3.1.1 Research funds sanctioned and received from various agencies, industry and other organizations

Nature of the Project	Duration	Name of the funding Agency	Total grant sanctioned	Amount received during the Academic year
Major projects	2 YEARS	AICTE	Rs 11,00,000/-	Rs 11,00,000/-
	2 YEARS	AICTE	Rs 07,00,000/-	Rs 07,00,000/-
	2 YEARS	AICTE	Rs 6,94,667/-	Rs 6,94,667/-
Minor Projects	6 months	TNSCT	Rs 7,000/-	Rs 7,000/-
Interdisciplinary Projects	1 YEAR	Sapthagiri Educational Trust	Rs 2,00,000	Rs 2,00,000
Industry sponsored Projects	6 Months	DST – IEDC	RS 1,00,000/-	RS 1,00,000/-
	6 Months	DST – IEDC	RS 1,00,000/-	RS 1,00,000/-
	6 Months	DST – IEDC	RS 1,00,000/-	RS 1,00,000/-
	6 Months	DST – IEDC	RS 1,00,000/-	RS 1,00,000/-
	6 Months	DST – IEDC	RS 1,00,000/-	RS 1,00,000/-
Projects sponsored by the University/ College	6 Months	Sapthagiri Educational Trust	Rs 20,000/-	Rs 20,000/-
	6 Months	Sapthagiri Educational Trust	Rs 15,000/-	Rs 15,000/-
	6 Months	Sapthagiri Educational Trust	Rs 10,000/-	Rs 10,000/-
	6 Months	Sapthagiri Educational Trust	Rs 15,000/-	Rs 15,000/-
	6 Months	Sapthagiri Educational Trust	Rs 15,000/-	Rs 15,000/-

	6 Months	Sapthagiri Educational Trust	Rs 10,000/-	Rs 10,000/-
	6 Months	Sapthagiri Educational Trust	Rs 15,000/-	Rs 15,000/-
International Projects	NIL	NIL	NIL	NIL
Any other(Specify)	1 week	AICTE	Rs 93,000/-	Rs 93,000/-
	2 days	AICTE	Rs 50,000/-	Rs 50,000/-
	2 weeks	AICTE	Rs 2.07,000/-	Rs 2.07,000/-
	3 weeks	AICTE	Rs 3,00,000/-	Rs 3,00,000/-

Sai
SAI RAM INSTITUTE OF TECHNOLOGY
NBA Accredited | Accredited by NAAC with 'A+' Grade | An ISO 9001 : 2015 Certified Institution
MHRD NIRF ranked Institution
Sai Leo Nagar, West Tambaram, Chennai. Tel : 044 - 2251 2111. www.sairamit.edu.in

Ref: T.O.No.095/ S4/SSIT/Ch -44/2020 Date: 16.03.2020

Submitted to the Chairman

Sir,

Sub: SSIT, Ch-44 – Release of Grant of Rs.11,00,000/- as Grant-in-Aid Under MODROB – Amount Released Rs.8,80,000/- - Purchase of Equipments for the ECE Lab – Requested – Reg.

Ref :1. Letter No.F.No.9-97/RIFD/MOD/Policy-1/2018-19 dt. 02.12.2019. from the Advisor-1 (RIFD).
2. Letter No.705 dated 13.03.2020 received from the HOD, Dept. of ECE

****

The References under 1st & 2nd cited are submitted herewith for kind perusal.

It is submitted that the Advisor, Modernization and Removal of Obsolescence (MODROB), MHRD has granted a sum of Rs.11,00,000/- (Rupees Eleven Lakhs only) as Grant-in-Aid under MODROB to set up a Laboratory on "**Advanced Antenna Design and Characterization Laboratory**" in the Department of ECE under Ref.1st cited. In this regard, a sum of Rs.8,80,000/- (Rupees Eight Lakh Eighty Thousand only) has already released and credited into our Account on 14.01.2020 to purchase the Equipments.

Accordingly, the HOD, Dept. of ECE has requested to grant permission to purchase the following equipments for the above Laboratory.

(i) Keysight's N9912A FieldFox RF Handled Analayzer.
(ii) ADS Premier University License Bundle.

Therefore, it is requested that approval may kindly be granted to purchase the above equipments to the ECE Laboratory at an early date.

Submitted to the Chairman for kind perusal and approval.

PRINCIPAL

PRINCIPAL
SAI RAM INSTITUTE OF TECHNOLOGY
SAI LEO NAGAR, CHENNAI-600 044.

O/C

Encl : as above

DESPATCHED
DATE: 16/3/20
Through ECE HOD

13/3/2020

From,

Dr. G. Thamarai Selvi,
HOD/ECE,
Sri Sai Ram Institute of Technology,
Chennai.

SRISAI RAM INSTITUTE OF TECHNOLOGY
705
16 MAR 2020
SAI LEO NAGAR, CHENNAI-600044

To,

The Principal,
Sri Sai Ram Institute of Technology,
Chennai.

Respected Sir,

Sub: purchase of equipment sanctioned in MODROB by AICTE - Regd.

For our department ECE, an amount of Rs 11,00,000/- as Grant-in-aid under MODROB Scheme by AICTE has been sanctioned for developing "Advanced Antenna design and characterization laboratory". We want to Purchase the following equipments for the Lab.

(i) Keysight's N9912A FieldFox RF Handheld Analayzer.

(ii) ADS Premier University License Bundle.

Now, an amount of Rs 8,80,000/- has been released and Credited to our account. So, I request you to grant permission to Purchase the above equipments.

Thanking you,

Yours faithfully,

Thamarai S.
13.3.2020.

Submitted to the Chairman's kind perusal

13/03/2020

ICICI Bank account Statement from 23-12-2019 to 22-01-2020.

Account Number	Tran Date	Tran Particular	Tran Remarks	Inst Num	Orig Sol Id	Currency Code	Dr Tran Amt	Cr Tran Amt	Bal Amt	Deposit Branch
Ac No:13930500 0416	##### ###	B/F				INR			1098 167	
Ac No:13930500 0416	14-Jan-20	ACH/MODROB/C0120131 13553	011400166347//101 01170199		103	INR	0	560000	1658 167	RPC MUMBAI
Ac No:13930500 0416	14-Jan-20	ACH/MODROB/C0120131 14455	011400208253//101 01170199		103	INR	0	880000	2538 167	RPC MUMBAI
Ac No:13930500 0416	16-Jan-20	ACH/full final amount/C012016868639	011600193451//101 01170199		103	INR	0	207000	2745 167	RPC MUMBAI
Ac No:13930500 0416	16-Jan-20	ACH/full final amount/C012016871885	011600193474//101 01170199		103	INR	0	300000	3045 167	RPC MUMBAI

Closing Balance as on 23-01-2020 03:21:14 is INR.3045167.00 includes Uncleared Funds of INR.0.00

Date:29.11.2019

F.No.9-87/RIFD/MOD/Policy-1/2018-19

All India Council for Technical Education
(A Statutory Body under Ministry of HRD, Govt. of India)
Nelson Mandela Marg, Vasant Kunj, New Delhi-110070 Website: www.aicte-india.org

MODROB - Sanction Letter

F.No.9-87/RIFD/MOD/Policy-1/2018-19

Date: 02.12.2019

To,

The Drawing and Disbursing Officer,
All India Council for Technical Education,
Nelson Mandela Marg, Vasant Kunj,
New Delhi- 110070.

Sub: Release of a sum of Rs.880000/- (Rupees Eight Lakh Eighty Thousand Only) being the Grant-in-Aid under the scheme Modernization and Removal of Obsolescence (MODROB) for the year 2018-19 payable during the current financial year 2019-20- reg.

Sir,

With reference to the proposal submitted by the institute, this is to convey that the sanction of the Council for payment of **Rs.1100000/- (Rupees Eleven Lakh Only)** as Grant-in-Aid under the **Modernization and Removal of Obsolescence (MODROB)** scheme, as per details given below:

1.	Name and address of the Beneficiary Institution:	**Director/ Principal/ Registrar, SRI SAI RAM INSTITUTE OF TECHNOLOGY, SAI LEO NAGAR, DHARKAST ROAD, WEST TAMBARAM, CHENNAI.600 044 Tamil Nadu -600044.**		
2.	Title of Project:	Advanced Antenna design and characterization laboratory		
3.	Name of Coordinator:	Dr. THAMARAI SELVI G		
4.	Duration of the project:	**2 Years**		
4.	Total Grant-in-aid Sanctioned:	**Total: Rs.1100000/-**	**Non-Recurring (85%):** Rs.935000/-	**Recurring (15%):** Rs.165000/-
5.	Amount to be released during the year 2019-20:	**1st Installment Rs.880000/-**	**Non-Recurring (85%):** Rs.748000 /-	**Recurring (15%):** Rs.132000/-
6.	Sanctioned grant-in-aid is debitable to:	**Major Head 601.18(a) Gen. (Plan Head)**		

1. The amount of the Grant shall be drawn by the Drawing and Disbursing Officer, All India Council for Technical Education on the Grant-in-Aid bill and shall be disbursed to and credited to the account of Director/Principal/ Registrar of the Institute through RTGS/PFMS.
2. This Grant-in-Aid is being released in conformity with the terms & conditions as well as norms of the scheme as already communicated, and also being communicated in this letter.

THE INSTRUCTIONS/GUIDELINES TO BE FOLLOWED BY UNIVERSITY/INSTITUTION

I. Release of funds:

a. The Principal/ Director of the institute and the Coordinator of the project are hereby requested to verify the correctness of the undermentioned bank account/ RTGS details submitted by them along with the Proposal, in which the grant is being released:

Institute PAN No.	Bank Name	Bank Branch Name	Branch Address	Account Holder Name	Account Type	Account Number	IFSC
AABTS7101F	ICICI BANK LTD	TAMBARAM BRANCH	Plot No 27&29 , Ayyasamy St., West Tambaram, Chennai 45	Principal, SRI SAI RAM INSTITUTE OF TECHNOLOGY	Current Account	139305000416	ICIC0001393

In case of any omission the same should be reported to AICTE immediately.

b. The sanction is issued in exercise of the powers delegated to the council and other terms & conditions laid down in the guidelines of the scheme.

c. 100% grant of the sanctioned amount is being released to Government/Govt. Aided institutions. Utilization Certificate (UC) and other requisite documents are to be submitted within one month of the completion of the project.

d. To self-financed/Pvt. Institutions 80% of the sanctioned amount is being released as first installment followed by 20% as reimbursement after receipt of UC and other requisite documents as specified in terms & Conditions of MODROB Scheme.

II. Maintenance of accounts:

a) The Institute shall strictly follow the provisions laid down in the scheme document and sanction order No. F.No.9-87/RIFD/MOD/Policy-1/2018-19 Dated 02.12.2019, issued by this office. All correspondences related to the project must contain this number along with year of sanction of the project; failing which correspondence will not be entertained

b) Funds covered by this grant shall be kept separately and would not be mixed up with other funds, so as to know the amount of interest accrued on the grant AICTE.

c) The University/College/Institute shall maintain proper accounts of the expenditure out of the grants, which shall be utilized only on approved items of expenditure (list enclosed).

d) The Council or its nominee shall have the right to check /verify the account to satisfy that the fund has been utilized for the purpose for it was sanctioned.

e) The date of release of the grant by AICTE shall be taken as the date of commencement of the project. The Principal / Director / Registrar shall intimate about the receipt of the grant to AICTE. Any expenditure incurred prior to the issuance of the approval letter will not be allowed to be adjusted in the grant and if the Institution / University do not take the project work within one month of the receipt of the grant, the approval shall ipso facto lapse.

f) After receipt of the grant from AICTE, the Institute shall send a confirmation to AICTE within 2 months of receipt of grant that the sanctioned project has been started/is in progress.

III. Refund of grant by way of a demand draft in favour of Member Secretary, AICTE, New Delhi:

a) If the college/institute does not have the Letter of Approval (LOA) or Extension of Approval issued by AICTE for the academic year 2019-20, the fund released should be immediately refunded to AICTE with interest accrued thereon.

b) If project is not started within six months of the issuance of this Offer Letter, the released amount, along with interest accrued thereon, has to be necessarily returned to AICTE.

c) In any case, if the institute is required to refund the grant or interest accrued thereon or balance amount, the amount will be refunded to AICTE.

d) It may be ensured that the project is completed within the stipulated time. If the project is not completed in time, no further extension will be granted in any case and institute has to refund the entire amount to AICTE.

e) As AICTE needs adequate time for depositing the Demand Draft in the bank, the same be immediately dispatched to avoid any lapse of the validity period.

IV. Submission of documents by college/institution after completion of Project/Subsequent years:

The following mandatory relevant documents are required to be submitted by the college/institution within one month of the completion of the project: -

a) Feedback form in the prescribed proforma.

b) The Annual Progress Report (APR) in the prescribed format along with the original Statement of actual Expenditure in the prescribed proforma duly signed by the Head of the institution and shall be submitted to AICTE not later than one month after completion.

c) The Utilization Certificate (UC) supported by Audited Statement of Expenditure to the effect that the grant has been utilized for the purpose for which it has been sanctioned shall be furnished to the AICTE immediately after completion of the project. It should contain the head-wise break up

of expenditure made from the grant-in-aid provided by the Council. Audited Statement of Expenditure indicating expenditure incurred in the total duration of the project in the prescribed format and GFR-19 shall be submitted to the Council.

d) In case of self-financing/private institutions, Statement of actual Expenditure & Utilization Certificate are required to be audited & signed by a Charted Accountant (with membership no., full address & stamp). Photocopies of formats are enclosed.

e) Program Evaluation Committee (PEC) is required to be constituted at Institutional level. The constitution of the PEC shall be asunder:

i. Principal/Director/Registrar of the Institution(Chairperson)
ii. Coordinator of the project (Member Secretary),
iii. Two HODs and one subject expert(Members).
iv. The members of the said PEC shall not be below the rank of Associate Professor. The minutes of the meetings are to be submitted to the Council at end of the project along with other mandatory documents.

f) Project completion report project indicating the activities undertaking, number of students benefited, laboratory works photographs of students, together with their views is to be submitted.

g) Attested photocopies of supporting vouchers/bills of expenditure incurred for the completion of Project.

h) Photographs of equipment's purchased.

i) The balance amount of the grant will be reimbursed to the university/institution only on submission of the above documents. On receipt of these documents, the total amount of balance of financial assistance, admissible as per the norms, shall be worked out and grant-in-aid shall be released, as second installment, in favour of the beneficiary institution.

V. General instructions

a) The amount of interest accrued on the grant should be treated as part of the grant to be utilized for that particular project. However, the interest amount accrued along with grant disbursed should not exceed the total grant sanctioned for the project. The Institute receiving the grant should reflect the same in the audited statement of accounts/ utilization certificate and may either refund the interest amount to AICTE or AICTE shall adjust the same in the next installment of grant before its release.

b) Any unavoidable circumstantial change in the project with respect to name of Project Coordinator for the MODROB project would mandatorily require prior approval of the Council. All such requests should be addressed to AICTE, in advance, recording the specific reasons for proposed changes, failing which the offer for the grant already issued would be treated as automatically withdrawn and the financial assistance released in favour of the beneficiary institution shall be refunded immediately to the Council. Kindly mention the .File No.9-87/RIFD/MOD/Policy-1/2018-19 in your future correspondence.

c) The grantee shall maintain an audited record of assets acquired wholly or substantially out of the Grant-in-Aid and a register of assets shall be maintained by the Institute in the prescribed form i.e.GFR-19.

d) The College / Institute receiving grant under MODROB is expected to put up a plaque at the main entrance of the Lab/Department, which has been modernized using the grant. All the equipment procured through the project should be super scribed with AICTE project file number.

e) The assets acquired wholly or substantially out of grant shall not be disposed or encumbered or utilized for the purpose other than those for which the Grant was given without proper sanction of the AICTE and should at any time the institution cease to function, such assets shall revert to the AICTE.

f) The grantee Institution shall observe all financial norms and guidelines as prescribed by the AICTE/ Government of India from time to time. GOI GFR rules (@https://doe.gov.in/order-circular/general-financial-rules2017-0) should be followed during utilization of grant.

Date:29.11.2019

F.No.9-87 /RIFD/MOD/Policy-I/2018-19

List of Equipment's approved :

Name of Equipments
Keysight's N9912A FieldFox RF Handheld Analyzer ADS Premier University License Bundle

Yours sincerely,

Prof. Dileep N. Malkhede
Advisor-1 (RIFD)

16 DEC 2019

Copy forwarded for information and necessary action to:

1. **Name and Address of the Coordinator,**
   Dr. THAMARAI SELVI G,
   SRI SAI RAM INSTITUTE OF TECHNOLOGY,
   SAI LEO NAGAR, DHARKAST ROAD, WEST TAMBARAM, CHENNAI.600 044 Tamil Nadu -600044.

2. **The Registrar / Director / Principal,**
   SRI SAI RAM INSTITUTE OF TECHNOLOGY,
   SAI LEO NAGAR, DHARKAST ROAD, WEST TAMBARAM, CHENNAI.600 044 Tamil Nadu -600044

3. Guard File

Prof. Dileep N. Malkhede
Advisor-1 (RIFD)

ICICI Bank account Statement from 23-12-2019 to 22-01-2020.

Account Number	Tran Date	Tran Particular	Tran Remarks	Inst Num	Orig Sol Id	Currency Code	Dr Tran Amt	Cr Tran Amt	Bal Amt	Deposit Branch
Ac No:139305000416	###########	B/F				INR			1098167	
Ac No:139305000416	14-Jan-20	ACH/MODROB/C012013113553	011400166347//10101170199		103	INR	0	560000	1658167	RPC MUMBAI
Ac No:139305000416	14-Jan-20	ACH/MODROB/C012013114455	011400208253//10101170199		103	INR	0	880000	2538167	RPC MUMBAI
Ac No:139305000416	16-Jan-20	ACH/full final amount/C012016868639	011600193451//10101170199		103	INR	0	207000	2745167	RPC MUMBAI
Ac No:139305000416	16-Jan-20	ACH/full final amount/C012016871885	011600193474//10101170199		103	INR	0	300000	3045167	RPC MUMBAI

Closing Balance as on 23-01-2020 03:21:14 is INR.3045167.00 includes Uncleared Funds of INR.0.00

Date:29.11.2019

F.No.9-280/RIFD/MOD/Policy-I/2018-19

All India Council for Technical Education
(A Statutory Body under Ministry of HRD, Govt. of India)
Nelson Mandela Marg, Vasant Kunj, New Delhi-110070 Website: www.aicte-india.org

MODROB - Sanction Letter

SRI SAI RAM INSTITUTE OF TECHNOLOGY SAI LEO NAGAR CHENNAI-600 044
16 MAR 2020
Ref. 714

F.No.9-280/ RIFD/MOD/Policy-1/2018-19 Date: 04.12.2019

To,

The Drawing and Disbursing Officer,
All India Council for Technical Education,
Nelson Mandela Marg, Vasant Kunj,
New Delhi- 110070.

Sub: Release of a sum of Rs.560000/- (Rupees Five Lakh Sixty Thousand Only) being the Grant-in-Aid under the scheme Modernization and Removal of Obsolescence (MODROB) for the year 2018-19 payable during the current financial year 2019-20- reg.

Sir,

With reference to the proposal submitted by the institute, this is to convey that the sanction of the Council for payment of **Rs.700000/- (Rupees Seven Lakh Only)** as Grant-in-Aid under the **Modernization and Removal of Obsolescence (MODROB)** scheme, as per details given below:

1.	Name and address of the Beneficiary Institution:	**Director/ Principal/ Registrar,** **SRI SAI RAM INSTITUTE OF TECHNOLOGY, SAI LEO NAGAR, DHARKAST ROAD, WEST TAMBARAM, CHENNAI.600 044 Tamil Nadu - 600044**		
2.	Title of Project:	Enhancement of Cloud infrastructure for Mobile application development with Data analytics		
3.	Name of Coordinator:	Dr. BRINDHA DEVI V		
4.	Duration of the project:	**2 Years**		
4.	Total Grant-in-aid Sanctioned:	**Total: Rs.700000/-**	**Non-Recurring (85%):** Rs.595000/-	**Recurring (15%):** Rs.105000/-
5.	Amount to be released during the year 2019-20:	**1st Installment Rs.560000/-**	**Non-Recurring (85%):** Rs.476000/-	**Recurring (15%):** Rs.84000/-
6.	Sanctioned grant-in-aid is debitable to:	**Major Head 601.18(a) Gen. (Plan Head)**		

1. The amount of the Grant shall be drawn by the Drawing and Disbursing Officer, All India Council for Technical Education on the Grant-in-Aid bill and shall be disbursed to and credited to the account of Director/Principal/ Registrar of the Institute through RTGS/PFMS.
2. This Grant-in-Aid is being released in conformity with the terms & conditions as well as norms of the scheme as already communicated, and also being communicated in this letter.

THE INSTRUCTIONS/GUIDELINES TO BE FOLLOWED BY UNIVERSITY/INSTITUTION

I. Release of funds:

a. The Principal/ Director of the institute and the Coordinator of the project are hereby requested to verify the correctness of the under mentioned bank account/ RTGS details submitted by them along with the Proposal, in which the grant is being released:

Institute PAN No.	Bank Name	Bank Branch Name	Branch Address	Account Holder Name	Account Type	Account Number	IFSC
AABTS7101F	ICICI BANK LTD	TAMBARAM BRANCH	Plot.No.27&29, Ayyasamy st., West Tambaram, Chennai.45	PRINCIPAL , SRI SAI RAM INSTITUTE OF TECHNOLOGY	Current Account	139305000416	ICIC0001393

Dr. BRINDHA DEVI V. HOD / I.T

In case of any omission the same should be reported to AICTE immediately.

b. The sanction is issued in exercise of the powers delegated to the council and other terms & conditions laid down in the guidelines of the scheme.
c. 100% grant of the sanctioned amount is being released to Government/Govt. Aided institutions. Utilization Certificate (UC) and other requisite documents are to be submitted within one month of the completion of the project.
d. To self-financed/Pvt. Institutions 80% of the sanctioned amount is being released as first installment followed by 20% as reimbursement after receipt of UC and other requisite documents as specified in terms & Conditions of MODROB Scheme.

II. Maintenance of accounts:

a) The Institute shall strictly follow the provisions laid down in the scheme document and sanction order No. F.No.9-280/RIFD/MOD/Policy-1/2018-19 Dated 15.11.2019 issued by this office. All correspondences related to the project must contain this number along with year of sanction of the project; failing which correspondence will not be entertained
b) Funds covered by this grant shall be kept separately and would not be mixed up with other funds, so as to know the amount of interest accrued on the grant AICTE.
c) The University/College/Institute shall maintain proper accounts of the expenditure out of the grants, which shall be utilized only on approved items of expenditure (list enclosed).
d) The Council or its nominee shall have the right to check /verify the account to satisfy that the fund has been utilized for the purpose for it was sanctioned.
e) The date of release of the grant by AICTE shall be taken as the date of commencement of the project. The Principal / Director / Registrar shall intimate about the receipt of the grant to AICTE. Any expenditure incurred prior to the issuance of the approval letter will not be allowed to be adjusted in the grant and if the Institution / University do not take the project work within one month of the receipt of the grant, the approval shall ipso facto lapse.
f) After receipt of the grant from AICTE, the Institute shall send a confirmation to AICTE within 2 months of receipt of grant that the sanctioned project has been started/is in progress.

III. Refund of grant by way of a demand draft in favour of Member Secretary, AICTE, New Delhi:

a) If the college/institute does not have the Letter of Approval (LOA) or Extension of Approval issued by AICTE for the academic year 2019-20, the fund released should be immediately refunded to AICTE with interest accrued thereon.
b) If project is not started within six months of the issuance of this Offer Letter, the released amount, along with interest accrued thereon, has to be necessarily returned to AICTE.
c) In any case, if the institute is required to refund the grant or interest accrued thereon or balance amount, the amount will be refunded to AICTE.
d) It may be ensured that the project is completed within the stipulated time. If the project is not completed in time, no further extension will be granted in any case and institute has to refund the entire amount to AICTE.
e) As AICTE needs adequate time for depositing the Demand Draft in the bank, the same be immediately dispatched to avoid any lapse of the validity period.

IV. Submission of documents by college/institution after completion of Project/Subsequent years:

The following mandatory relevant documents are required to be submitted by the college/institution within one month of the completion of the project: -

a) Feedback form in the prescribed proforma.
b) The Annual Progress Report (APR) in the prescribed format along with the original Statement of actual Expenditure in the prescribed proforma duly signed by the Head of the institution and shall be submitted to AICTE not later than one month after completion.
c) The Utilization Certificate (UC) supported by Audited Statement of Expenditure to the effect that the grant has been utilized for the purpose for which it has been sanctioned shall be furnished to the AICTE immediately after completion of the project. It should contain the head-wise break up of expenditure made from the grant-in-aid provided by the Council. Audited Statement of

Expenditure indicating expenditure incurred in the total duration of the project in the prescribed format and GFR-19 shall be submitted to the Council.

d) In case of self-financing/private institutions, Statement of actual Expenditure & Utilization Certificate are required to be audited & signed by a Charted Accountant (with membership no., full address & stamp). Photocopies of formats are enclosed.

e) Program Evaluation Committee (PEC) is required to be constituted at Institutional level. The constitution of the PEC shall be asunder:

i. Principal/Director/Registrar of the Institution(Chairperson)
ii. Coordinator of the project (Member Secretary),
iii. Two HODs and one subject expert(Members).
iv. The members of the said PEC shall not be below the rank of Associate Professor. The minutes of the meetings are to be submitted to the Council at end of the project along with other mandatory documents.

f) Project completion report project indicating the activities undertaking, number of students benefited, laboratory works photographs of students, together with their views is to be submitted.

g) Attested photocopies of supporting vouchers/bills of expenditure incurred for the completion of Project.

h) Photographs of equipment's purchased.

i) The balance amount of the grant will be reimbursed to the university/institution only on submission of the above documents. On receipt of these documents, the total amount of balance of financial assistance, admissible as per the norms, shall be worked out and grant-in-aid shall be released, as second installment, in favour of the beneficiary institution.

V. General instructions

a) The amount of interest accrued on the grant should be treated as part of the grant to be utilized for that particular project. However, the interest amount accrued along with grant disbursed should not exceed the total grant sanctioned for the project. The Institute receiving the grant should reflect the same in the audited statement of accounts/ utilization certificate and may either refund the interest amount to AICTE or AICTE shall adjust the same in the next installment of grant before its release.

b) Any unavoidable circumstantial change in the project with respect to name of Project Coordinator for the MODROB project would mandatorily require prior approval of the Council. All such requests should be addressed to AICTE, in advance, recording the specific reasons for proposed changes, failing which the offer for the grant already issued would be treated as automatically withdrawn and the financial assistance released in favour of the beneficiary institution shall be refunded immediately to the Council. Kindly mention the File No.9-280/RIFD/MOD/Policy-I/2018-19 in your future correspondence.

c) The grantee shall maintain an audited record of assets acquired wholly or substantially out of the Grant-in-Aid and a register of assets shall be maintained by the Institute in the prescribed form i.e.GFR-19.

d) The College / Institute receiving grant under MODROB is expected to put up a plaque at the main entrance of the Lab/Department, which has been modernized using the grant. All the equipment procured through the project should be super scribed with AICTE project file number.

e) The assets acquired wholly or substantially out of grant shall not be disposed or encumbered or utilized for the purpose other than those for which the Grant was given without proper sanction of the AICTE and should at any time the institution cease to function, such assets shall revert to the AICTE.

f) The grantee Institution shall observe all financial norms and guidelines as prescribed by the AICTE/ Government of India from time to time. GOI GFR rules (@https://doe.gov.in/order-circular/general-financial-rules2017-0) should be followed during utilization of grant.

Date:29.11.2019

F.No.9-230 /RIFD/MOD/Policy-I/2018-19

List of Equipment's approved :

Name of Equipments
Scanner
Intel i5 PCs
Networking
Printers
UPS
Projects

Yours sincerely,

Prof. Dileep N. Malkhede
Advisor-1 (RIFD)

Copy forwarded for information and necessary action to:

16 DEC 2019

1. **Name and Address of the Coordinator,**
   Dr. BRINDHA DEVI V,
   SRI SAI RAM INSTITUTE OF TECHNOLOGY,
   SAI LEO NAGAR, DHARKAST ROAD, WEST TAMBARAM,
   CHENNAI.600 044 Tamil Nadu -600044

2. **The Registrar / Director / Principal,**
   SRI SAI RAM INSTITUTE OF TECHNOLOGY,
   SAI LEO NAGAR, DHARKAST ROAD, WEST TAMBARAM,
   CHENNAI.600 044 Tamil Nadu -600044

3. **Guard File**

Prof. Dileep N. Malkhede
Advisor-1 (RIFD)

SAI RAM INSTITUTE OF TECHNOLOGY
NBA Accredited | Accredited by NAAC with 'A+' Grade | An ISO 9001 : 2015 Certified Institution
MHRD NIRF ranked Institution
Sai Leo Nagar, West Tambaram, Chennai. Tel : 044 - 2251 2111. www.sairamit.edu.in

Ref: T.O.No.096/ S4/SSIT/Ch -44/2020 Date: 16.03.2020

Submitted to the Chairman

Sir,

Sub: SSIT, Ch-44 – Release of Grant of Rs.6,94,667/- as Grant-in-Aid for PRERANA Centre- Amount Released Rs.6,94,667/- - Purchase of Computer Equipments – Requested – Reg.

Ref :1. Letter No.F.72-12/RIFD/PRERANA/Policy-1/2018-19 dt. 18.01.2020. from the Advisor-1 (RIFD).
2. Letter No.697 dated 13.03.2020 received from Dr.G.Saravanan. Associate Professor, Dept. of ECE.

****

The References under 1st & 2nd cited are submitted herewith for kind perusal.

It is submitted that the Advisor, PRERANA, AICTE has granted a sum of Rs.6,94,667/- (Rupees Six Lakhs Ninety four thousand six hundred and sixty seven only) as Grant-in-Aid to purchase Computer Equipments under PRERANA scheme. In this regard, a sum of Rs.1,50,000/- (Rupees One Lakh Fifty Thousand only) has already released on 12.12.2019 to purchase the Equipments.

Hence, Dr.G.Saravanan, Assoc. Prof. Dept. of ECE has requested to grant permission to purchase Computers, Laser Printer and Headphones for PRERANA centre.

Therefore, it is requested that approval may kindly be granted to purchase the above mentioned items at an early date.

Submitted to the Chairman for kind perusal and approval.

PRINCIPAL

PRINCIPAL
SR. SAI RAM INSTITUTE OF TECHNOLOGY
SAI LEO NAGAR, CHENNAI - 600 044.

Encl : as above

DESPATCHED
DATE: 16/3/20

Through
Mr. Saravanan
Apeer.

13- 03- 2020

From

Dr.G.Saravanan,

Associate Professor,

Department of ECE,

Sri Sai Ram Institute of Technology,

West Tambaram, Chennai -44.

To,

The Principal,

Sri Sai Ram Institute of Technology,

West Tambaram, Chennai -44.

Sir,

Sub: Requisition letter for the purchase of Computer system, Laser Printer and Headphones for PRERANA centre – reg.

I wish to inform you that, the fund of rupees 1,50,000 is sanctioned towards the purchase of Computer system, Laser Printer and Head phones under PRERANA scheme by the AICTE and it was credited to our ICICI account.

We request you to kindly purchase same through the vendor for smooth implementation of PRERANA scheme in our Institution.

Thanking you.

13/01/2020

Your faithfully,

All India Council for Technical Education
(A Statutory body under Ministry of HRD, Govt. of India)
Nelson Mandela Marg,Vasant Kunj, New Delhi-110070 Website: www.aicte-india.org

PRERANA - Sanction Letter

To

The Drawing and Disbursing Officer,
All India Council for Technical
Education, Nelson Mandela Marg,
Vasant Kunj,
New Delhi - 110070

Sub: Release of a sum of **Rs. 694667/- (Rupees Six Lakh NinetyFour Thousand Six Hundred SixtySeven Only)** being the **Grant-in-Aid** under the scheme **Prerana** for the year **2018-19** payable during the current financial year **2019-20**- reg.

Sir,

With reference to the proposal submitted by the institute, this is to convey that the sanction of the Council for payment of Rs. **694667/- (Rupees Six Lakh NinetyFour Thousand Six Hundred SixtySeven Only)** as 100% recurring grant Grant-in-Aid under the **PRERANA** scheme, as per details given below:

1.	Name and address of the Beneficiary Institution:	SRI SAI RAM INSTITUTE OF TECHNOLOGY, SAI LEO NAGAR, DHARKAST ROAD, WEST TAMBARAM, CHENNAI.600 044, CHENNAI.-600044, KANCHIPURAM, Tamil Nadu
2.	Duration of the scheme:	2 Years
3.	Total Grant-in-aid Sanctioned:	**Rs. 694667/-**
4.	Amount to be released during the year 2019-20:	**Rs. 694667/-**
5.	Sanctioned grant-in-aid is debitable to:	**Major Head 601-8 (b) & (c)**

1. The amount of the Grant shall be drawn by the Drawing and Disbursing Officer, All India Council for Technical Education on the Grant-in-Aid bill and shall be disbursed to and credited to the account of Director/Principal/ Registrar of the Institute through RTGS/PFMS.
2. This Grant-in-Aid is being released in conformity with the terms & conditions as well as norms of the scheme as already communicated, and also being communicated in this letter.

The instructions/guidelines to be followed by University/Institution

I. **Release of funds**

a. The Principal/ Director of the institute and the Coordinator of the project are hereby requested to verify the correctness of the under mentioned bank account/ RTGS details submitted by them along with the proposal, in which the grant is being released:

Institute PAN No.	Bank Name	Bank Branch Name	Bank Branch Address	Account Holder Name	Account Type	Account Number	IFSC Code
AABTS7101F	ICICI BANK LTD	TAMBARAM BRANCH	Plot.No.27&29, Ayyasamy st., West Tambaram, Chennai.45	PRINCIPAL, SRI SAI RAM INSTITUTE OF TECHNOLOGY	Current Account	139305000416	ICIC0001393

In case of any omission the same should be reported to AICTE immediately.

b. The sanction is issued in exercise of the powers delegated to the council and other terms & conditions laid down in the guidelines of the scheme.

c. 100% Recurring amount as grant-in-aid is being released to AICTE approved institutions under the scheme. There is no non-recurring amount.

I. Maintenance of accounts

a The Institute shall strictly follow the provisions laid down in the scheme document and sanction order No. F.No.72-12/RIFD/Prerana/Policy-1/2018-19 dated ... 2019 issued by this office. All correspondences related to the scheme must contain this number along with year of sanction of the scheme; failing which correspondence will not be entertained.

b Funds covered by this grant shall be kept separately and would not be mixed up with other funds, so as to know the amount of interest accrued on the grant.

c The College/Institute shall maintain proper accounts of the expenditure out of the grants, which shall be utilized only on the scheme.

d The Council or its nominee shall have the right to check/verify the account to satisfy that the fund has been utilized for the purpose for it was sanctioned.

e The date of release of the grant by AICTE shall be taken as the date of commencement of the scheme. The Principal / Director / Registrar shall intimate about the receipt of the grant to AICTE. Any expenditure incurred prior to the issuance of the approval letter will not be allowed to be adjusted in the grant and if the Institution do not take the scheme work within six month of the receipt of the grant, the approval shall ipso facto lapse.

f The amount of interest accrued on the grant should be treated as part of the grant to be utilized for that particular scheme. However, the interest amount accrued along with grant disbursed should not exceed the total grant sanctioned for the scheme. The Institute receiving the grant should reflect the same in the audited statement of accounts/ utilization certificate and may either refund the interest amount to AICTE.

g After receipt of the grant from AICTE, the Institute shall send a confirmation to AICTE within 2 months of receipt of grant that the sanctioned scheme has been started/is in progress.

h The grant is intended to cover items of expenditure connected with the Prerana Scheme such as Honorarium to the eminent faculty members invited for conducting sessions @ Rs. 2000/- per class of minimum 2 Hours. No TA/DA will be paid. Students will be paid the application fee for such exams through this scheme.

III. Instructions for Implementation of scheme

a The parent institution shall provide adequate space for conducting the classes for SC/ST students.

b For smooth functioning of scheme and to meet its objectives effectively, it is essential to assign an adequate man power in the form of dedicated faculty as Principal Coordinator and support staff.

c The Principal Coordinator shall devise a feed-back mechanism to assess the importance of the programme. The feedback shall be obtained after each programme from each of the SC/ST students. If need be, the centre can update its course curriculum of these programmes.

d Any extra money required to complete the programme must be borne by the institute from their own resources. But the quality of the activities should not be compromised.

IV. Refund of grant (by way of a demand draft in favour of Member Secretary, AICTE, New Delhi)

a In any case, if the institute is required to refund the grant or interest accrued thereon or balance amount, the amount will be refunded to AICTE.

b. If the college/institute does not have the Letter of Approval (LOA) or Extension of Approval issued by AICTE for the academic year 2019-20, the fund released should be immediately refunded to AICTE with interest accrued thereon.

c. If scheme is not started within six months of the issuance of this Offer Letter, the released amount, along with interest accrued thereon, has to be necessarily returned to AICTE.

d It may be ensured that the scheme is completed within the stipulated time. If the scheme is not completed in time no further extension will be granted in any case and institute has to refund the entire amount to AICTE.

e As AICTE needs adequate time for depositing the Demand Draft in the bank, the same be immediately dispatched to avoid any lapse of the validity period.

V. Submission of documents by college/institution after completion of Scheme/Subsequent years.

The following mandatory relevant documents are required to be submitted by the college/institution within one month of the completion of the scheme:-

a. Feedback form in the prescribed proforma.

b Original Statement of actual expenditure in the prescribed proforma duly signed by the Head of the institution and countersigned by Registrar/Finance Officer/Govt. Auditor Note: The institution is not required to submit bills/ vouchers/ invoices etc for the expenditure incurred out of recurring grants. However, such copies of bills/ vouchers/ invoices shall be digitized by respective institutions receiving grant and uploaded scanned copies of such bills/vouchers/invoices etc on the portal for availability and view at any point of time.

c The **Utilization Certificate (UC)** supported by Audited Statement of Expenditure to the effect that the grant has been utilized for the purpose for which it has been sanctioned shall be furnished to the AICTE immediately after completion of the scheme. It should contain the head-wise break up of expenditure made from the grant-in-aid provided by the Council. Audited Statement of Expenditure indicating expenditure incurred in the total duration of the scheme in the prescribed format and GFR-19 shall be submitted to the Council.

d In case of self-financing/private institutions, Statement of actual Expenditure & Utilization Certificate are required to be audited & signed by a Charted Accountant (with membership no., full address & stamp). Photocopies of formats are enclosed.

e **Program Evaluation Committee (PEC)** is required to be constituted at Institutional level. The constitution of the PEC shall be as under:

(i) Principal/Director/Registrar of the Institution (Chairperson)
(ii) Coordinator of the scheme (Member Secretary),
(iii) Two HODs and one subject expert (Members)

The members of the said PEC shall not be below the rank of Associate Professor. The minutes of the meetings are to be submitted to the Council at end of the scheme along with other mandatory documents.

f Project completion report indicating the activities undertaking, number of students benefited, photographs of students, together with their views is to be submitted.

V. General instructions

a The approved project under Prerana Scheme shall be started within six month from the date of release of funds.

b **If programme is not started in the period of six months of the issuance of this Sanction Order, the released amount, along with interest accrued thereon, has to be returned back to AICTE.** Kindly mention the File No. 72-12/RIFD/Prerana/Policy-1/2018-19 in your future correspondence.

c The grantee Institution shall observe all financial norms and guidelines as prescribed by the AICTE/ Government of India from time to time. GOI GFR rules (@https://doe.gov.in/order-circular/general-financial-rules2017-0) should be followed during utilization of grant.

d This Sanction Order may be treated as Offer Letter for all purposes.

Yours sincerely,

Dileep N. Malkhede
Advisor (RIFD)

Copy forwarded for information and necessary action to:

12 I NOV 2019

1. **Name and Address of the Coordinator**
Mr.. SARAVANAN G,
SRI SAI RAM INSTITUTE OF TECHNOLOGY,
SAI LEO NAGAR, DHARKAST ROAD, WEST TAMBARAM,
CHENNAI.600 044,
CHENNAI.-600044, KANCHIPURAM,
Tamil Nadu

2. **The Registrar / Director / Principal**
SRI SAI RAM INSTITUTE OF TECHNOLOGY,
SAI LEO NAGAR, DHARKAST ROAD, WEST TAMBARAM,
CHENNAI.600 044,
CHENNAI.-600044, KANCHIPURAM,
Tamil Nadu

3. Guard File

தமிழ்நாடு அறிவியல் தொழில்நுட்ப மாநில மன்றம்
TAMILNADU STATE COUNCIL FOR SCIENCE AND TECHNOLOGY
(Established by Government of Tamilnadu)
Directorate of Technical Education Campus, Chennai – 600 025.
Ph : 044-22301428, Telefax : 044-22301552 www.tanscst.nic.in

Dr.R.SRINIVASAN, M.Sc., Ph.D.,F.I.C.S., M.A.C.S.(USA).,
Member Secretary

Lr.No.TNSCST/SPS/AR/2019-2020 18.03.2020

To
The Principal
Sri Sairam Institute of Technology
West Tambaram
Chennai - 600 044

SRI SAI RAM INSTITUTE OF TECH... 764 21 MAR 2020 ... SAI LEO NAGAR, CHENNAI-600...

Sir/Madam,

Sub: TNSCST – Student Project Scheme – 2019-2020 – approval intimation–grant release- reg.

With respect to the above scheme, the list of projects approved by the State Council is enclosed along with terms and conditions. You are requested to adhere to terms and conditions such as submission of UC and Seminar Paper in Time.

Herewith enclosed the cheque for the approved grant and disburse the grant to the concerned students through the guides at the earliest

Kindly send the utilisation certificate (format enclosed) and seminar paper (ref.T&C-no.5&6) on completion of the project.

Thanking you,

Yours faithfully,

19/3/20

Member Secretary.

18/3/20

Encl: a) Terms & Conditions (T&C)
b) Format of Utilisation Certificate (UC)
c) Cheque for Rs.7000/- No: 853110 dt.18.03.2020

Cheque not enclosed

Copy to: Individual Guides

Deposited into Bank.

283. Sri Sairam Institute of Technology (1) – 7000/-

	Dr. G. Shanmugasundar Associate Professor Dept. of Mechanical Engineering Sri Sairam Institute of Technology Chennai - 600 044	Design and fabrication of solar powered surveillance drone for women safety	Abhishek.G.Shanker V.S. Vinoth Abhilash K. Vijayalayan S. Jayaraman	EME-055	The Principal Sri Sairam Institute of Technology Chennai - 600 044	7000/-

TAMILNADU STATE COUNCIL FOR SCIENCE AND TECHNOLOGY
DOTE CAMPUS, CHENNAI - 600 025

STUDENT PROJECT SCHEME 2019-2020
UTILISATION CERTIFICATE

(TWO COPIES)

1. Name of the guide and address :

2. Name of the student(s) :

3. Title of the project :

4. Project code :

It is certified that a sum of Rs..... (Rupees) Sanctioned by the council for carrying out above mentioned student project has been utilized for the purpose for which it was sanctioned and sum of Rs. .....remaining unutilized is refunded.

Signature of the guide Signature of the HOD Signature of the REGISTRAR/PRINCIPAL/DEAN With SEAL

TAMILNADU STATE COUNCIL FOR SCIENCE AND TECHNOLOGY

DOTE Campus, Chennai-600025

STUDENT PROJECTS SCHEME 2019-2020

Terms and Conditions of the grant

1. The project team **SHOULD NOT** change the topic of the project and should not deviate from the objectives of the sanctioned proposal. In the event of any such changes, sponsoring will be treated as cancelled and the college should return the sanctioned amount to TNSCST.
2. Every sanctioned project is allotted with a Project code Number. Please refer this number while corresponding with TNSCST.
3. The project sanction letter and the money will be sent to the Principal/Registrar of the institution with a copy to the Project guide.
4. The sanctioned project should be completed and the report should be submitted before end of **APRIL 2020**.
5. The state council will review the progress of the project at any time before completion of the project.
6. On completion of the project, 2-3 pages seminar paper (500 words, Times New Roman, 12 font size, single column, margins left- 2.5cm, right-2cm, top-2cm & bottom- 2cm, Word format without any figures & tables) should be submitted/uploaded in the council website.(link will be activated in due course of time) by mentioning the project code.
7. Utilization certificate (**UC**) should be sent to The Member Secretary, Tamilnadu State Council for Science and Technology, DOTE Campus, Chennai-600025. The Utilization Certificate should be signed by the Guide, HOD and Principal/Registrar/Dean with official **seal** as the case may be.
8. The guides are responsible for timely submission of SEMINAR PAPER and UC.
9. The seminar paper will be included in the form of **PROCEEDINGS** which will be brought out during Seminar cum Exhibition, only for those who submit the **UC**
10. **Anyone student of** the project team should present and exhibit the findings before the experts in the Seminar cum Exhibition which will be organized during **July/August 2020.**
11. The project model /fabrication/equipment are all properties of the council and therefore these are to be kept safely in the college and it should be handed over to the council with necessary details and bills as and when required.
12. During the Seminar cum Exhibition," best project award and certificate" will be presented to the outstanding selected projects and completion certificates to all.
13. The council reserves the right to terminate the project at any stage if it is convinced that the grant has not been properly utilized or appropriate progress is not being made. In addition, the Council may designate officer/an Expert to review the work done.

14. If the GUIDE wishes to leave the Institution where the project is based, the Institute/GUIDE will inform the same to the Council and in consultation with Council, evolve steps to ensure successful completion of the project, before relieving the GUIDE. The Council reserves the right to order verification/audit of accounts by any Officer authorized by it. The bills and accounts shall be kept safely.

15. Unspent money if any should be refunded in the form of DD drawn in favour of The Member Secretary, Tamilnadu State Council for Science and Technology, DOTE Campus, Chennai-600025 payable at Chennai.

16. Students/faculties are requested to publish the research papers emerging out of the project work in leading Journals. **The council will encourage them through financial support in addition to project grant if they publish in leading/peer review journals**.

17. Investigators must acknowledge the Council in reports and technical/scientific papers publishing based on the research work done under the project

18. If the results of research are to be legally protected by way of patent/copy rights etc. the results should not be published in any form without action being taken to secure legal protection for the research results.

19. The state council encourages the students/faculties, who want to protect the results/invention created out of the project by getting patents through its Patent Information Centre free of cost. (IPR facilitation Format enclosed).

20. The knowledge generated from the project will be the property of TNSCST and should be properly acknowledged. Transfer to technology generated shall be done in consultation with the Council.

21. The recipient organization shall comply, with such other conditions as may be suggested in the 'guidelines' issued in this regard from time to time.

22. All further correspondence should be addressed to **The Member Secretary, Tamilnadu State Council for Science and Technology, DOTE Campus, CHENNAI-600025** and should include project code.

-sd-

MEMBER SECRETARY

தமிழ்நாடு அறிவியல் தொழில்நுட்ப மாநில மன்றம்

TAMILNADU STATE COUNCIL FOR SCIENCE AND TECHNOLOGY

Directorate of Technical Education Campus, Chennai – 600 025

PATENT FACILITATION FORM

PIC Reference Number: (by Office)

Date:

Applicant(s)	Address	Nationality
Name: Contact no.: Email:		
Inventor(s)	**Address**	**Nationality**
Name: Contact no.: Email:		
Title of the invention		
Field of invention		

- Have you approached any other institution for patenting this invention? (If yes, provide details and outcome).

Is the proposed invention novel (new)?	
i) The Invention Is An Addition To The Existing Product/Process	YES/NO
ii) The invention is a modification of the existing product	YES/NO
iii) The invention is entirely new	YES/NO
Whether the proposed invention contains an inventive step?	YES/NO
Whether the proposed invention is capable of industrial application?	YES/NO
For what part of the invention, protection is needed? (tick the relevant)	
i) Product	
ii) Method(Process)	
iii) Both	

Requirements to Draft Complete Specification

1.	Brief description of your invention Note : disclose the best method	
2.	Include diagrams (with proper labeling and brief description) (example : diagrams showing technical implementation, system architecture or any other diagrams)	
3.	Any experimental results available? (example : chart, graphs etc)	YES/NO
4.	what are the advantages of the present invention over existing technologies?	
5.	Unique feature of the invention	
6.	Chemical Structure (if chemical compounds involved)	
7.	If the proposed invention involves biological material, kindly fill the below details	
i)	whether deposition of the material to international depository authority of india made?	YES/NO
Ii)	Mention the characterstics of the biological material	
Iii)	What is the source and geographical origin of the biological material?	
8.	Indicate the current state of art (status of the invention)	Completed / In-Progress
9.	Is traditional knowledge involved? (usage of ayurvedic/siddha/unani knowledge)	YES/NO
10.	Present Stage Of Development (Including Scale Of Operation / Production, Validation, Quality Etc.)	
11.	Others (IF ANY)	

**Include additional sheets for explanation

Terms of service:

1. The applicant should bear the prescribed Government fee at the time of filing.
2. The applicant should strictly follow the timelines.
3. The council will provide any assistance sought for filing and further information till grant.
4. Any intimation from the Patent Office will be to the applicant's mailid/address. Hence, it is the applicant's responsibility to take over the communication from the Patent Office and get assistance from the state council.
5. The council is for facilitating IP filing, and is not responsible for any adverse office actions and hence cannot give assurance for grant of an application.

I / We certify and declare that all the information provided above are true and correct to the best of my / our knowledge and belief.

Signature with name

Date:
Place:

Patent Information Centre
Tamilnadu State Council for Science and Technology
DOTE Campus
Chennai-600025.
Tel: 044–22301428 , Fax: 044 – 22301552
Email: enquiry.tanscst@nic.in, ms.tanscst@nic.in Website: www.tanscst.nic.in

283. Sri Sairam Institute of Technology (1) – 7000/-

	Dr. G. Shanmugasundar Associate Professor Dept. of Mechanical Engineering Sri Sairam Institute of Technology Chennai - 600 044	Design and fabrication of solar powered surveillance drone for women safety	Abhishek.G.Shanker V.S. Vinoth Abhilash K. Vijayalayan S. Jayaraman	EME-055	The Principal Sri Sairam Institute of Technology Chennai - 600 044	7000/-

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TAMILNADU STATE COUNCIL FOR SCIENCE AND TECHNOLOGY
(Established by Government of Tamilnadu)
Directorate of Technical Education Campus, Chennai – 600 025.
Ph : 044-22301428, Telefax : 044-22301552 www.tanscst.nic.in

Dr.R.SRINIVASAN, M.Sc., Ph.D.,F.I.C.S., M.A.C.S.(USA).,
Member Secretary

Lr.No.TNSCST/SPS/AR/2019-2020 18.03.2020

To
The Principal
Sri Sairam Institute of Technology
West Tambaram
Chennai - 600 044

Sir/Madam,

Sub: TNSCST – Student Project Scheme – 2019-2020 – approval intimation–grant release- reg.

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Herewith enclosed the cheque for the approved grant and disburse the grant to the concerned students through the guides at the earliest

Kindly send the utilisation certificate (format enclosed) and seminar paper (ref.T&C-no.5&6) on completion of the project.

Thanking you,

Yours faithfully,

19/3/20

Member Secretary.

18/3/20

Encl: a) Terms & Conditions (T&C)
b) Format of Utilisation Certificate (UC)
c) Cheque for Rs.7000/- No: 853110 dt.18.03.2020

Copy to: Individual Guides

TAMILNADU STATE COUNCIL FOR SCIENCE AND TECHNOLOGY
DOTE CAMPUS, CHENNAI - 600 025

STUDENT PROJECT SCHEME 2019-2020
UTILISATION CERTIFICATE

(TWO COPIES)

1. Name of the guide and address :

2. Name of the student(s) :

3. Title of the project :

4. Project code :

It is certified that a sum of Rs..... (Rupees) Sanctioned by the council for carrying out above mentioned student project has been utilized for the purpose for which it was sanctioned and sum of Rs. .....remaining unutilized is refunded.

Signature of the guide Signature of the HOD Signature of the REGISTRAR/PRINCIPAL/DEAN With SEAL

தமிழ்நாடு அறிவியல் தொழில்நுட்ப மாநில மன்றம்
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Directorate of Technical Education Campus, Chennai – 600 025

PATENT FACILITATION FORM

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(by Office)

Date:

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Inventor(s)	**Address**	**Nationality**
Name: Contact no.: Email:		
Title of the invention		
Field of invention		

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i)	The Invention Is An Addition To The Existing Product/Process	YES/NO
ii)	The invention is a modification of the existing product	YES/NO
iii)	The invention is entirely new	YES/NO
Whether the proposed invention contains an inventive step?		YES/NO
Whether the proposed invention is capable of industrial application?		YES/NO
For what part of the invention, protection is needed? (tick the relevant)		
i)	Product	
ii)	Method(Process)	
iii)	Both	

Requirements to Draft Complete Specification

1.	Brief description of your invention Note : disclose the best method	
2.	Include diagrams (with proper labeling and brief description) (example : diagrams showing technical implementation, system architecture or any other diagrams)	
3.	Any experimental results available? (example : chart, graphs etc)	YES/NO
4.	what are the advantages of the present invention over existing technologies?	
5.	Unique feature of the invention	
6.	Chemical Structure (if chemical compounds involved)	
7.	If the proposed invention involves biological material, kindly fill the below details	
i)	whether deposition of the material to international depository authority of india made?	YES/NO
Ii)	Mention the characterstics of the biological material	
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10.	Present Stage Of Development (Including Scale Of Operation / Production, Validation, Quality Etc.)	
11.	Others (IF ANY)	

**Include additional sheets for explanation

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1. The applicant should bear the prescribed Government fee at the time of filing.
2. The applicant should strictly follow the timelines.
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I / We certify and declare that all the information provided above are true and correct to the best of my / our knowledge and belief.

Signature with name

Date:
Place:

Patent Information Centre
Tamilnadu State Council for Science and Technology
DOTE Campus
Chennai-600025.
Tel: 044–22301428 , Fax: 044 – 22301552
Email: enquiry.tanscst@nic.in, ms.tanscst@nic.in Website: www.tanscst.nic.in

TAMILNADU STATE COUNCIL FOR SCIENCE AND TECHNOLOGY

DOTE Campus, Chennai-600025

STUDENT PROJECTS SCHEME 2019-2020

Terms and Conditions of the grant

1. The project team **SHOULD NOT** change the topic of the project and should not deviate from the objectives of the sanctioned proposal. In the event of any such changes, sponsoring will be treated as cancelled and the college should return the sanctioned amount to TNSCST.
2. Every sanctioned project is allotted with a Project code Number. Please refer this number while corresponding with TNSCST.
3. The project sanction letter and the money will be sent to the Principal/Registrar of the institution with a copy to the Project guide.
4. The sanctioned project should be completed and the report should be submitted before end of **APRIL 2020**.
5. The state council will review the progress of the project at any time before completion of the project.
6. On completion of the project, 2-3 pages seminar paper (500 words, Times New Roman, 12 font size, single column, margins left- 2.5cm, right-2cm, top-2cm & bottom- 2cm, Word format without any figures & tables) should be submitted/uploaded in the council website.(link will be activated in due course of time) by mentioning the project code.
7. Utilization certificate (**UC**) should be sent to The Member Secretary, Tamilnadu State Council for Science and Technology, DOTE Campus, Chennai-600025. The Utilization Certificate should be signed by the Guide, HOD and Principal/Registrar/Dean with official **seal** as the case may be.
8. The guides are responsible for timely submission of SEMINAR PAPER and UC.
9. The seminar paper will be included in the form of **PROCEEDINGS** which will be brought out during Seminar cum Exhibition, only for those who submit the **UC**
10. **Anyone student of** the project team should present and exhibit the findings before the experts in the Seminar cum Exhibition which will be organized during **July/August 2020.**
11. The project model /fabrication/equipment are all properties of the council and therefore these are to be kept safely in the college and it should be handed over to the council with necessary details and bills as and when required.
12. During the Seminar cum Exhibition," best project award and certificate" will be presented to the outstanding selected projects and completion certificates to all.
13. The council reserves the right to terminate the project at any stage if it is convinced that the grant has not been properly utilized or appropriate progress is not being made. In addition, the Council may designate officer/an Expert to review the work done.

14. If the GUIDE wishes to leave the Institution where the project is based, the Institute/GUIDE will inform the same to the Council and in consultation with Council, evolve steps to ensure successful completion of the project, before relieving the GUIDE. The Council reserves the right to order verification/audit of accounts by any Officer authorized by it. The bills and accounts shall be kept safely.

15. Unspent money if any should be refunded in the form of DD drawn in favour of The Member Secretary, Tamilnadu State Council for Science and Technology, DOTE Campus, Chennai-600025 payable at Chennai.

16. Students/faculties are requested to publish the research papers emerging out of the project work in leading Journals. **The council will encourage them through financial support in addition to project grant if they publish in leading/peer review journals**.

17. Investigators must acknowledge the Council in reports and technical/scientific papers publishing based on the research work done under the project

18. If the results of research are to be legally protected by way of patent/copy rights etc. the results should not be published in any form without action being taken to secure legal protection for the research results.

19. The state council encourages the students/faculties, who want to protect the results/invention created out of the project by getting patents through its Patent Information Centre free of cost. (IPR facilitation Format enclosed).

20. The knowledge generated from the project will be the property of TNSCST and should be properly acknowledged. Transfer to technology generated shall be done in consultation with the Council.

21. The recipient organization shall comply, with such other conditions as may be suggested in the 'guidelines' issued in this regard from time to time.

22. All further correspondence should be addressed to **The Member Secretary, Tamilnadu State Council for Science and Technology, DOTE Campus, CHENNAI-600025** and should include project code.

-sd-

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DEPARTMENT OF SCIENCE AND TECHNOLOGY

INNOVATION AND ENTREPRENEURSHIP DEVELOPMENT CENTER (IEDC)

SRI SAI RAM INSTITUTE OF TECHNOLOGY
Sai Leo Nagar, West Tambaram, Chennai- 600 044.

Funded by

NATIONAL SCIENCE & TECHNOLOGY ENTREPRENEURSHIP DEVELOPMENT BOARD (NSTEDB),
DEPARTMENT OF SCIENCE AND TECHNOLOGY,
GOVERNMENT OF INDIA, NEW DELHI.

FUNDED PROJECT COMPLETED REPORT

2019 -2020

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E GLOVE

HARINI KARTHIK V. JANANI M. GUNA SHALINI B. NIVASHINI

Guided By

Dr. G. SARAVANAN

ASSOCIATE PROFESSOR

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

INNOVATION AND ENTREPRENEURSHIP DEVELOPMENT CENTER (IEDC)
SRI SAI RAM INSTITUTE OF TECHNOLOGY
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GOVERNMENT OF INDIA, NEW DELHI.**

ABSTRACT

Detection of electric field and magnetic field in and around have become a major criterion. Rapid rise in the usage of electronic items in domestic and in lands has leads to this research. Lack of Electromagnetic detection is leading to various natural disaster. A system needs to be developed to protect the person and preserve their life. Thus the proposed Safety device gives beneficial approach to prepare for Electrocution and other disasters. The labors present in the power plant working in high electromagnetic field and the strangers who are unaware of electric fencing in and around them are exposing to high field strengths can be benefited by this device and the health status of the person is also monitored remotely.

SOCIAL RELAVANCE

Our designed module aims to:

• Ensures a healthy life and promotes the well-being of the workers under a transmission line and also of the people who move near an electric fencing.

• Sets a threshold for the levels of EMF so as to keep the heartbeat levels of the workers and the civilians under normal conditions.

• Creation of a product that is at an affordable price.

• Designing a compact system to meet the needs of the worker and for constant monitoring of his health.

• Compact and light weight module ensures increased efficiency on detecting the EM waves

MARKET SURVEY AND NEED

The existing module does not produce par level efficiency to detect the electric and magnetic waves in and around as. This system does not concern about the health and welfare of lineman working under high voltage. The proposed system aims to produce beneficial approach to protect the worker in an electric line from the harmful effects of EMF. A key feature is that it provides information about the worker's health condition by monitoring the heartbeat.

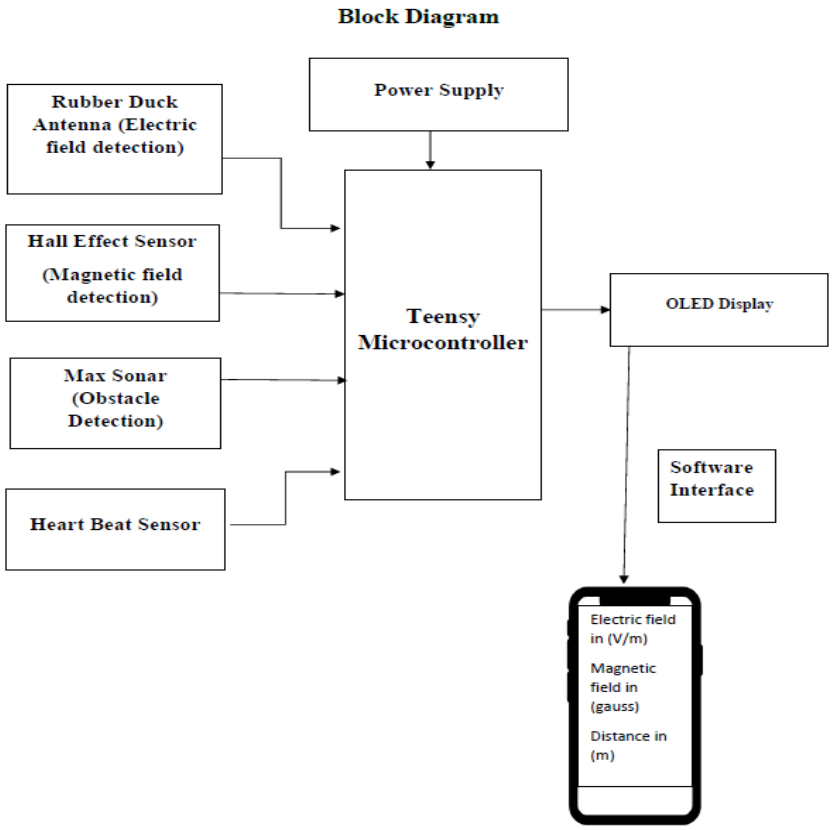
The device finds the distance of the source producing excessive EMF, the intensity of it and finally the level of heartbeat of the worker near to it. The need

for this arises in the wake of the many recent incidents of stalking which have led to many deaths caused generic disorder in human life. Although there are countless other options for detecting electric and magnetic waves, our model is the only one which offers a risk free and efficient way of ensuring the individual's safety. Ours also comes equipped with distance detection mechanism using max sonar which detects the EM waves at certain distance which ensures safety and prevents human from threats. This is the first software-hardware product to do so.

The projected market sales for this product are very favorable especially considering the target audience of workers working near high voltage. This is also what one may call as the "need of the hour" so to speak. The notable feature in our product is its small size which makes it easily portable and can be mounted anywhere with the right set up. This supersedes all of its previous versions with the added assurance of hazards prevention.

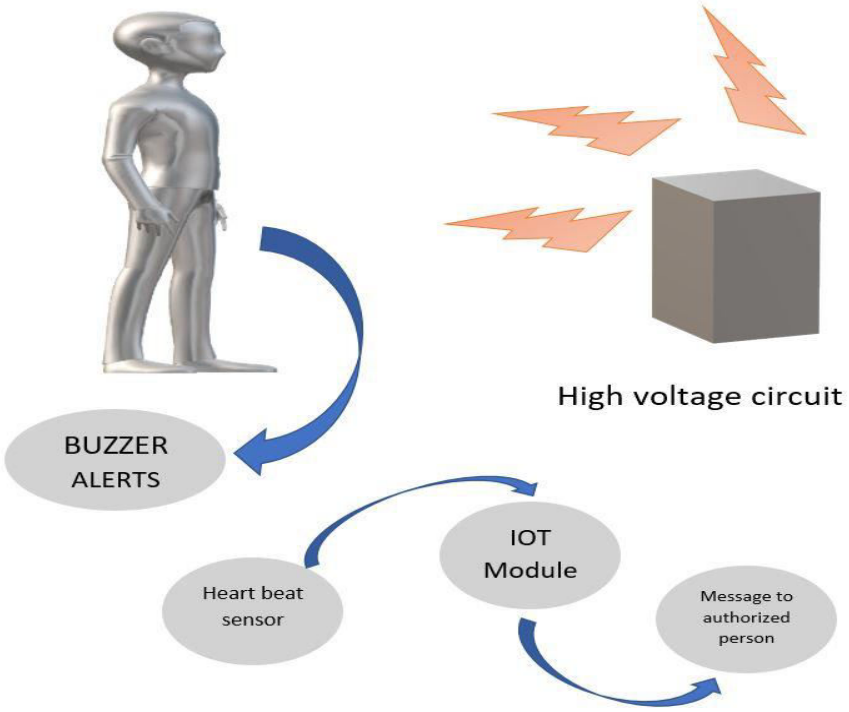
PRODUCT DESIGN

BLOCK DIAGRAM



ARCHITECTURE

- Teensy Micro controller - The Teensy 3.2 is compatible, faster and capable of more complex projects, especially with its onboard micro SD card port. An upgraded ARM Cortex MCU (180MHz from 72MHz), more memory (1M from 256K), as well as more RAM, EEPROM and accessible pins make up the key new features of this “teensy” board.
- Power Supply - Power supply to the circuit is DC supply which is stored in the battery of minimum of 24v as output supply and it is pure form of dc output voltage. This voltage is passed to the internal circuit of the E-Glove.
- E and M field circuit- The E and M field circuit are used to detect the presence of external electric and magnetic field. This circuit produce the output as milli gauss for magnetic field and digital values (0’s or 1’s) for electric field.
- Heart beat sensor (MAX 30100)- MAX30100 is an integrated pulse oximeter and heart-rate monitor sensor solution.
- LV-Max Sonar EZO (MB1000) - LV-Max Sonar-EZ provides very short to long-range detection and ranging in a very small package. The LV-Max Sonar-EZ detects objects from 0-inches to 254-inches (6.45-meters) and provides sonar range information from 6-inches out to 254-inches with 1-inch resolution.
- The device comprises of buzzer alerting system and Wi-Fi module which interacts with cloud to maintain the database. The database includes the values such as electric field intensity, magnetic field intensity and heart rate of the human being.



APPLICATION OF OUR PROJECT

• It is mainly used to detect the electromagnetic wave sources

• It monitors the heart beat of the user apart from standard safer exposure levels.

• At the time of emergency, it is used to give alarm.

• It is also used to send information to the trusted members/ monitor/ supervisor of the user in case of emergency.

VALUES AND BENEFITS

Size of the product

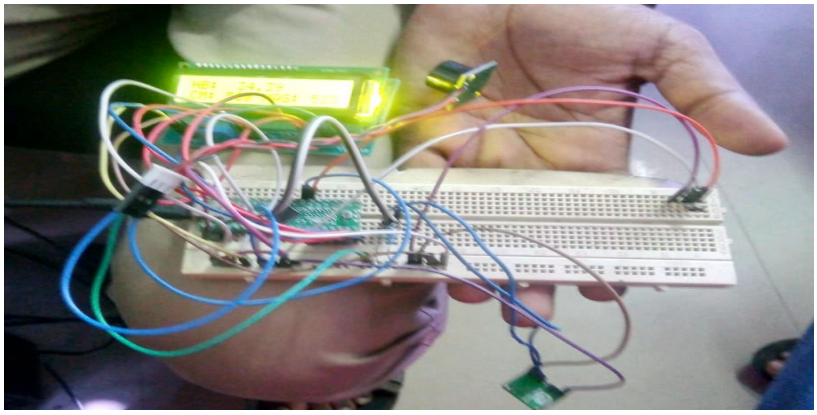
- It contains a smaller number of components.
- It is small in size.

- It is a light weight device.
- It can be placed anywhere.

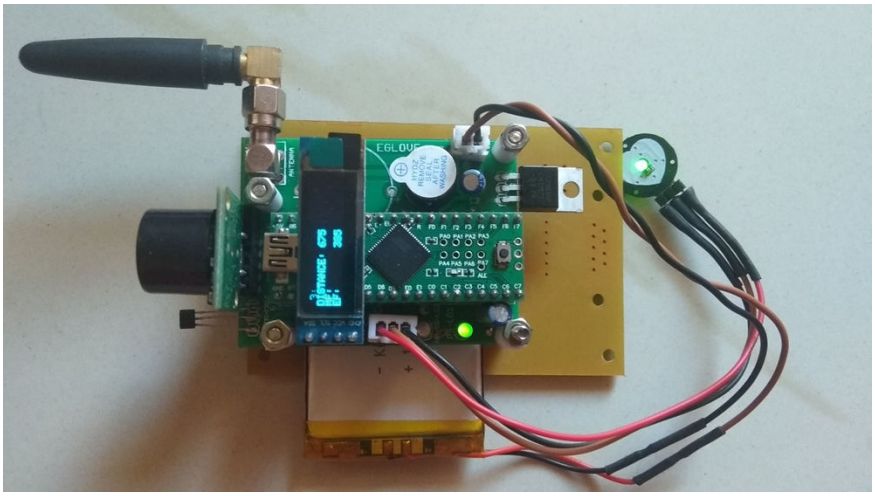
Convenience and usability

- Easy to use.
- No technical knowledge is required.
- Can be placed anywhere.

PROTOTYPE IMAGES



HARDWARE MODULE



Technical Overview

- Teensy microcontroller serves as the interface for all functions.
- The heartbeat sensor serves the function of checking whether the worker is in a stable condition.
- Electric and Magnetic fields are taken into consideration to find whether the EMF conditions are within scale when the linemen are working near sources of electricity.
- The MAX Sonar is used to find the possible safest distance based on the E-field and M-field values fetched from their respective sensors.
- Buzzer alert is given to indicate that the lineman is working in an unsafe distance and warns the person to move away.
- The OLED display provides information of Heartbeat, Electric and Magnetic fields in a consistent manner.
- The device is made compatible and handy with dimensions of 60cm x 40cm with a strap embedded for wearing.
- The battery is rechargeable and is chosen on the focus of longer use.

Conclusion

The aim of this E-Glove project is to help the workers exposing to high radiation and also to a common villager who is in need of safeguarding himself/herself from electro fencing and high radiation. Sources of electric current increase the risk of neurodegenerative diseases and neurobehavioral abnormalities. Based on the radiation levels to which the human body is exposed we can save them from the **GENETIC PROBLEMS** which may cause serious issues in the future.

The technology used in the project is recent and aimed to produce a low-cost product with maximum benefits to the workers and the common man in the field.

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LEARNING OF BRAILLE LANGUAGE

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ABSTRACT

This project describes a Raspberry Pi based hardware implementation of the Braille teaching device, where the problem of existing method can be abridged. This project implements a Braille Script Teaching Aid in which the presence of combination of six vibration motors is operated using the input got from the Raspberry Pi. All these vibration motors is controlled using Relay. This method provides an easy way of teaching Braille Script. Some self-learning programs are developed to make students to learn without the help of a teacher. It is well suited for first time learners. We can teach different languages with the same setup by selecting the language based on the requirement.

TECHNICAL CONCEPTS

Education is the key to success in life, normal children learn from teachers in schools seeing and communicating with each other. For Visually challenged st dents learning to read and write is much more difficult because of visual impairment. The teaching aids required to teach such blind

pupil are special and require lot of teacher's attention. For a first time learning blind student, character set a d numbers are taught with a help of marbles and slotted slate. Different arrangement patterns of marbles on slotted slate represent different characters. For each character representation, teacher has to reach each student and change the arrangement of marbles. This is harder and time-consuming exercise. The proposed system provides translation for visually impaired people to read English characters. The system uses the characters for vibrating the vibration motors for the visually impaired people in the form of braille language which is communicated to the users through mini vibration motors representing each braille glyph. Suitable hardware is chosen for implementing the system. The system contains, a single braille cell and mobile for voice recognition to get the characters as the input. Raspberry Pi is used as the processing device in this project.

A. Vibration Motor board

The main idea behind this project is to improve the learning of visually impaired people through braille system. The hardware board consists of a motor board which consists of six vibration motors. The system uses the characters for vibrating the vibration motors for the visually impaired people in the form of braille language which is communicated to the users through mini vibration motors representing each braille dots.

B. Raspberry pi

Raspberry Pi 3 Model B is a hand-held mini computer device that contains many I/O ports along with 40 GPIO pins. Since Raspberry Pi cannot provide output voltage that is enough to operate mini vibration motors we use relays.

There are 6 relays which are used for controlling 6 vibration motors. Relays are basically switches that have their own power supply and they are connected to 6 GPIO pins when the characters are recognized the pins are given as high to represent the characters through vibration patterns.

SOCIAL RELEVANCE

Communication is very important in our life. It helps to transfer our ideas and views to others. The visually impaired people find it really hard to communicate and for them there is a special script called the Braille. The Intelligent Braille tutor is a device made to improve the communication for the visually impaired people. As of 2012 285 million people in the world are visually impaired out of which 39 million people are blind this number would probably be risen by now The tutor student ratio is always poor , our project focuses on the importance of learning the braille language without the help of the tutor that is independent learning of braille language

With this project the learning of braille language becomes easy, cheap and less time consuming than traditional method.

MARKET SURVEY AND NEED

The existing methods have does not interface both braille tutor and reading mechanism. The previous systems are difficult to use and are not user friendly. Further improvements cannot be made on the existing system, since the previous systems are not reprogrammable. In our proposed model the blind could learn to read braille language without the help of another individual. This gives encourages the individuals to learn braille on their own. The blind could also use this device to read messages received in their subscriber identification module. The device is simple to use and it is user friendly.

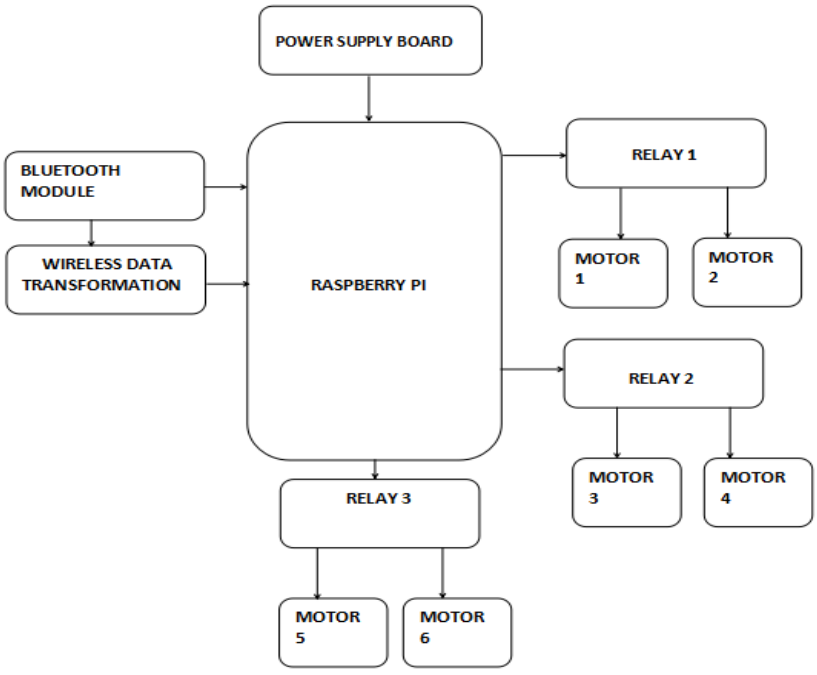
This model can be installed in all the schools for blind people as this model makes the learning process to be interesting and easy. This can also be installed in all the homes having blind people.

PRODUCT MANUFACTURING AND FEASIBILITY

Creation of braille module requires knowledge about the software, raspberry pi and hardware connections which makes it feasible for manufacturing. It does not require any sort of heavy machinery. It requires few components along with mobile phone.

PRODUCT DESIGN

BLOCK DIAGRAM



APPLICATION OF OUR PROJECT

- It is mainly used to improve the learning of visually impaired people.
- The blind could learn to read braille language without the help of another individual.
- This gives encourages the individuals to learn braille on their own.
- The device is simple to use and it is user friendly.

VALUES AND BENEFITS

- It contains less number of components.
- It is small in size.
- It is light weight device.

HARDWARE MODULE

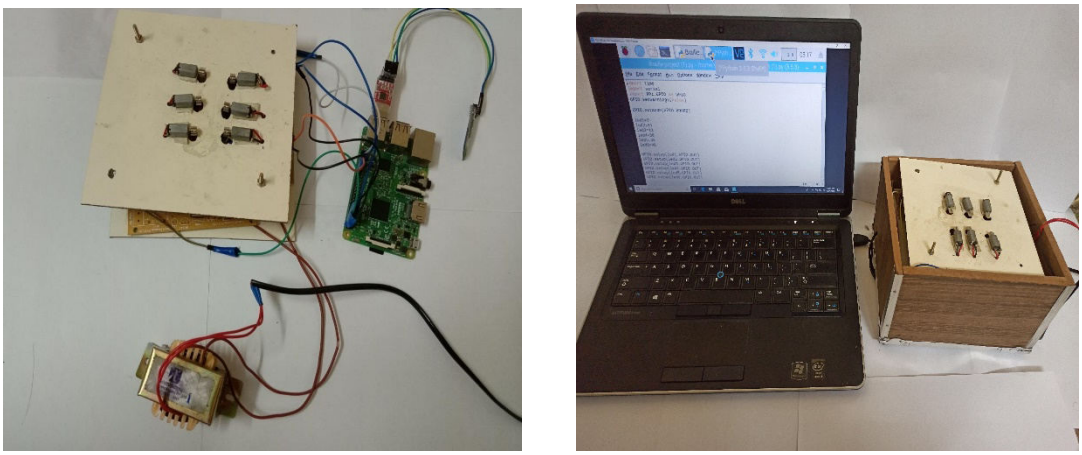


Figure : Experimental module of Braille kit

CONCLUSION

The main aim of the project work is to improve the electronic reading of the visually handicapped people and to allow Braille users to access information which would otherwise not be available to them in Braille. System is developed within their economic reach to focus on strengthening their knowledge. Also to make a device with low cost, reliable, easy to use and portable with compactness by which the blind can read Braille alphabet on a two finger in familiar reading manner. This product the benefits the environment by preventing the wastage of paper used for Braille printing.

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Ministry of Science & Technology
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SMART DOOR UNLOCK SYSTEM USING FACE RECOGNITION

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IV YEAR CSE, SRI SAIRAM INSTITUTE OF TECHNOLOGY

GUIDED BY

Mr. P.Rayavel
Assistant Professor(Grade III)

Funded by

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INTRODUCTION

Face detection is a computer technology being used in a variety of applications that identifies human faces in digital images. Face detection also refers to the psychological process by which humans locate and attend to faces in a visual scene.

Face-detection algorithms focus on the detection of frontal human faces. It is analogous to image detection in which the image of a person is matched bit by bit. Image matches with the image stores in database. Any facial feature changes in the database will invalidate the matching process.

Face detection is more challenging because of some unstable characteristics, for example, glasses and beard will impact the detecting effectiveness.

Moreover, different kinds and angles of lighting will make detecting face generate uneven brightness on the face, which will have an influence on the detection process.

Fig No.1: Face Detection

OVERVIEW:

The proposed system act as a security system for home with both person detection and provide security for door access control by using facial recognition for the home environment.

The smart door unlock system consist of a raspberry pi with database connectivity.The database consists of images of authorities for whom the door unlock access to be provided.

When a person comes front of the door the camera starts to captures a series of images and process it and compare it with the images in the database.

For facial recognition we use CNN (Convolutional Neural Networks) algorithm,so that the accuracy will be high.

After recognition if the image captured recognizes the images in the database the door unlocks. Otherwise the authority will be alerted regarding this activity.

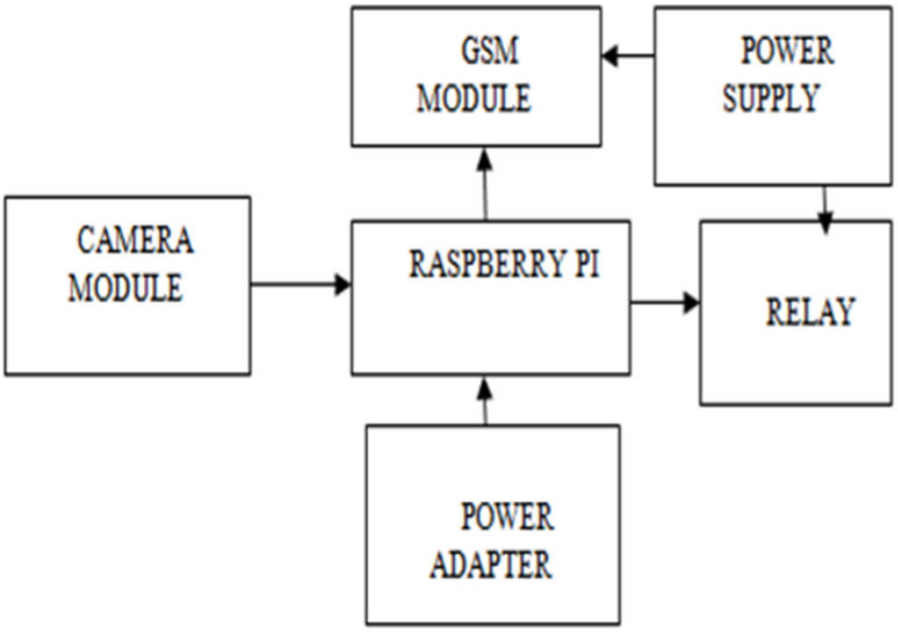

Fig No.2: Architecture

INNOVATION:

After image is recognized if the image captures doesnot matches the images in the database the authority will be alerted regarding this activity.

For sending this alert we are using GSM module.if the person trying to access the door is known person the authority can remote access the door and make it to open.

Else if the person is a unknown person the alert will be sent like ”NO ONE IS AT HOME”.if the unknown person performs any unusual activity the alert will be send to the authority and triggers a security alarm.

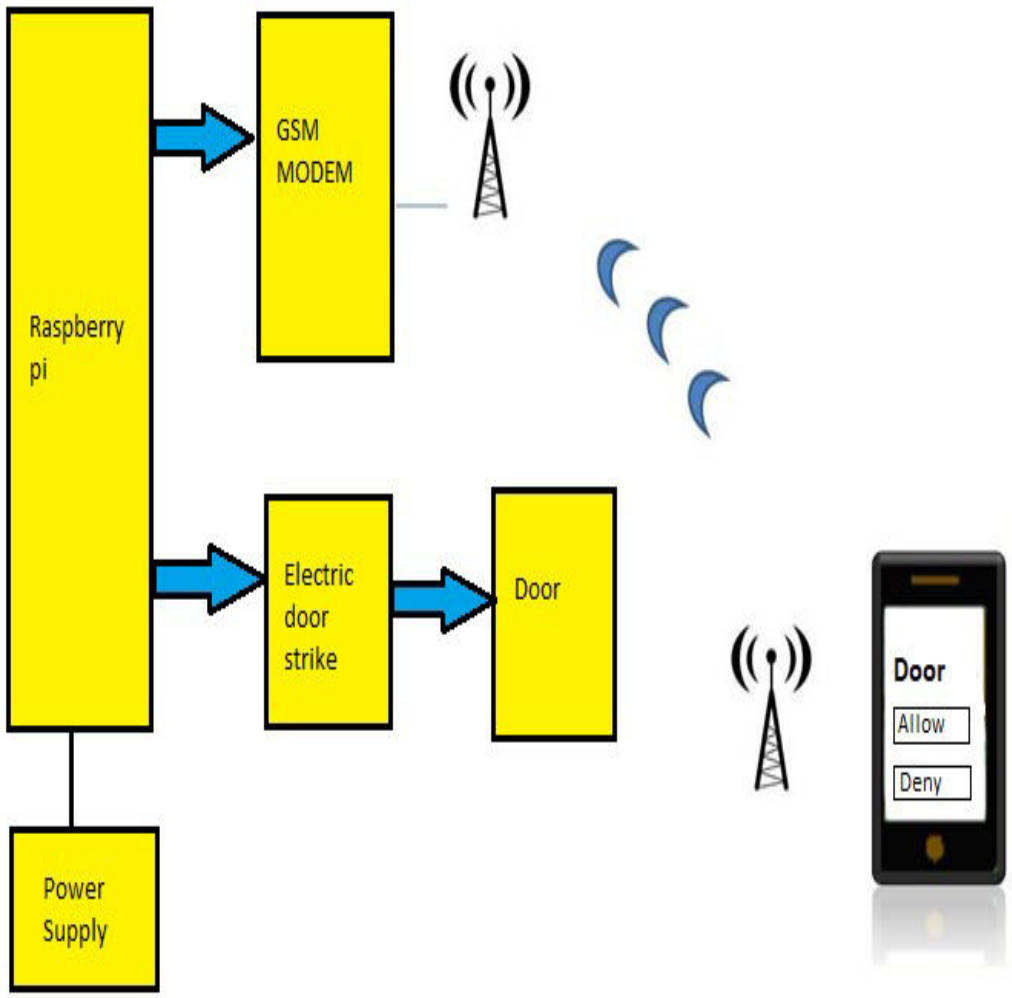

Fig No.3: Block Diagram of Working Module

Technologies used:

1) *OpenCV using python3*

2)Raspberry pi board

3)GSM module

4)Fisheye Camera

Raspberry Pi 4 Model B/4GB:

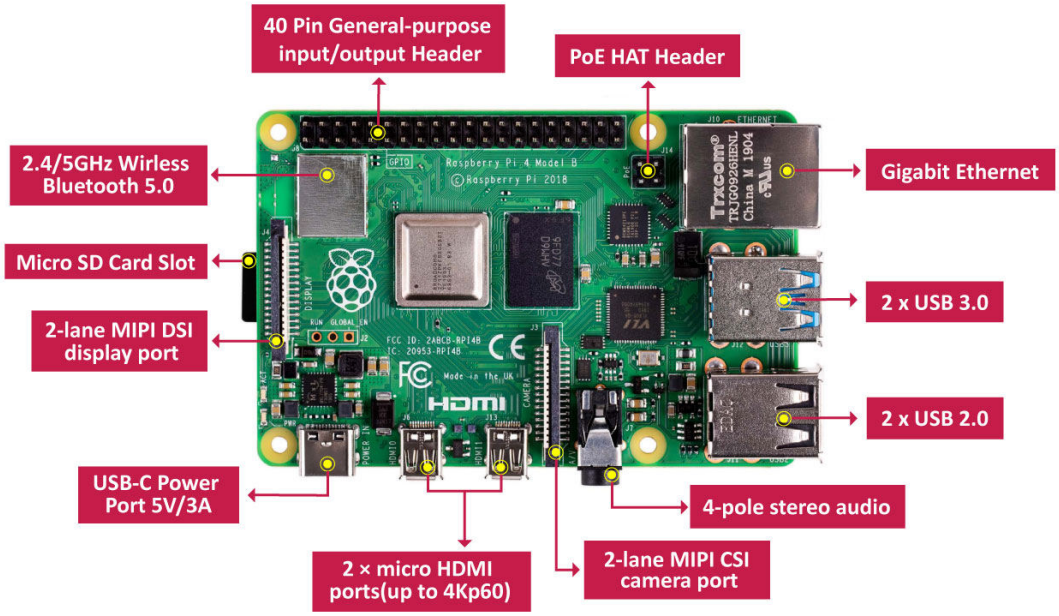

Fig No. 4(a): Raspberry Pi 4

Specifications:

1)Broadcom BCM2711, Quad-core Cortex-A72 (ARM v8) 64-bit SoC @ 1.5GHz.

2)4GB LPDDR4-2400 SDRAM.

3)2.4 GHz and 5.0 GHz IEEE 802.11ac wireless, Bluetooth 5.0, BLE.

4)Gigabit Ethernet.

5)H.265 (4kp60 decode), H264 (1080p60 decode, 1080p30 encode).

6)OpenGL ES 3.0 graphics.

We use Raspbian OS for implementing this complete module. The Raspbian OS has inbuilt support for python.

GSM module:

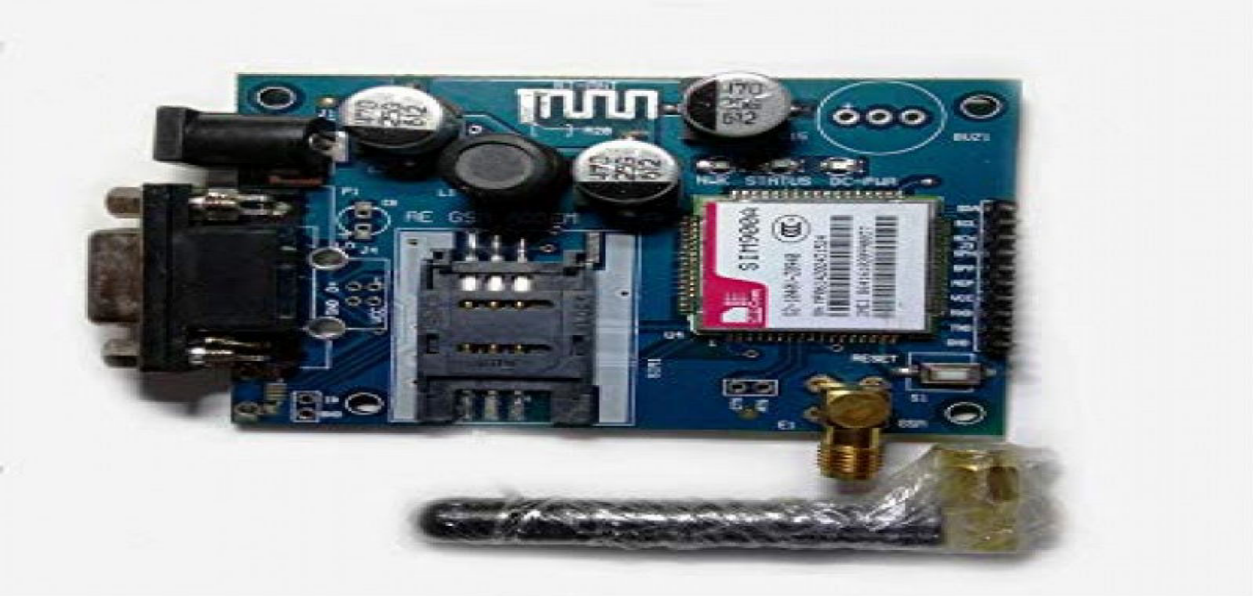

Fig No.4(b) : GSM Module (SIM 900A)

Features:

1)Standard serial RS232 interface.
2)Serial TTL interface for direct interface to microcontrollers.
3)Power, Status and Network LEDs for easy debugging.
4)Onboard MIC/Speaker circuits and 3.5mm audio connectors.
5)Standard AT commands.
6)Adjustable serial baud rate from 1200 to 115200 bps.

GSM module is used to establish communication between a computer and a GSM system. GSM module consists of a GSM modem assembled together with power supply circuit andcommunication interfaces (like RS-232, USB, etc) for computer. The MODEM is the soul of such modules.

Fisheye Lens Night Vision Camera:

Fig No.4(c) : Fisheye Lens Night Vision Camera

Specifications :

1)Supports night vision, comes with infrared LED (850nm)
2)5 megapixel OV5647 sensor
3)Camera specifications:
CCD size : 1/4inch
Aperture (F) : 2.35
Focal Length : adjustable
Field of View : 160 degree (while other normal cameras are typically 72 degree)
Diagonal angle : 160 degree
Horizontal angle : 120 degree
Sensor best resolution : 1080p

RPi Camera (H), from Waveshare, is a Raspberry Pi Camera Module with fish eye lens and it supports night vision. It is compatible with all revisions of the Pi. Powered with a 5 megapixel OV5647 sensor, its best resolution is 1080p. The fish eye lens offers a 160 degree field of view while other normal cameras are typically 72 degree.

Algorithm used:

1)Harcascade

2)PCL

3)CNN

Haar Cascades

It is based on the Haar Wavelet technique to analyse pixels in the image into squares by function. This uses machine learning techniques to get a high degree of accuracy from what is called “training data”. This uses “integral image” concepts to compute the “features” detected. Haar Cascades use the Adaboost learning algorithm which selects a small number of important features from a large set to give an efficient result of classifiers.

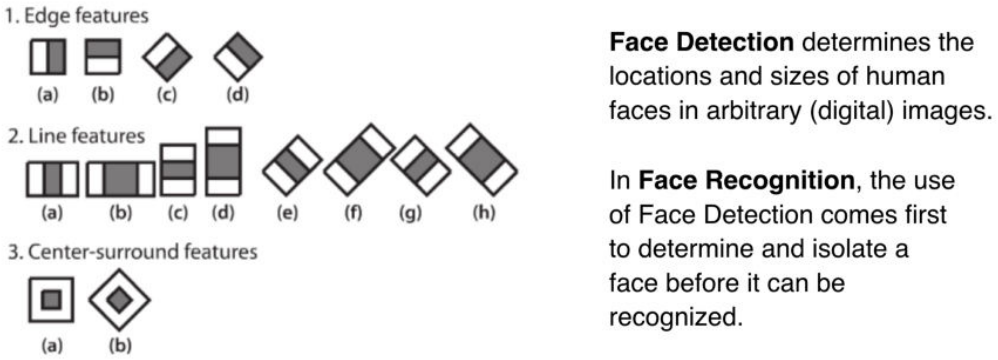

Fig No.5(a) : Face Detecting Features

Convolutional Neural Networks:

In the context of a convolutional neural network, a convolution is a linear operation that involves the multiplication of a set of weights with the input, much like a traditional neural network. Given that the technique was designed for two-dimensional input, the multiplication is performed between an array of input data and a two-dimensional array of weights, called a filter or a kernel.

The filter is smaller than the input data and the type of multiplication applied between a filter-sized patch of the input and the filter is a dot product. A dot product is the element-wise multiplication between the filter-sized patch of the input and filter, which is then summed, always resulting in a single value.

Because it results in a single value, the operation is often referred to as the "*scalar product*".

Using a filter smaller than the input is intentional as it allows the same filter (set of weights) to be multiplied by the input array multiple times at different points on the input. Specifically, the filter is applied systematically to each overlapping part or filter-sized patch of the input data, left to right, top to bottom.

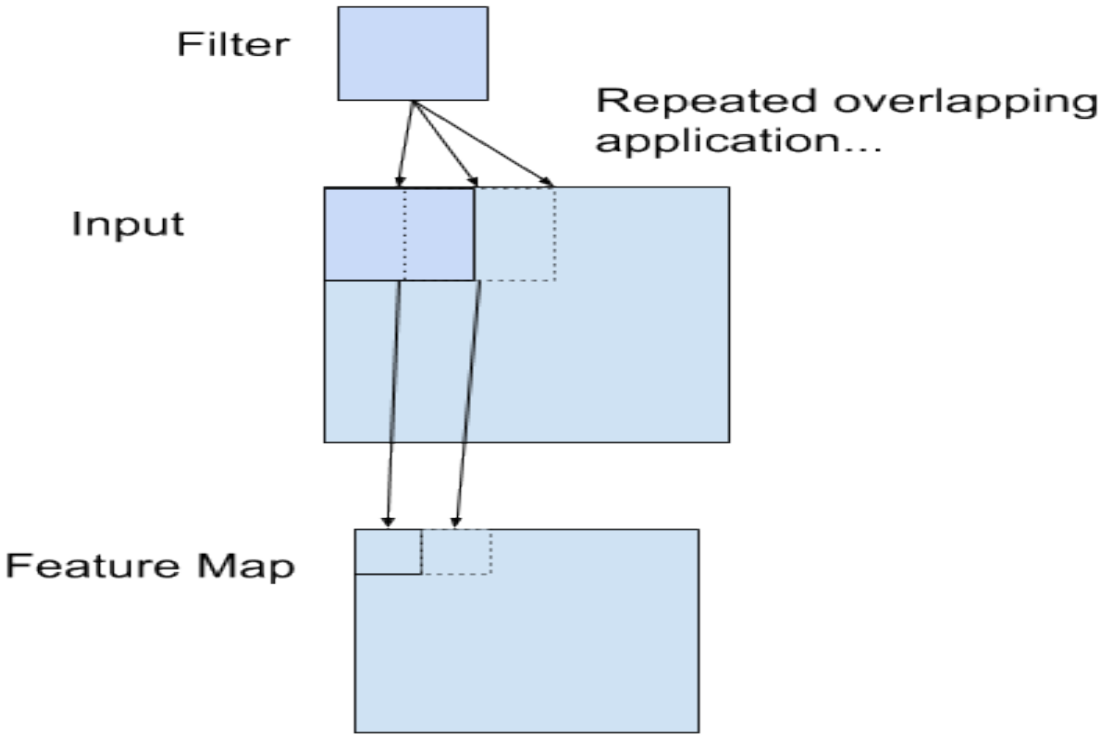

Fig No.5(b) : Feature Mapping

Using a filter smaller than the input is intentional as it allows the same filter (set of weights) to be multiplied by the input array multiple times at different points on the input. Specifically, the filter is applied systematically to each overlapping part or filter-sized patch of the input data, left to right, top to bottom.

This systematic application of the same filter across an image is a powerful idea. If the filter is designed to detect a specific type of feature in the input, then the application of that filter systematically across the entire input image allows the filter an opportunity to discover that feature anywhere in the

image. This capability is commonly referred to as translation invariance, e.g. the general interest in whether the feature is present rather than where it was present.

The output from multiplying the filter with the input array one time is a single value. As the filter is applied multiple times to the input array, the result is a two-dimensional array of output values that represent a filtering of the input. As such, the two-dimensional output array from this operation is called a "*feature map*".

Once a feature map is created, we can pass each value in the feature map through a nonlinearity, such as a ReLU, much like we do for the outputs of a fully connected layer.

Conclusion

In this proposed system door access system by using face recognition and along with the SMS alert system has been presented. This system has been used with home door lock access control based on face recognition method by verifying enrolled facial images. Concern persons will be informed successfully about the person detection via SMS alert generations along with details attached. Face recognition is one of the several techniques for recognizing people. There are several methods that can be used for that purpose. Some of the most common are using PCA or Eigen faces. The Haar Cascades algorithm is one of those algorithms. As we show Haar Cascades has very good performance and is very accurate.

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FIBER REINFORCED LIGHT WEIGHT PANELS

VISHNU RAJ.S

KARTHICK.S

SHRIRAM.M

GUIDED BY

Mr. P. PONDEEPAK.,M.E
Assistant Professor

INNOVATION AND ENTREPRENEURSHIP DEVELOPMENT CENTER (IEDC)
SRI SAI RAM INSTITUTE OF TECHNOLOGY
Sai Leo Nagar, West Tambaram, Chennai- 600 044.

Funded by

**NATIONAL SCIENCE & TECHNOLOGY ENTREPRENEURSHIP DEVELOPMENT BOARD (NSTEDB),
DEPARTMENT OF SCIENCE AND TECHNOLOGY,
GOVERNMENT OF INDIA, NEW DELHI.**

ABSTRACT

The use of interlocking wall panel has gained rapid popularity in many foreign countries as an alternative to conventional bricks wall for sustainable housing. It is being always challenge for researchers to make sustainable interlocking wall panel with light weight property. This project explains the design of wall panel with innovative interlocking system. These panels are fabricated by means of foamed concrete for the light weight property. Foamed concrete has unique characteristics that can be exploited in civil Engineering works. It requires no compaction, but will flow readily from an outlet to fill restricted and irregular cavities, and it can be pumped over significant distances and heights. Thus it could be thought of as a free-flowing, self-setting fill. This report gives the results of an experimental investigation in which the properties of foam concrete such as compressive strength, and density were investigated by using varying percentage of fly ash, polypropylene fibre with different mix proportion. Finally, the mix design of foamed concrete is discussed.

SMART WALL PANELS

It's also called as fiber reinforced light weight concrete panels. It has a light weight property as well as good strength due to the usage of special type of concrete with fiber reinforcement, our product has a innovative interlocking system like a interlocking brick that never introduced before in the market. This interlocking technique is differ from tongue and groove method.

DESIGN OF INTERLOCKING PANEL

Smart wall panels are designed with innovative interlocking system as per our requirements. We introduced a new interlocking system in the wall panels to joining together as a wall.

Dimensions of panels

These hollow core panels have same dimensions in terms of height and thickness, the length of panels only vary.

Following Three different size of panels are used **(L × H × D)**

- **1000 × 610 × 100**
- **600 × 610 × 100**
- **400 × 610 × 100** (dimensions are in mm)

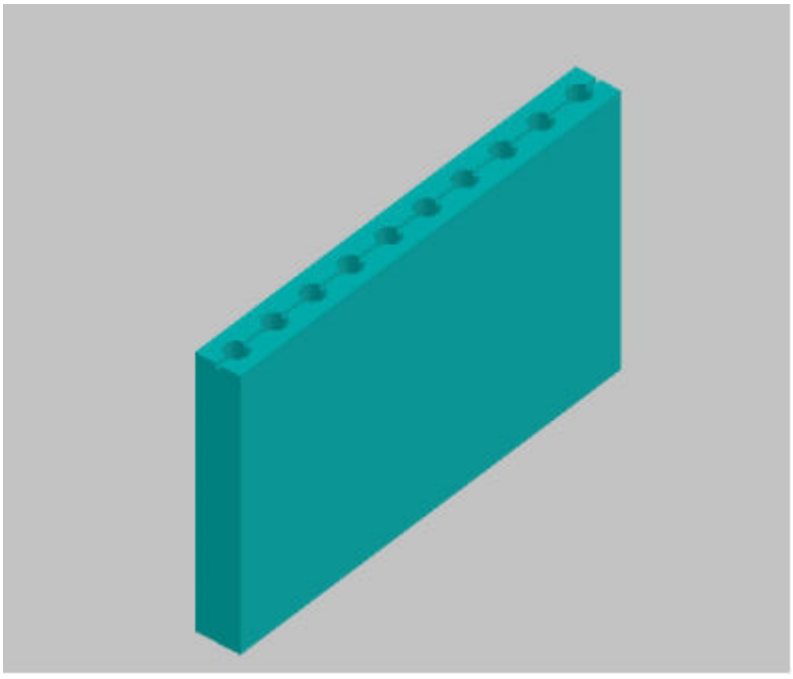


figure showing 3D drawing of product

INTERLOCKING PANEL FORMATION

The following 3D cad drawings showing the interlocking formation of wall panels

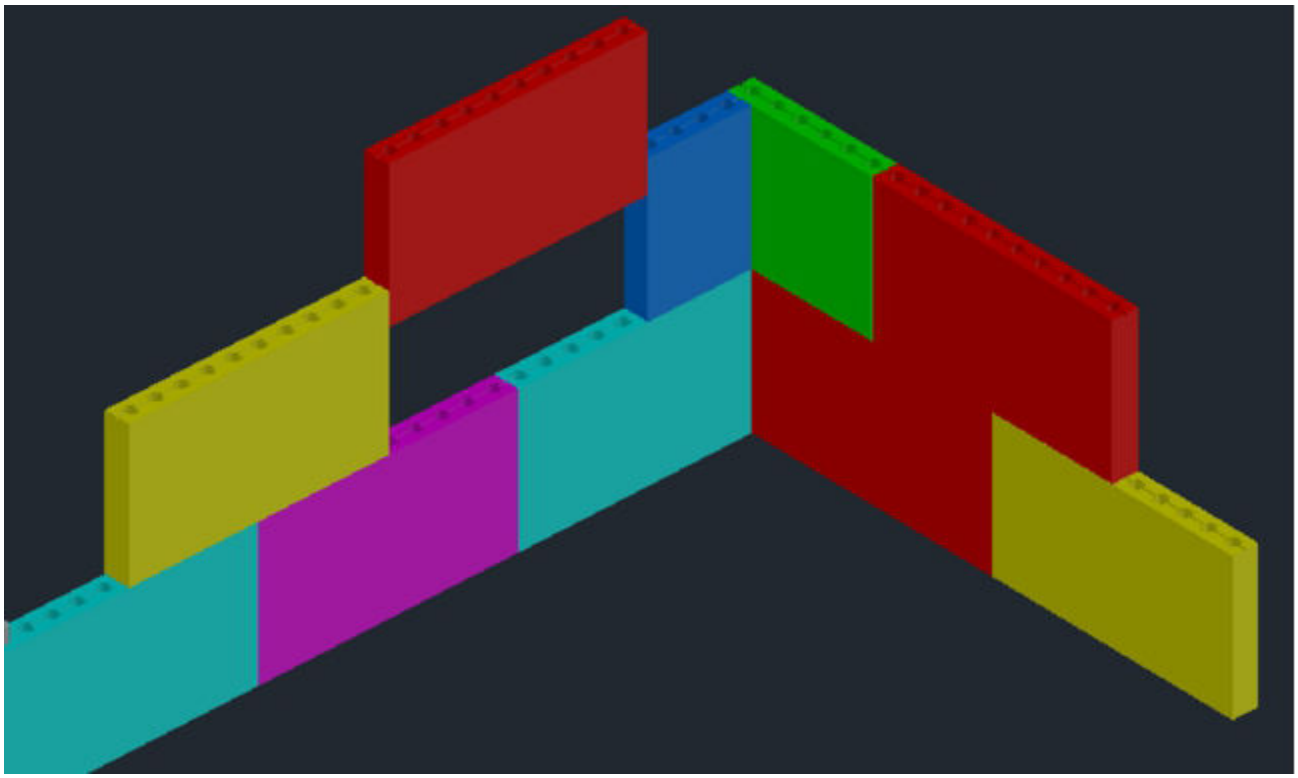
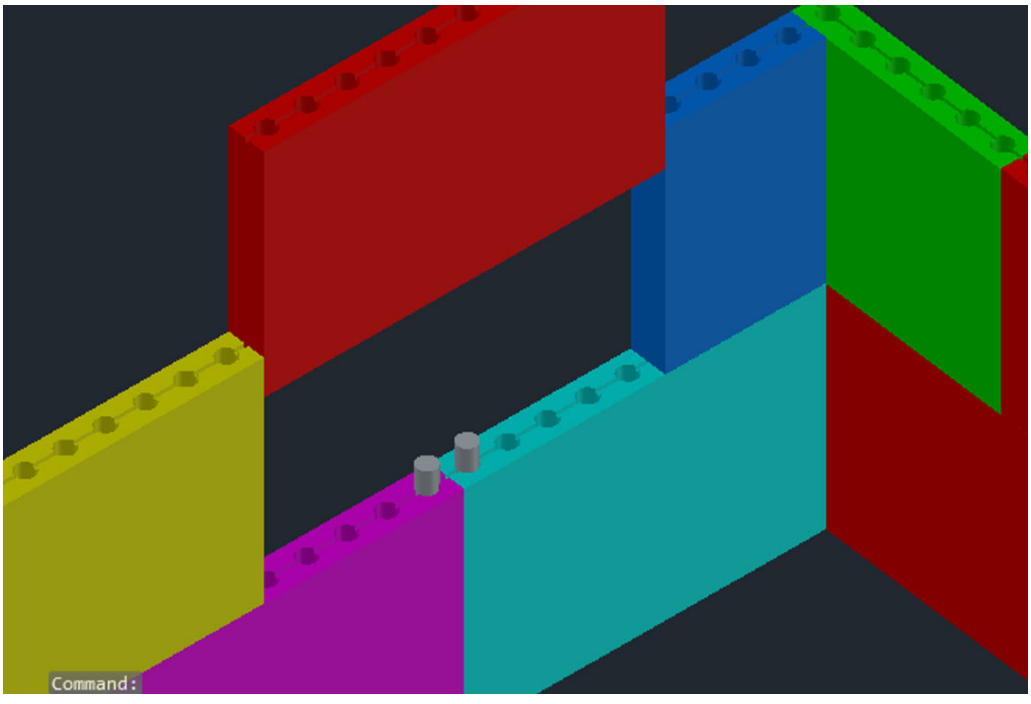


Figure showing Wall Formation of Panel



PROPERTIES OF SMART WALL PANELS

- ❖ High heat resistance
- ❖ Sound insulation
- ❖ Waterproof
- ❖ Fireproof
- ❖ Lightweight

TECHNICAL SPECIFICATIONS

Size	1000 x 610 x 600 mm 600 x 610 x 600 mm 400 x 610 x 600 mm
Weight	8 to 25 kg (depending on size)
Concrete strength (minimum)	3.5 to 5.0 N/mm2
Density	800- 1000 kg/m3
Fire proof	more than 2 hours with a 150 mm thick panel
Water absorption	Less than 10 %

BENEFITS OF OUR PRODUCT

- **The speed of construction and labor-saving:** 3 workers can build a wall of 15m2 in 1 hour.

- **Saving of mortar:** the mortar needed for works is just 20-25% compared to using traditional brick and 40-50% compared to using AAC of CLC blocks.

- **Ease of installation:** electric and communication cables, pipelines can be installed much easier, cheaper and faster.

- **Lower construction costs:** The final cost to build 1m2 of a wall by smart concrete panels is 40-50% lower compared to clay bricks wall or 70-75% lower compared to AAC/CLC blocks wall. This brings an enormous saving and profit to the investor (not to mention the cost savings from early completion of the project and about 30% reduction of the foundation cost thanks to the light weight of the wall).

Main application

- Smart wall panels are mainly used to build walls which are not load bearing. The lightweight concrete panels of 100mm thick are mainly for inner partition walls, while the lightweight concrete panels of 150/200mm thick are for outer surrounding walls. Higher density panel can be considered for load bearing at 1-2 floors houses.

- Smart wall panels are recommended for hospitals, schools, warehouses, industrial and commercial buildings, and especially recommended being used for apartments in high-rise buildings, affordable housing projects.

CONCLUSION

Smart wall Panels now is a great choice for building walls and floors of buildings, offices, houses etc., reducing the time of construction, save costs and friendly to the environment.

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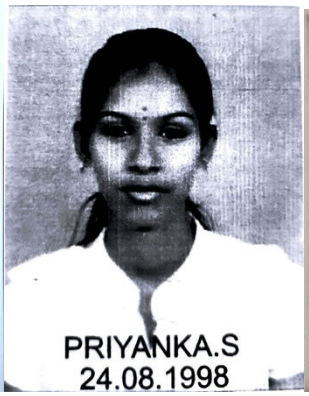
Sponsored by
DEPARTMENT OF SCIENCE & TECHNOLOGY
Government of India, New Delhi

सत्यमेव जयते
Ministry of Science & Technology
Government of India

IEDC project No. 01 – for the year 2018 -2019

DEVELOPMENT OF PAH PURIFIER

AUTO NAVIGATION DRONE SYSTEM



Saran M — IV Year

Nokudaiyaval G — III Year

Priyanka S — IV Year

Information Technology, SRI SAIRAM INSTITUTE OF TECHNOLOGY

GUIDED BY

Ponamalar A (AP).

Funded by
NATIONAL SCIENCE & TECHNOLOGY ENTREPRENEURSHIP DEVELOPMENT BOARD (NSTEDB),

सत्यमेव जयते
DEPARTMENT OF SCIENCE AND TECHNOLOGY

INTRODUCTION:

A drone in technical terms is an unmanned aircraft. Drones are more formally known as unmanned Aerial Vehicle (UAVs) or unmanned Aircraft Systems (UASs). They are used for the surveillance system in most parts of the world. Generally in a drone the transmitter and receiver will be separated which limits its navigation. Here in our proposed work we will make the drone to navigate beyond the limits. This project Auto-Navigation Drone System reaches the destination as specified in the user interface. This project is composed of Google Maps API where the destination is mentioned in the User interface. In our proposed idea both the transmitter and receiver are placed in the drone. We use PERT and CPM algorithm for calculating the distance from Quadcopter and the Destination and then it chooses the best path according to the battery available in the drone at that instance. The sensors are interfaced with the Arduino which in turn is interfaced with the Raspberry Pi .The collected sensor information from the raspberry pi will be stored in the server. This information can be accessed through the user interface.The drone uses only 80% of its battery in order to keep 20% of battery in reserve. Generally our drone tries to use only 40% of battery to reach the destination and remaining 40% to come back to the place from where it started. In case if the drone didn't reach the specified destination within the 40% usage of its battery it gives an intimation to the user whether to reach the destination or not , if the user asks it to reach the destination it goes to the destination or else it returns to the place from where it departed.The user can also track the drone's movements and it can control the drone even manually.

SOURCES OF DRONE:

1. Lithium Ion Battery

2. Internet Connection

Li Battery

Internet

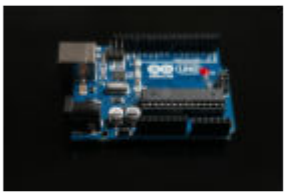
EFFECTS OF AUTO NAVIGATION DRONE SYSTEM:

1. Long range transmission
2. Selects the path for its navigation to the destination.

INNOVATION:

In our proposed system both the transmitter and receiver are interfaced with the drone. This helps the drone to navigate even beyond the limits.According to the battery availability of the drone it chooses its path using the Algorithms to the destination and navigates using Google Maps API.The destination can specified through an User-Interface.

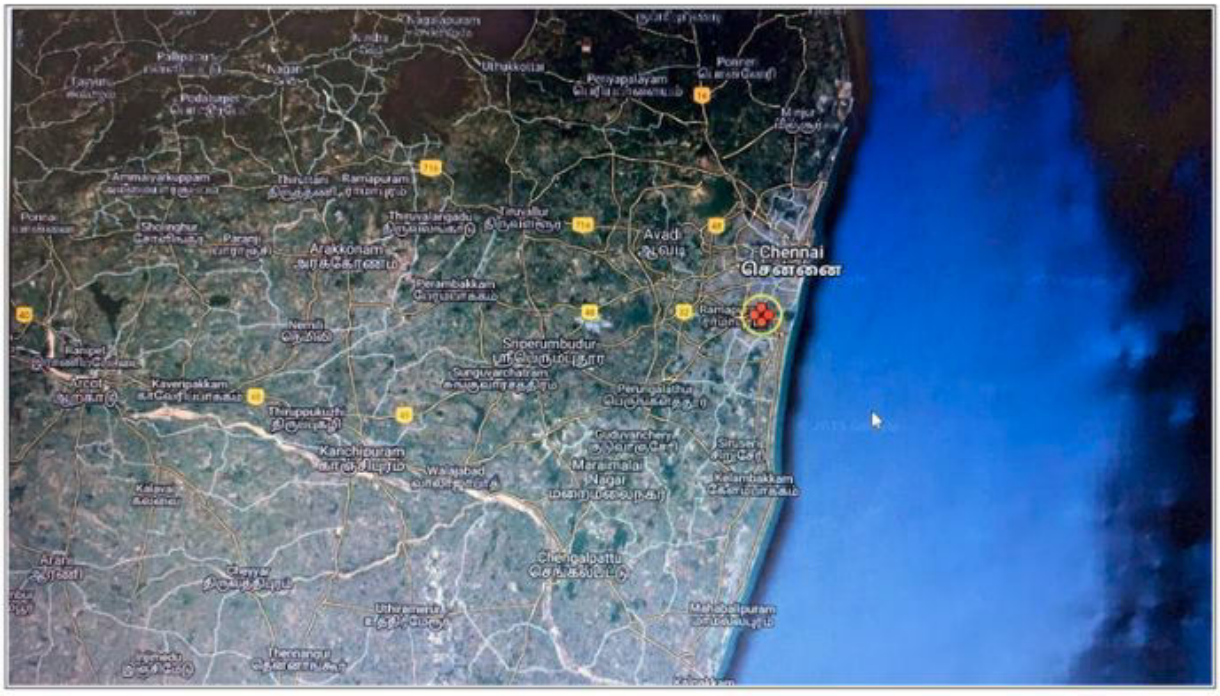
METHODOLOGY FLOW CHART:

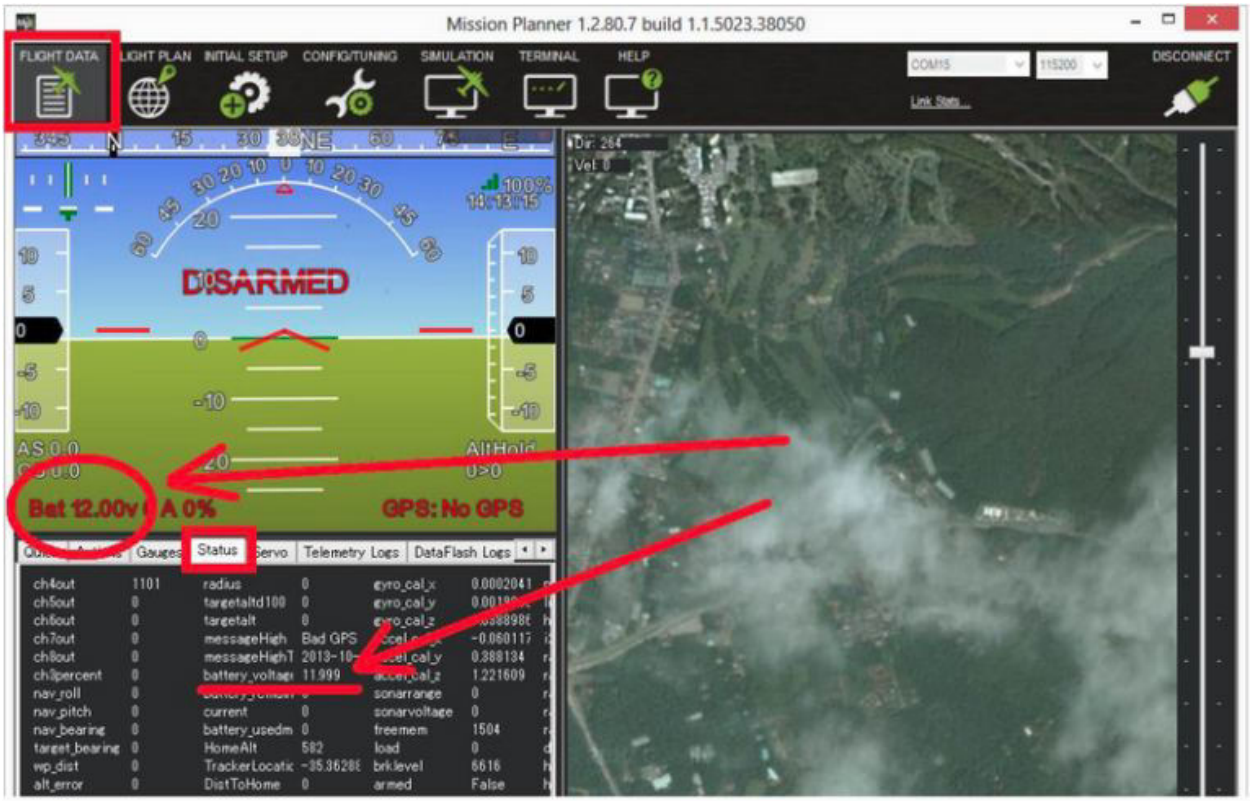


MARKET SURVEY:

Drone using autopilot is an existing system in which the transmitter and receiver are placed separately.Due this the existing autopilot drone can navigate only within a certain limit. It navigates only in the path specified by the user through an user interface.Thus the navigation of the drone is limited.

Product photographs:




Mission Planner 1.2.80.7 build 1.1.5023.38050
FLIGHT DATA
FLIGHT PLAN
INITIAL SETUP
CONFIG/TUNING
SIMULATION
TERMINAL
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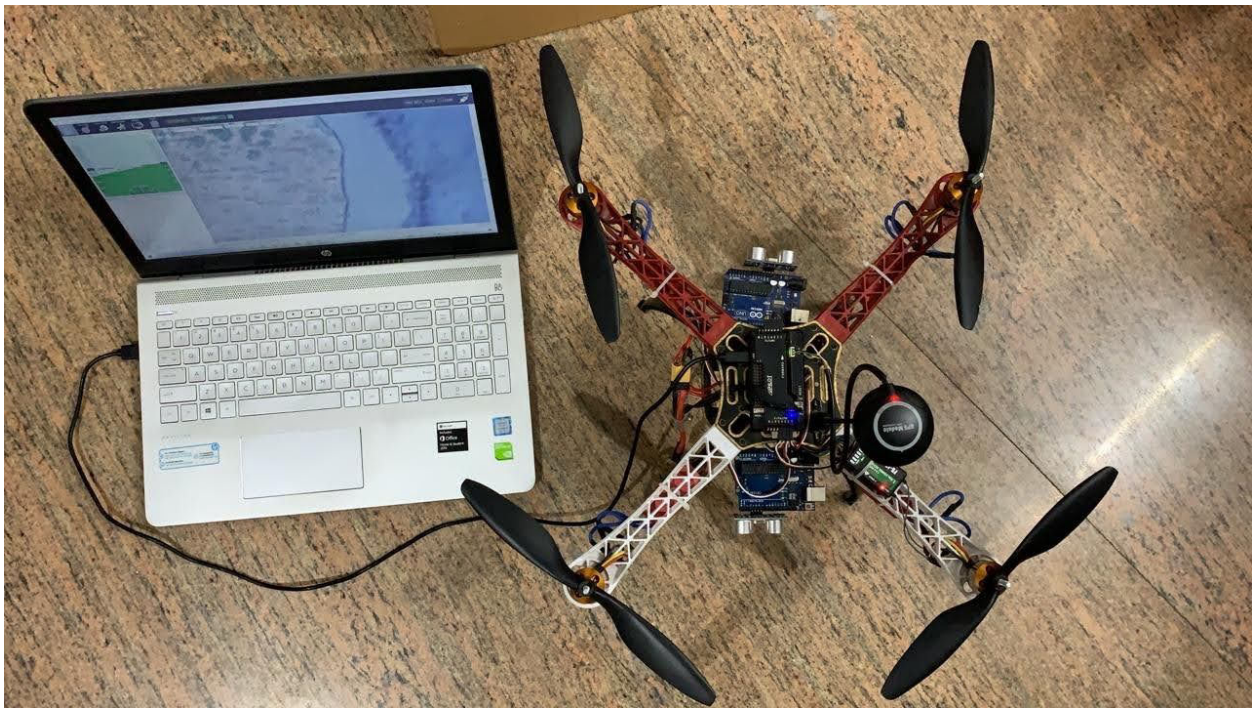
Servo
Telemetry Logs
DataFlash Logs



CONCLUSION

In our proposed system both the Transmitter and the Receiver are interfaced which can travel to a long distance beyond the limit whereas this can navigate by calculating the availability of battery. Also, created an user interface where the destination is mentioned where the Quad-coper has to navigate. There is no need for technical staff to operate the Quad-copter. It is fully automated. The inbuilt Gyroscope sensor, Barometric sensor and Accelerometer sensor will Transmit various Data like Orientation, Angular Velocity, Speed, etc. As this system is totally flexible to any application where it can be used in Defence, Health care, Agriculture, Industry and so on.

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Progress Report- IEDC

Name of the College/Institution	**Sri Sai Ram Institute Technology**		
Year of starting of project	2015		
Name of the Head/Principal of the Institution/College	**Dr. K. PALANIKUMAR , M.E , Ph.D**		
Name of IEDC Coordinator	Dr. K. PALANIKUMAR , M.E , Ph.D		
Contact Details of IEDC Coordinators	1.**Dr. K.PALANIKUMAR, M.E., Ph.D.,** Professor & Principal Sri Sai Ram Institute of Technology, Chennai- 600 044, Tamilnadu, INDIA. Ph: 91-44-22512444, 2251 2111 (O) 2. Dr.G. SHANMUGASUNDAR, M.E , Ph.D., Associate Professor/ Mechanical Engg. Sri Sai Ram Institute of Technology Chennai- 600 044, Tamilnadu, INDIA. Ph: 91-44-22512444, 2251 2111 (O)		
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e-Mail ID	principal@sairamit.edu.in shanmugasundar.mech@sairamit.edu.in		
Financial Details			
Previous Sanction Orders details	**Sanction Order No.**		**Sanction Order Date with Amount**
	1.	11/03/2015 – NEB(C)	28/05/2015 Rs 5,30,000/-
	2.	11/03/2015 – NEB (G)	28/05/2015 Rs 8,00,000/-
	3.	11/03/2015 – NEB	05/12/2016 Rs 7,84,248/-
	4.	11/03/2015 – NEB	03/05/2018 Rs 7,55,417/-
	5.	11/03/2015 – NEB	14/06/2019 Rs 8,00,000/-

Technical Outcome year wise

i. FIRST YEAR

	Title of the project	Outcome in terms of product/process development	Current Status Patent filled if any, Socially/Economically Relevance
1.	Safety Helmet for fire fighter	Safety Helmet	Patent Published No. 201641044018,K. Palanikumar & Mr. K. R. Bharath
2.	Development of PAH (Polyaromatic hydrocarbons) purifier	Water Purifier	Patent Published No. 201741010893, K. Palanikumar R.M.Asha,T. Gowshik, S. Balaji, & R. Sathish.
3.	Character Encryption for Data Security	Data Security system Software Product	Patent Published No.201741012896 K. Palanikumar,J. Ilakkiya, Subathra,& S. Ragavi,
4.	Clap Sensor for Differently able and aged People	Clap Sensor	Patent Published No.201741027560 K. Palanikumar ,S.Rajarajan, R.Nagammai nachu, V.Kayalvizhi S.Mythili &S.Malathy.
5.	Egensor – Power Generation and sensing	Egensor – Power Generation and sensing System	Patent Published No.201741011384 K. Palanikumar , Arvindh.R Shubham shekhar venkatesan.M Vignesh.A, & L.Vijayaraja

Technical Outcome year wise

ii. SECOND YEAR

	Title of the project	Outcome in terms of Product/process development	Current Status Patent filled if any, Socially/Economically Relevance
6.	Development Of Optimized Pellet From Solid Sewage	Pellets From Solid Sewage	Product developed & Startup Company Initiated by students.
7.	**KAKSA** - Intelligence in Class Boards	Smart Boards in Class rooms	Product developed & Startup Company Initiated by students.
8.	Mind Controlled Gaming For The Differently Abled	Gaming For The Differently Abled	Patent published IPR No . 201841016343 Dr.K. Palanikumar Dr.B.Sreedevi P. Navaneeth H. Akshay M. Nirmalraj S. Athreya
9.	Bus Pass and Ticket Automation System	Bus Pass and Ticket Automation	Patent filed IPR No. 201941008408 Dr.K. Palanikumar & Mrs. A. Sharmila
10.	Wireless Power Transfer In Corporation With Solar Energy	Wireless Power Transfer system	Product developed Planning for patent

Technical Outcome year wise

iii. THIRD YEAR

	Title of the project	Outcome in terms of Product/process development	Current Status Patent filled if any, Socially/Economically Relevance
11.	Bio-compatible femur made of polymer composite	Bio-compatible femur	Product Developed
12.	Resistible cars - An approach towards safer travelling	Resistible car safe bombers	Product Developed
13.	Rover and UAV based 3D modeller and supervisor for various application	Unmanned Arial Vehicle (UAV)	Product Developed
14.	Safety vehicle for women using data mining	Safety vehicle for women	Product Developed & Startup Company Initiated by students.
15.	Wireless security Camera for stalker threat Identification.	Wireless security Camera	Patent filed IPR NO. 201941012141 Dr.K. Palanikumar & Dr.V.Brindha devi

Technical Outcome year wise

iv. FOURTH YEAR

	Title of the project	Outcome in terms of Product/process development	Current Status Patent filled if any, Socially/Economically Relevance
16.	SECURITY CAMERA AND DOOR UNLOCK SYSTEM	DOOR UNLOCK SYSTEM	Product Developed & Patent under Preparation
17.	DRONE SURVILLIENCE SYSTEM FOR NATURAL CALAMITIES	DRONE SURVILLIENCE SYSTEM	Product Developed & Patent under Preparation
18.	e-Glove	e-Glove	Product Developed & Patent filed
19.	LEARNING OF BRAILLE LANGUAGE	LEARNING OF BRAILLE LANGUAGE	Product Developed & Patent under Preparation
20.	FIBER REINFORCE CONCRETE WALL PANEL	FIBER REINFORCE CONCRETE WALL PANEL	Product Developed & Patent under Preparation

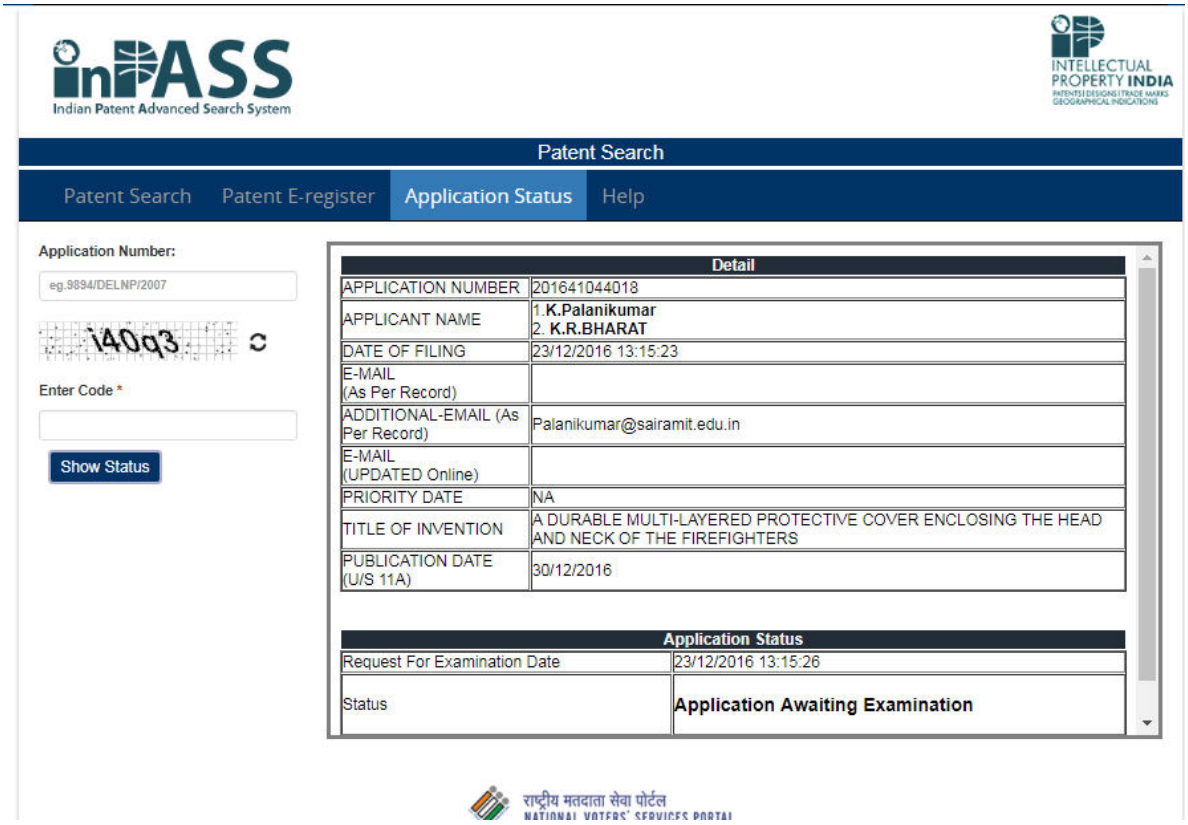
Coordinators / IEDC

Principal

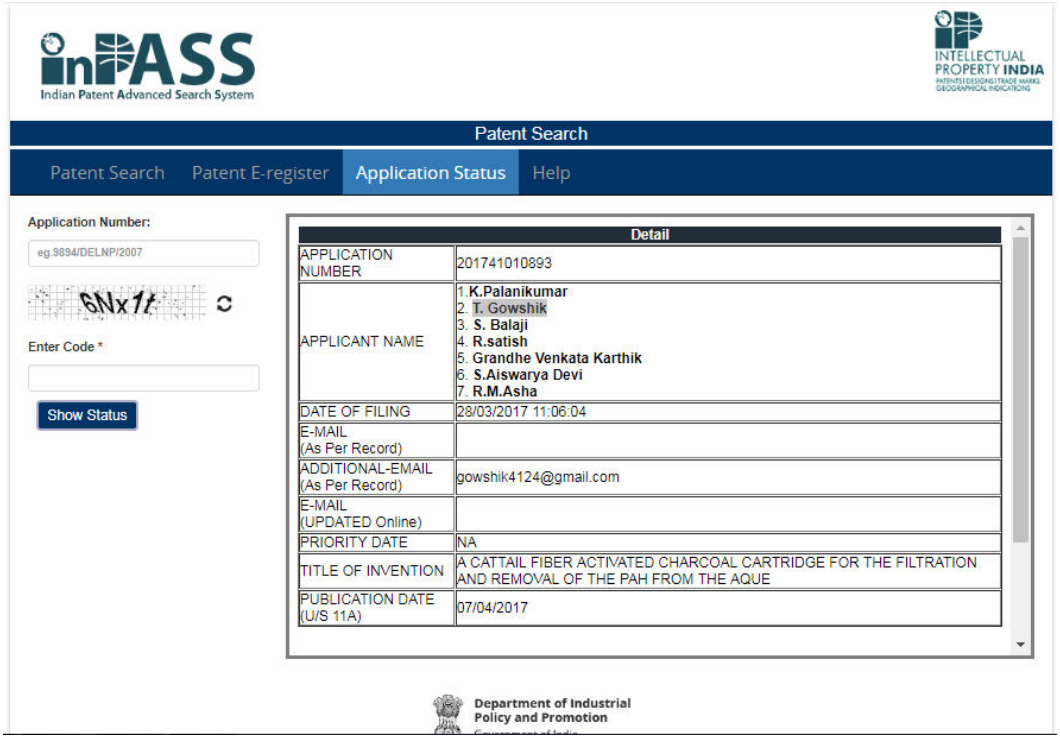
Dr.K.PALANI KUMAR
PRINCIPAL
SRI SAIRAM INSTITUTE OF TECHNOLOGY
SAI LEO NAGAR, CHENNAI-600 044.

IEDC PROJECTS CONVERTED AS PATENT:

Project no .01



Project no .02



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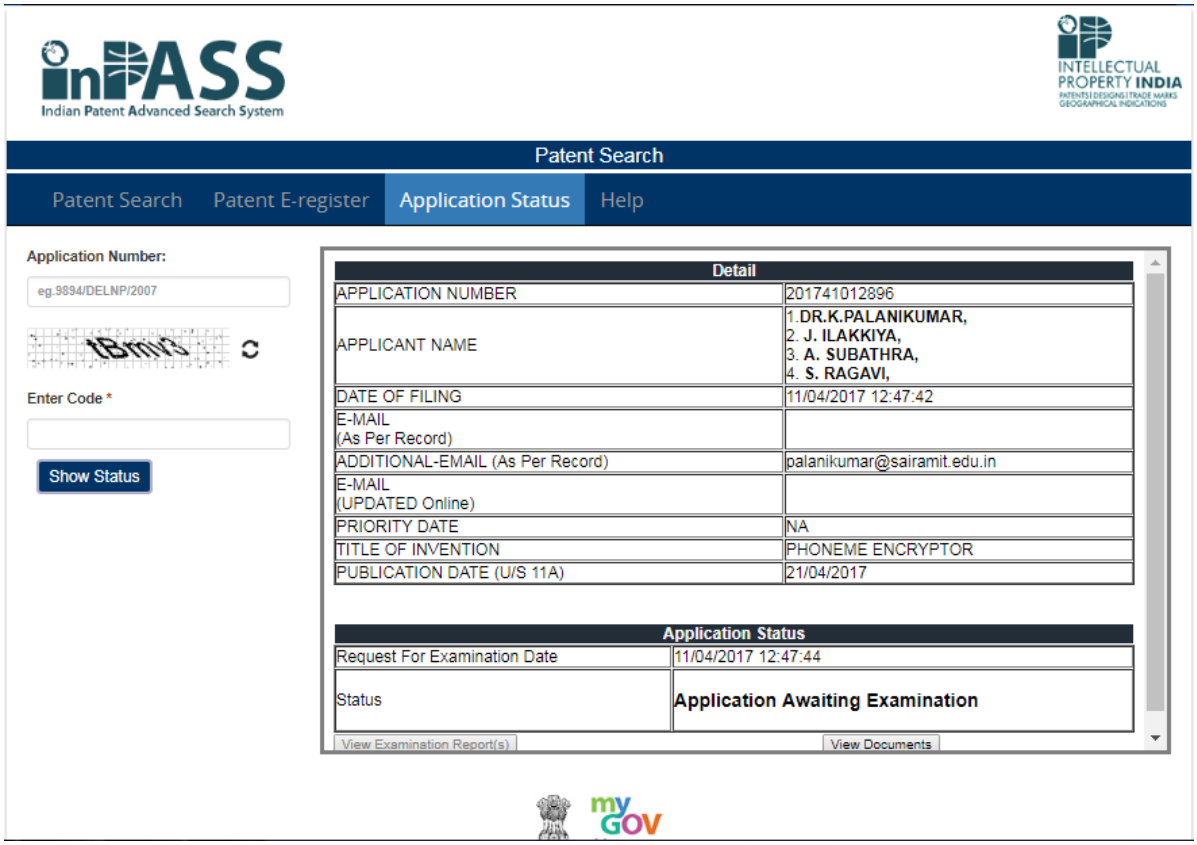

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Patent Search

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Application Number:

eg.9894/DELNP/2007

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Detail	
APPLICATION NUMBER	201741012896
APPLICANT NAME	1.DR.K.PALANIKUMAR, 2. J. ILAKKIYA, 3. A. SUBATHRA, 4. S. RAGAVI,
DATE OF FILING	11/04/2017 12:47:42
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	palanikumar@sairamit.edu.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	NA
TITLE OF INVENTION	PHONEME ENCRYPTOR
PUBLICATION DATE (U/S 11A)	21/04/2017

Application Status	
Request For Examination Date	11/04/2017 12:47:44
Status	**Application Awaiting Examination**

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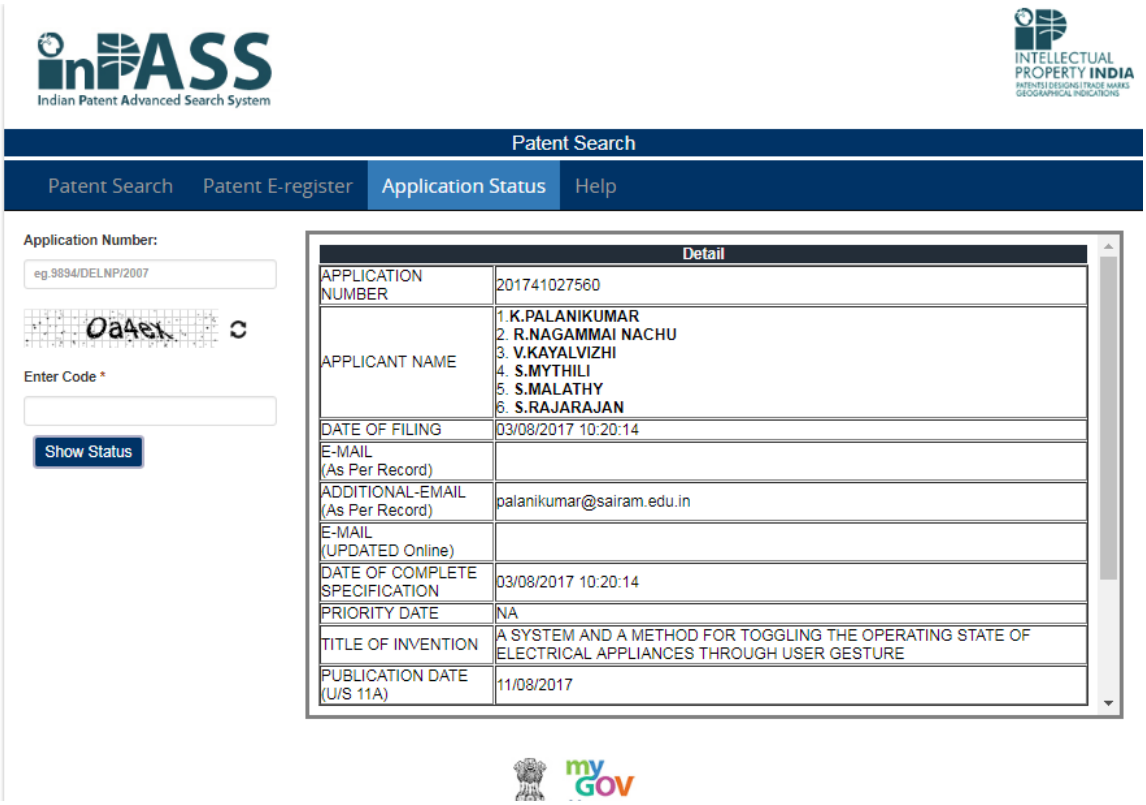
Project no .04



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Patent Search

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Application Number:

eg.9894/DELNP/2007

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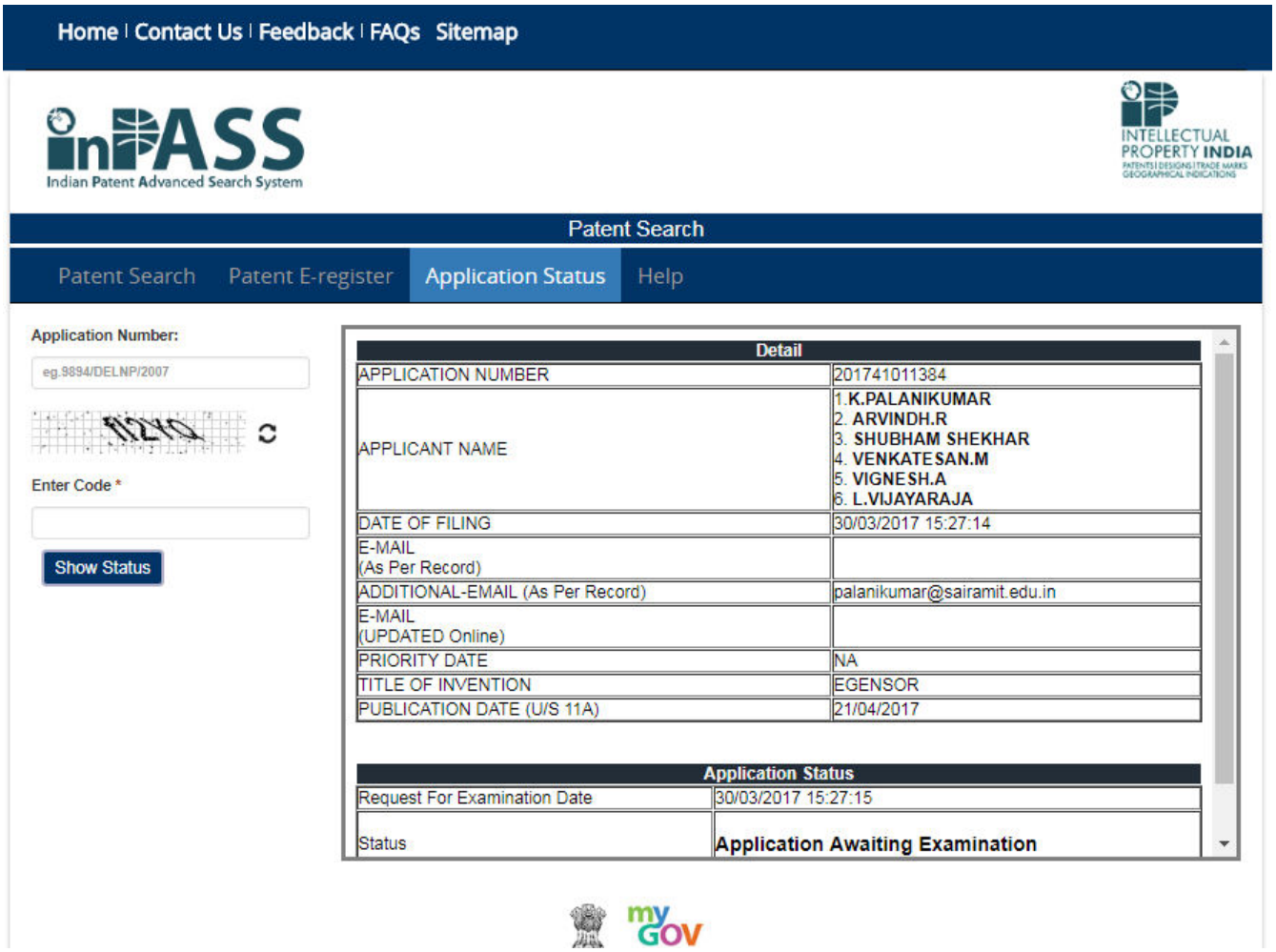
Detail	
APPLICATION NUMBER	201741027560
APPLICANT NAME	1.K.PALANIKUMAR 2. R.NAGAMMAI NACHU 3. V.KAYALVIZHI 4. S.MYTHILI 5. S.MALATHY 6. S.RAJARAJAN
DATE OF FILING	03/08/2017 10:20:14
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	palanikumar@sairam.edu.in
E-MAIL (UPDATED Online)	
DATE OF COMPLETE SPECIFICATION	03/08/2017 10:20:14
PRIORITY DATE	NA
TITLE OF INVENTION	A SYSTEM AND A METHOD FOR TOGGLING THE OPERATING STATE OF ELECTRICAL APPLIANCES THROUGH USER GESTURE
PUBLICATION DATE (U/S 11A)	11/08/2017

Project no .05



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Application Number:

eg.9894/DELNP/2007

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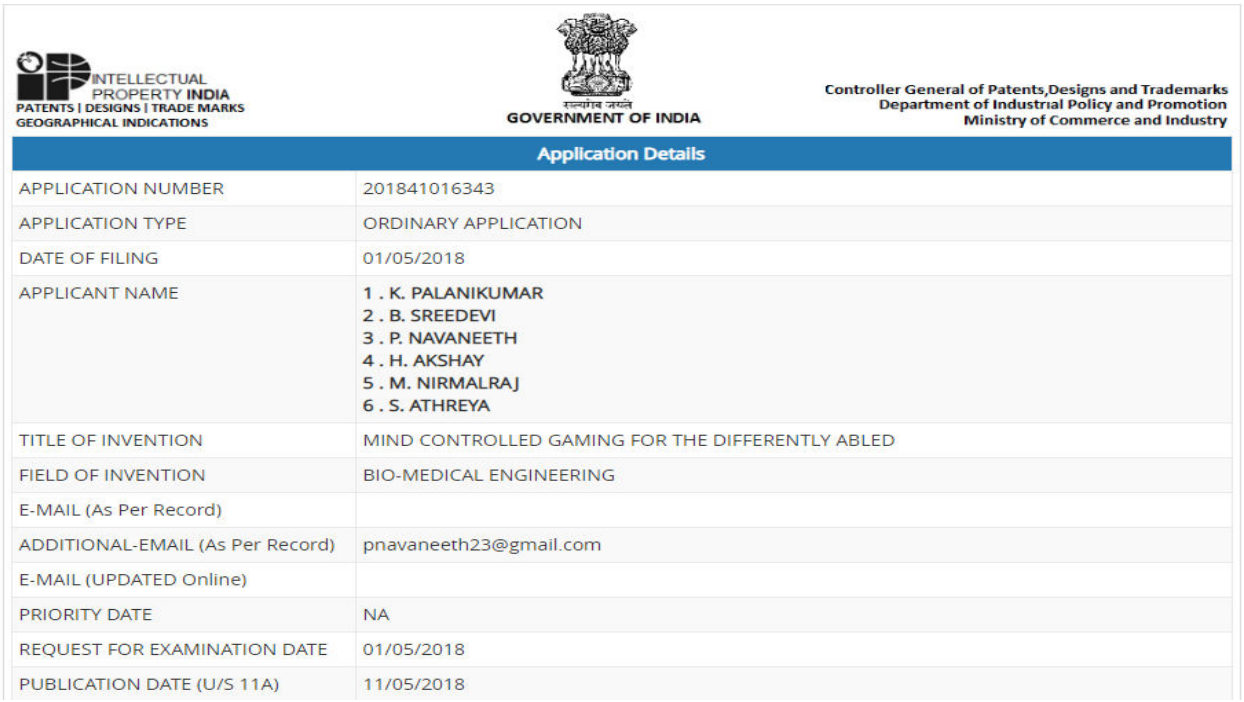
Detail	
APPLICATION NUMBER	201741011384
APPLICANT NAME	1.K.PALANIKUMAR 2. ARVINDH.R 3. SHUBHAM SHEKHAR 4. VENKATESAN.M 5. VIGNESH.A 6. L.VIJAYARAJA
DATE OF FILING	30/03/2017 15:27:14
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	palanikumar@sairamit.edu.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	NA
TITLE OF INVENTION	EGENSOR
PUBLICATION DATE (U/S 11A)	21/04/2017

Application Status	
Request For Examination Date	30/03/2017 15:27:15
Status	**Application Awaiting Examination**

Project no .06



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GEOGRAPHICAL INDICATIONS

GOVERNMENT OF INDIA

Controller General of Patents,Designs and Trademarks
Department of Industrial Policy and Promotion
Ministry of Commerce and Industry

Application Details	
APPLICATION NUMBER	201841016343
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	01/05/2018
APPLICANT NAME	1 . K. PALANIKUMAR 2 . B. SREEDEVI 3 . P. NAVANEETH 4 . H. AKSHAY 5 . M. NIRMALRAJ 6 . S. ATHREYA
TITLE OF INVENTION	MIND CONTROLLED GAMING FOR THE DIFFERENTLY ABLED
FIELD OF INVENTION	BIO-MEDICAL ENGINEERING
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	pnavaneeth23@gmail.com
E-MAIL (UPDATED Online)	
PRIORITY DATE	NA
REQUEST FOR EXAMINATION DATE	01/05/2018
PUBLICATION DATE (U/S 11A)	11/05/2018

Project no .07

INTELLECTUAL PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS
GEOGRAPHICAL INDICATIONS

सत्यमेव जयते
GOVERNMENT OF INDIA

Controller General of Patents,Designs and Trademarks
Department of Industrial Policy and Promotion
Ministry of Commerce and Industry

Application Details	
APPLICATION NUMBER	201941008408
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	05/03/2019
APPLICANT NAME	1 . DR. K. PALANIKUMAR 2 . Sharmila P 3 . Skanda Gurunathan R 4 . S. Vivekanandan 5 . Shankar T 6 . Aravind G
TITLE OF INVENTION	AN AUTHENTICATION SLIP PROCUREMENT SYSTEM FOR A PUBLIC TRANSPORT VEHICLE
FIELD OF INVENTION	COMPUTER SCIENCE
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	palanikumar@sairamit.edu.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	05/03/2019
PUBLICATION DATE (U/S 11A)	17/05/2019
FIRST EXAMINATION REPORT DATE	24/09/2020

Project No 08:

INTELLECTUAL PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS
GEOGRAPHICAL INDICATIONS

सत्यमेव जयते
GOVERNMENT OF INDIA

Controller General of Patents,Designs and Trademarks
Department of Industrial Policy and Promotion
Ministry of Commerce and Industry

Application Details	
APPLICATION NUMBER	201941012141
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	28/03/2019
APPLICANT NAME	1 . Dr. K. PALANIKUMAR 2 . Dr. V.BRINDHA DEVI 3 . P.SHARMILA 4 . NEERAJA.S 5 . PAVITRA.P 6 . QUEENCY LEENA SAWYER.W
TITLE OF INVENTION	WIRELESS SECURITY CAMERA FOR STALKER AND THREAT IDENTIFICATION
FIELD OF INVENTION	ELECTRONICS
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	palanikumar@sairamit.edu.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	28/03/2019
PUBLICATION DATE (U/S 11A)	17/05/2019

Other Innovative participation and awards for our IEDC Project in the year 2019-2020:

TECHNOLOGY ENABLING CENTRE
CENTRE FOR TECHNOLOGY DEVELOPMENT AND TRANSFER
Anna University, Chennai-25

सत्यमेव जयते
Department of Science and Technology
Ministry of Science and Technology
Government of India

Certificate of Participation

This is to certify that the product/process titled "AUTO NAVIGATION DRONE SYSTEM" has been exhibited by the Students "Ms. S. PRIYANKA, Mr. M. SARAN, Ms. G. NOKUDAIYAVAL", under the Mentorship of "Mrs. A. PONMALAR" from "SRI SAI RAM INSTITUTE OF TECHNOLOGY" has been exhibited and attended keynote lectures on Innovations, IPR, Incubation, Startups and Technology Transfer in the "TECHNOLOGY EXHIBITION 2020 CUM TRAINING PROGRAMME" held at Anna University, Chennai during 27-29 February 2020.

TEC EXHIBITION & TRAINING 2020

COORDINATOR-TEC & DIRECTOR-CTDT

Scanned with CamScanner

TEC WINNER 2020
TECHNOLOGY ENABLING CENTRE
CENTRE FOR TECHNOLOGY
DEVELOPMENT AND TRANSFER
ANNA UNIVERSITY, CHENNAI 600 025
Certificate of Achievement
This is to certify that the product/process titled "Learning of a Braille Language" presented by the Students "Mr. S. Vijay, Mr. Joahnas Mathew Saji, Mr. R. Dineshkumar" under the Mentorship of "Mr. L. Vijayaraja" from "Sri Sairam Institute Of Technology" have won the SPECIAL PRIZE with cash award of Rs. 10,000/- (Rupees Ten Thousand Only) at the "TECHNOLOGY EXHIBITION 2020 CUM TRAINING PROGRAMME" held at Anna University, Chennai during 27 – 29 February 2020.
COORDINATOR -TEC &
DIRECTOR - CTDT
VICE-CHANCELLOR
ANNA UNIVERSITY

Sri SAI RAM INSTITUTE OF TECHNOLOGY
Accredited by NBA and NAAC 'A+' | An ISO 9001:2015 Certified and MHRD NIRF ranked institution |
Approved by AICTE, New Delhi | Affiliated to Anna University, Chennai.
Sai Leo Nagar, West Tambaram, Chennai-600 044.
ww.sairamit.edu.in.Tel: 044-22512333/22512111

Ref:T.O.No.264/S2/SSIt, Ch-44/2018 Date : 08/02/2019

Submitted to the Chairman

Sub: SSIt-Ch-44-Seeking of approval for IEDC funded projects for the academic Year 2018-2019.

******

It is submitted that the following projects have been reviewed and selected by the High level Expert Committee which was constituted for the year 2018-2019 and reviewed the projects on 29/01/2019 and recommended the following projects under the IEDC funding for the academic year 2018-2019 :

A. List of projects selected for DST funding- year 2018-2019 :

Sl no	Guide Name	Title of Innovation	Students Name	Dept/ Year	IEDC funding amount from DST – New Delhi
1	Mrs.K. SATHYABAMA AP/CSE	SECURITY CAMERA AND DOOR UNLOCK SYSTEM	MANOJ KUMAR.P, GOKULA KRISHNAN.S, AAKASH.B, YOGENDRAN.S	CSE/III	1,00,000/-
2	Mrs.A.PONMALAR AP/IT	DRONE SURVILLIENCE SYSTEM FOR NATURAL CALAMITIES	PADMA PRIYA.R.V, PRIYANKA.J, NOKUDAIYAVAL.K	IT/II	1,00,000/-
3	Dr.SARAVANAN.G AP/ECE	e-Glove	HARINI KARTHIK.D, JANANI.V, DHANALAKSHMI.R, JAYANTHI.C	ECE/III	1,00,000/-
4	Mr.L.VIJAYARAJA AP/EEE & Mr.R.DHANASEKAR AP/EEE	LEARNING OF BRAILLE LANGUAGE	DHINAKARAN.M.S, DINESH KUMAR.R, JOAHNAS MATHEW, VIJAY.S	EEE/III	1,00,000/-
5	Mr.PONDEEPAK AP/CIVIL	FIBER REINFORCE CONCRETE WALL PANEL	VISHNU RAJ.S, KARTHIK.S, SHRI RAM .S	CIVIL/III	1,00,000/-
Total Amount Sanctioned From IEDC Fund – DST , New Delhi .					**Rs 5,00,000/-** (Rupees Five Lakhs Only)

B. List of Projects to be considered under Management Contribution:

Sl no	Guide Name	Title of Innovation	Students Name	Dept/ Year	Amount Required under Management funding
1	Ms.ILAKKIYA.T AP/IT	ADVANCED METERING INFRASTRUCTURE-AN IOT BASED SOLN USING LORA	KAVYA.R, DHIVYA.S	IT/III	10,000/-
2	Mr.S.MEGANATHAN AP/MECH	CONVERSION OF WASTE PLASTIC INTO LIQUID FUEL	SAKTHINAYAGAN.K, BASKARA HARIHARAN, RAMKUMAR.K, YUGENDREN.P, THANUSH.S.R, SUJITH.S	MECH/II	10,000/
3	Dr.THAMARAI SELVI HOD/ECE	SMART WALKING STICK	ROSHINE.M, BARGAVI.P, VIGNESHWARI.S	ECE/II	10,000/
4	Mr.SIVAGURU.C AP/CIVIL	NATURES GIFT-THE POLIMERS	PADMA BHARATHI.A, PADMA PRIYA.N, PAVITHRA.K.S, MAHALAKSHMI.S	CIVIL/II	10,000/
5	Mr.J.M PRABHUDASS AP/MECH	ANTI THEFT SAFETY LOCKER IN BIKES	DEEPAK.R, RATHNAVEL SUBRAMANIAN, JAYACHANDRAN.S, FENNETH MOSES.G, RAJAGOPALAN.R	MECH/III	10,000/
6	Dr.JAGATHEESH KUMAR AP/EEE	PARALYZED HELPERS KIT	MANOJ.L, CHARAN RAJ.P.C, ARACINDHAN.S, DIVAGAR	EEE/III	10,000/
7	Mrs.ROOPA AP/CSE	NAVIGATION SYSTEM FOR VISUALLY CHALLENGED	PRUTHVI RAJ.G, PRAVEEN DANIEL.P, SAIKARTHICK .S	CSE/III	10,000/
Total Amount required under management funding					**Rs 70,000/-** (Rupees Seventy Thousand only)

In this connection, It is submitted that out 12 projects the IEDC will provide funds for first five projects listed in Table A. and therefore, it is requested that necessary approval may kindly be granted and sanction may be accorded in respect of the remaining projects listed in Table B.

Submitted to the chairman for kind perusal and approval.

BY SPEED POST

GOVERNMENT OF INDIA
MINISTRY OF SCIENCE & TECHNOLOGY
Department of Science & Technology
Technology Bhawan, New Mehrauli Road,
New Delhi 110 016. **Phone** : 2653 7982, 2659
0312 **Fax** : 91-11-2653 7982
Email: sujit@nic.in

SUJIT BANERJEE
SCIENTIST F

No. 11/03/2015 -NEB

Dated 11th August, 2015

Dear Sir/Madam,

I hope by now you would have got the grants-in-aid for both recurring grants and capital grants credited to your account. You may kindly start the work of IEDC at the earliest, if you have not done so far.

You may also constitute your Advisory Committee for IEDC, as per the instructions given in the guidelines. DST is also a Member of the Committee and kindly inform me as and when you have constituted the committee. I would also request you to convene the first meeting of this Advisory committee by October/November period.

As a part of the financial support you would be required to submit UC & SAE at the end of the FY i.e. after 31st March, 2016. A copy of the format of UC & SAE is enclosed herewith. A copy of the UC is also required to be uploaded to CPSMS.

With kind regards,

Yours sincerely,

(Sujit Banerjee)

Dr. K Palanikumar,
Sri Sai Ram Institute of Technology,
Sai Leo Nagar,
West Tambaram,
Chennai – 600 044

MR. Shanmugasundaram, APG II, Regd.

11/03/2015-NEB (C)
Government of India
Ministry of Science & Technology
Department of Science & Technology

SRISAI RAM INSTITUTE OF TECHNOLOGY
05 JUN 2015
SAI LEO NAGAR, CHENNAI-600044

Technology Bhawan,
New Mehrauli Road,
New Delhi 110 016.
Dated the 28 May 2015

ORDER

Sub: Establishment of an Innovation and Entrepreneurship Development Centre (IEDC) at Sri Sai Ram Institute of Technology, Chennaiduring 2014-15.

Sanction of the President is accorded for the establishment of an Innovation and Entrepreneurship Development Centre (IEDC) at SriSai Ram Institute of Technology, Chennaiat a total cost of Rs 13,30,000/- (Rupees thirteen lakhs thirty thousand only). Sanction of the President is also accorded for the release of an amount of Rs 530,000/- (Rupees Five lakh thirty thousand only) as one time non-recurring (capital) grants. The recurring financial assistance to the IEDC from this Department would be available for a maximum period of five years. However, the quantum of assistance and its continuation would be on yearly basis subject to the review of the performance of IEDC by the Department.

2. The host Institute would appoint a Co-ordination of IEDC immediately to oversee the operations of the IEDC on day to day basis.

3. The coordinator should undergo Faculty Development Programmes (FDP) as early as possible, which are sponsored by the Department and other agencies for developing trainers in entrepreneurship area.

4. *The manpower employed in the IEDC project would be co-terminus with the duration of the IEDC project and the Department(DST) would have no liability to meet the manpower costs beyond the duration of the project (Vide Order No. A-20020/11/97 IFD dt.16.8.2002). In order to ensure this, IEDC is advised to enter into yearly contract with the persons to be employed under the project.*

5. The host institution should also appoint an Advisory Board to be headed by the Principal/Head of the institution to monitor the progress of implementation of the IEDC project and its activities. This Board may advice the host Institute for raising funds from other sources for the IEDC for its activities.

6. The Drawing & Disbursing Officer, Department of Science & Technology, shall arrange to release an amount of Rs. 530,000/-(Rupees five lakhs thirty thousand only) to Sri Sai Ram Institute of Technology, Sai Leo Nagar, West Tambaram, Chennai – 600 044 by means of RTGS as per the following details given below --

Name of the Account Holder	Sri Sai Ram Institute of Technology
Name of the Bank	Central Bank of India
Branch Address	Sathyam Plaza, 198 GST Road, Chrompet, Chennai – 600 044
IFSC code	CBIN0281267
Account No.	3458218052
MICR Code	600016017

7. The sanction of this grant is subjected to the terms and condition mentioned in the Annexure.

8. The expenditure is debitable to Demand No. 86-Department of Science & Technology (DST) for the year 2015-16 (Plan):-

3425 Other Scientific Research (Major Head)
60 Other (Sub Major Head)
60.200 Assistance to Other Scientific Bodies (Minor Head)
08 Grants-in-aid for S&T programmes for Socio-economic Development
08.10 Science & Technology Entrepreneurship Development activities
08.10.35 Grants for creation of capital assets

9. The grantee should submit a six monthly progress report of activities of IEDC to the Department.

10. The grantee will submit the Utilization Certificate and the Statement of Audited expenditure as per the enclosed format of the department after the end of the current F.Y. They may also forward the budget for the next F.Y. along with it after the approval of the competent authority/monitoring committee.

11. As per Rule 211(1) of GFRs, the accounts of all grantee institutions shall be open to inspection by the sanctioning authority audit whenever the institution is called upon to do so.

12. This issues with the approval of Integrated Finance Division, Department of Science & Technology vide their sanction no. IFD/ 893/2015-16 dated 13/05/15.

13. The sanction order has been entered in the sanction order register as per GFR-39 at Sl.No.15 of the register.

14. "The Institute will maintain separate audited accounts for the project and the amount of grant will be kept in a bank account earning interest. The interest earned should be reported to DST while submitting the Statement of Expenditure/Utilization Certificate. The interest thus earned will be treated as a credit to the institute to be adjusted towards further installment of the grant".

15. It is certified that no UC is pending from the grantee in regards to the grants-in-aid released under the programme.

(Sujit Banerjee)
Scientist F

To,

The Pay & Accounts Officer
Department of Science & Technology
New Delhi.

Copy to:

1. Dr. K Palanikumar
   Sri Sai Ram Institute of Technology,
   Sai Leo Nagar,
   West Tambaram,
   Chennai – 600 044
2. Office of the Principal Director & Audit, AGCR Building, III Floor, I P Estate, New Delhi-110002.
3. Office of the Accountant General, Chennai.
4. Head (NEB)/Sanction Folder
5. Cash Section/IFD/Accounts Section

(Sujit Banerjee)
Scientist F

11/03/2015-NEB(G)
Government of India
Ministry of Science & Technology
Department of Science & Technology

SAI RAM INSTITUTE OF TECHNOLOGY
05 JUN 2015
SAI LEO NAGAR, CHENNAI-600044

05/06/15

Technology Bhawan,
New Mehrauli Road,
New Delhi 110 016.
Dated the 28 May 2015

ORDER

Sub: Establishment of an Innovation and Entrepreneurship Development Centre (IEDC) at Sri Sai Ram Institute of Technology, Chennai during 2015-16.

Sanction of the President is accorded for the establishment of an Innovation and Entrepreneurship Development Centre (IEDC) at Sri Sai Ram Institute of Technology, Chennaiat a total cost of Rs 13,30,000/- (Rupees thirteen lakhs thirty thousand only). The financial assistance to the IEDC from this Department would be available for a maximum period of five years. However, the quantum of assistance and its continuation would be on yearly basis subject to the review of the performance of IEDC by the Department.

2. Sanction of the President is also accorded for the release of grants- in- aid of Rs 800,000/- (Rupees eight lakh only) as the recurring expenditure for the first year of operation of IEDC to Sri Sai Ram Institute of Technology, Chennai.

3. Head wise break –up of the approved budget is shown below:

Sl No	Items of expenditure	Amount Rs
	Recurring	
1	Student projects (five Nos @ Rs 1.00 lakhs each)	5,00,000
2	Contingencies (phone fax stationery travel and honorarium to the Co-ordinator of IEDC etc)	3,00,000
	Total	8,00,000

4. The host Institute would appoint a Co-ordination of IEDC immediately to oversee the operations of the IEDC on day to day basis.

5. The coordinator should undergo Faculty Development Programmes (FDP) as early as possible, which are sponsored by the Department and other agencies for developing trainers in entrepreneurship area.

6. *The manpower employed in the IEDC project would be co-terminus with the duration of the IEDC project and the Department(DST) would have no liability to meet the manpower costs beyond the duration of the project (Vide Order No. A-20020/11/97 IFD dt. 16.8.2002). In order to ensure this, IEDC is advised to enter into yearly contract with the persons to be employed under the project.*

7. The host institution should also appoint an Advisory Board to be headed by the Principal/Head of the institution to monitor the progress of implementation of the IEDC project and its activities. This Board may advice the host Institute for raising funds from other sources for the IEDC for its activities.

8. The Drawing & Disbursing Officer, Department of Science & Technology, shall arrange to release an amount of Rs. 8,00,000/-(Rupees eight lakh only) to Sri Sai Ram Institute of Technology, Sai Leo Nagar, West Tambaram, Chennai – 600 044by means of RTGS as per the following details given below.

Name of the Account Holder	Sri Sai Ram Institute of Technology
Name of the Bank	Central Bank of India
Branch Address	Sathyam Plaza, 198 GST Road, Chrompet, Chennai – 600 044
IFSC code	CBIN0281267
Account No.	3458218052
MICR Code	600016017

9. The sanction of this grant is subjected to the terms and condition mentioned in the Annexure.

10. The expenditure is debitable to Demand No. 86-Department of Science & Technology (DST) for the year 2015-16 (Plan):-

3425 Other Scientific Research (Major Head)
60 Other (Sub Major Head)
60.200 Assistance to Other Scientific Bodies (Minor Head)
08 Grants-in-aid for S&T programmes for Socio-economic Development
08.10 Science & Technology Entrepreneurship Development activities
08.10.31 Grants –in -aid (General)

11. The grantee should submit a six monthly progress report of activities of IEDC to the Department.

12. The grantee will submit the Utilization Certificate and the Statement of Audited expenditure as per the enclosed format of the department after the end of the current F.Y. They may also forward the budget for the next F.Y. along with it after the approval of the competent authority/monitoring committee.

13. As per Rule 211(1) of GFRs, the accounts of all grantee institutions shall be open to inspection by the sanctioning authority audit whenever the institution is called upon to do so.

14. This issues with the approval of Integrated Finance Division, Department of Science & Technology vide their sanction no. IFD/892/2015-16 dated 13/05/2015.

15. The sanction order has been entered in the sanction order register as per GFR-39 at Sl.No.14 of the register.

16. "The Institute will maintain separate audited accounts for the project and the amount of grant will be kept in a bank account earning interest. The interest earned should be reported to DST while submitting the Statement of Expenditure/Utilization Certificate. The interest thus earned will be treated as a credit to the institute to be adjusted towards further installment of the grant".

17. It is certified that no UC is pending from the grantee in regards to the grants-in-aid released under the programme.

Sujit Banerjee
Scientist F

To,

The Pay & Accounts Officer
Department of Science & Technology
New Delhi.

Copy to:

1. Dr. K Palanikumar,
   Sri Sai Ram Institute of Technology,
   Sai Leo Nagar,
   West Tambaram,
   Chennai – 600 044
2. Office of the Principal Director & Audit, AGCR Building, III Floor, I P. Estate, New Delhi-110002.
3. Office of the Accountant General, Chennai.
4. Head (NEB)/Sanction Folder
5. Cash Section/IFD/Accounts Section

(Sujit Banerjee)
Scientist F

11/03/2015-NEB
Government of India
Ministry of Science & Technology
Department of Science & Technology

Technology Bhawan,
New Mehrauli Road, New
Delhi 110016

Dated.14/06/2019

ORDER

Sub: Release of balance amount to Innovation and Entrepreneurship Development Centre (IEDC) at Sri Sai Ram Institute of Technology, Chennai during during 2019-20.

In continuation of this Department's sanction order of even no. dated **03/05/2018**, sanction of the President is accorded for the continuation of an Innovation and Entrepreneurship Development Centre (IEDC) at **Sri Sai Ram Institute of Technology, Chennai,** at a total cost of Rs.800,000/- (Rupees eight lakh only). The financial assistance to the IEDC from this Department would be available for a maximum period of five years. **However, the quantum of assistance and its continuation would be on yearly basis subject to the review of the performance of IEDC by the Department.**

2. Sanction of the President is also accorded for the release of grants- in- aid of of **Rs.** 8,00,000/- **(Rupees Eight lakh only)** as the recurring expenditure for the 4th year of operation of IEDC to **Sri Sai Ram Institute of Technology, Chennai**.

3. Head wise break –up of the approved budget is shown below:

Sl. No	Items of expenditure	Amount (Rs.)
	Recurring	
1	Student projects (five Nos @ Rs 1.00 lakhs each)	5,00,000/-
2	Contingencies (phone fax stationery travel and honorarium to the Co-ordinator of IEDC etc)	3,00,000/-
3	Amount sanctioned	8,00,000/-
4	Net release	8,00,000/-

4. **The manpower employed in the IEDC project would be co-terminus with the duration of the IEDC project and the Department(DST) would have no liability to meet the manpower costs beyond the duration of the project (Vide Order No. A-20020/11/97 IFD dt.16.8.2002). In order to ensure this, IEDC is advised to enter into yearly contract with the persons to be employed under the project.**

5. The host institution should also appoint an Advisory Board to be headed by the Principal/Head of the institution to monitor the progress of implementation of the IEDC project and its activities. This Board may advice the host Institute for raising funds from other sources for the IEDC for its activities.

6. This sanction is subject to the condition that the grantee organization will furnish to the Department of Science & Technology, financial year wise Utilization Certificate (UC) in the perform prescribed as per GFR 2017 and audited statement of expenditure (SE) along with up to date progress report at the end of each financial year duly reflecting the interest earned / accrued on the grants received under the project. This is also subject to the condition of submission of the final statement of expenditure, utilization certificate and project completion report within one year from the scheduled date of completion of the project. The SE& UC for the FY 2018-19 is enclosed.

7. The grantee organization will have to enter & upload the Utilization Certificate in the PFMS portal besides sending it in physical form to this Division. The subsequent/final installment will be released only after confirmation of the acceptance of the UC by the Division and entry of previous Utilization Certificate in the PFMS.

8. The grant-in-aid being released is subject to the condition that

a) A transparent procurement procedure in line with the Provisions of General Financial Rules 2017 will be followed by the Institute/Organization under the appropriate rules of the grantee organization while procuring capital assets sanctioned for the above mentioned project and a certificate to this effect will be submitted by the Grantee organization immediately on receipt of the grant:

b) While submitting Utilization Certificate/Statement of Expenditure, the organization has to ensure submission of supporting documentary evidences with regard to purchase of equipment/capital assets as per the provisions of GFR 2017. Subsequent release of grants under the project shall be considered only on receipt of the said documents.

c) The grantee organization will maintain separate audited account for the project and the entire amount of grant will be kept in an interest bearing bank account. For Grants released during F.Y. 2018-19 and onwards, all interests and other earnings, against released Grant shall be remitted to Consolidated Fund of India,(www.bharatkosh.gov.in)immediately after finalization of accounts, as it shall not be adjusted towards future release of grant. A certificate to this effect shall have to be submitted along with Statement of Expenditure/Utilization Certificate for considering subsequent release of grant/closure of project accounts

9. DST reserves sole rights on the assets created out of grants. Assets acquired wholly or substantially out of government grants (except those declared as obsolete and unserviceable or condemned in accordance with the procedure laid down in GFR 2017), shall not be disposed of without obtaining the prior approval of DST

10. The account of the grantee organisation shall be open to inspection by the sanctioning authority and audit (both by C&AG of India and Internal Audit by the Principal Accounts Office of the DST), whenever the organisation is called upon to do so, as laid down under Rule 236(1) of General Financial Rules 2017.

11. Due acknowledgement of technical support / financial assistance resulting from this project grant should mandatorily be highlighted by the grantee organization in bold letters in all publications / media releases as well as in the opening paragraphs of their Annual Reports during and after the completion of the project.

12. Failure to comply with the terms and conditions of the Bond will entail full refund with interest in terms of Rule 231 (2) of GFR 2017.

13. The expenditure involved is debatable to Demand No.84, Department of Science & Technology for the year 2019-20:-

3425	Other Scientific Research (Major Head)
60	Other
60.200	Assistance to Other Scientific Bodes (Minor Head)
70	Innovation, Technology Development and Deployment
70.00.31	Grants-in-aid General for the year 2019-20(Plan) (Previous :NSTEDB-3425.60.200.08.10.31)

14. The balance of Rs. 8,00,000/- (Rupees Eight lakh only) will be drawn by the drawing and disbursing officer, DST and will be disbursed to (IEDC) **Sri Sai Ram Institute of Technology, Chennai** 2019-20 The bank details for electronic transfer of fund through RTGS

Name of the Account Holder	Sri Sai Ram Institute of Technology
Name of the Bank	Central Bank of India
Branch Address	Sathyam Plaza, 198 GST Road, Chrompet, Chennai – 600 044
IFSC code	CBIN0281267
Account No.	3458218052
NITI Aayog NGO Unique ID	TN/2018/0189178

15. As per Rule 234 of GFR 2017, this sanction has been entered at **S. No G-28** in the register of grants maintained in the Division for the scheme Innovation, Technology Development and Deployment.

16. This issue with the concurrence of IFD vides their Concurrence **Dy.no. 965** dated the **12/06/2019**

(Naveen Vasishta)
Scientist 'E'

To,

The Pay & Accounts Officer
Department of Science & Technology
New Delhi.

Copy to:

1. Dr. K Palanikumar,
   Sri Sai Ram Institute of Technology,
   Sai Leo Nagar,
   West Tambaram,
   Chennai – 600 044
2. Office of the Principal Director & Audit, AGCR Building, III Floor, I.P. Estate
   New Delhi-110002.
3. Office of the Accountant General, Odisha
4. Head (NEB)/Sanction Folder
5. Cash Section/IFD/Accounts Section

(Naveen Vasishta)
Scientist 'E'

Dated: 19th June, 2020

F. No.67-13/RIFD/GOC/POLICY-4/2019-20

All India Council for Technical Education
(A Statutory body under Ministry of HRD, Govt. of India)
Nelson Mandela Marg,Vasant Kunj, New Delhi-110070 Website: www.aicte-india.org

GOC - Sanction Letter for E-Conference

To

The Director/ Principal/ Registrar
Sri Sai Ram Institute of Technology,
Sai Leo Nagar, Dharkast Road, West Tambaram,
Kanchipuram, Chennai, Tamil Nadu-600044

Subject: To organize Conference in online mode i.e. **E-Conference** under the scheme **Grant for Organizing Conference (GOC)**-reg.

Sir/ Madam,

With reference to the Sanction Letter No.67-13/RIFD/GOC/POLICY-4/2019-20 dated-11.02.2020 and proposal submitted by your institute, this is to convey that an amount of Rs. **5,00,000/- (Rupees Five lakh only)** was sanctioned and released to your institute in the month of February-2020 for organizing Conference under the scheme **Grant for Organizing Conference (GOC)**, as per details given below:

1.	Name and address of the Beneficiary Institution:	**Director/ Principal/ Registrar** Sri Sai Ram Institute of Technology, Sai Leo Nagar, Dharkast Road, West Tambaram, Kanchipuram, Chennai, Tamil Nadu-600044
2.	Permanent ID of Institute:	1-2501960
3.	Title of Conference:	INTERNATIONAL CONFERENCE ON MECHANICAL, MANUFACTURING AND MATERIALS ENGINEERING FOR SUSTAINABLE DEVELOPMENT
4.	Name of Coordinator:	Dr. Palani Kumar K.

The grant was released to the institute's account as per details given in table below:

Institute PAN No.	Bank Name	Bank Branch Name	Bank Branch Address	Account Holder Name	Account Type	Account Number	IFSC Code
AABTS7101F	ICICI BANK LTD	TAMBARAM BRANCH	Plot.No.27&29, Ayyasamy st., West Tambaram, Chennai	SRI SAI RAM INSTITUTE OF TECHNOLOGY	Current Account	139305000416	ICIC0001393

The grant was released to organize the conference in physical mode, but due to outbreak of COVID-19, the Council has decided to give option to the institutions to organize the conference in online mode only i.e. E-Conference with additional terms and conditions.

Note:

1. If your institute has organized the conference in the stipulated time, then you are intimated to submit the requisite documents along with balance amount, if any.
2. If your institute has not organized the conference after receipt of grant, then you are allowed to organize the conference in online mode i.e. E-Conference within 6 months of receipt of this letter.
3. If your institute does not want to organize the **E-conference**, then you are required to refund the complete grant along with the interest accrued thereon.
4. The grant from AICTE will be **Rs. 50,000 or 1/3rd of the total expenditure incurred** for organizing the **E-Conference**, whichever is lesser. Rest amount is required to be refunded to AICTE.

The instructions/guidelines to be followed by College/Institution

I. Limit of Funding

a. The grant from AICTE will be **Rs. 50,000** or **1/3rd of the total expenditure incurred** for organizing the **E-Conference**, whichever is lesser.
b. The balance amount should be immediately refunded to AICTE with interest accrued thereon.

There may be the following expenditure heads under **E-Conference**:

a. Certificate/Brochure and other documents designing.
b. Conference website designing & updating.
c. Honorarium to Experts/ Resource Persons.
d. Publication of proceedings.
e. Miscellaneous.

II. Submission of documents by college/institution to AICTE on receipt of this letter/grant

a. The Acceptance letter with dates for Organizing **E-Conference** should reach this office within 15 days from the date of receipt of this Sanction Letter duly signed and sealed by Coordinator and Head of the institution along with permission/clearance of Govt. of India for organizing E-Conference.

III. Maintenance of accounts

a. The Institute shall strictly follow the provisions laid down in this Letter No. F. No. 67-13/ RIFD/GOC/Policy-4/2019-20 dated: 19-06-2020 issued by this office. All correspondence related to the conference must contain this number along with year of sanction of the conference failing which correspondence will not be entertained.
b. Funds covered by this grant shall be kept separately and would not be mixed up with other funds, so as to know the amount of interest accrued on the grant.
c. The University/College/Institute shall maintain proper accounts of the expenditure out of the grant.
d. The Council or its nominee shall have the right to check/verify the account to satisfy that the fund has been utilized for the purpose for it was sanctioned.

IV. Refund of grant to AICTE (by way of a demand draft in favour of Member Secretary, AICTE, New Delhi)

a. In case the event is cancelled or institute does not want to organize the E-Conference, the fund released should be immediately refunded to AICTE with interest accrued thereon.
b. The grant shall be refunded to AICTE if the Letter of Approval (LOA) or Extension of Approval is not issued by AICTE to the institute for the academic year 2019-20.
c. The proposed/approved **E-Conference** shall be conducted within 6 months from the date of receipt of this letter. If **E-conference** is not conducted within stipulated time period, the released amount, along with interest accrued thereon, has to be necessarily returned to AICTE within one month, failing which penalty @ 18% will be levied.
d. Interest accrued on the grant released, shall be refunded to AICTE.
e. No payment is permissible against the conference **already conducted** before the receipt of grant. Institutions are liable to refund the grant if received after the conduct of conference and have no plan of conducting the **E-conference** ahead.
f. As AICTE needs adequate time for depositing the Demand Draft in the bank, the same be immediately dispatched to avoid any lapse of the validity period.

V. Submission of documents by college/institution to AICTE after conduct of conference

The following documents must be submitted to AICTE within a period of one month, from the date of conduct of Conference:

a. Feedback form in the prescribed proforma.

b. Original Statement of actual Expenditure & Utilization Certificate in the prescribed proforma duly signed by the Head of the institution and countersigned by Registrar/Finance Officer/Govt. Auditor. In case of self-financing/private institutions, Statement of actual Expenditure & Utilization Certificate are required to be audited & signed by a Charted Accountant (with membership no., full address & stamp). Photocopies of formats are enclosed.

c. Copy of the proceedings/Project completion report.

d. Attested photocopies of supporting vouchers/bills of expenditure incurred for Organizing Conference.

e. Soft copy of photographs of conference.

f. One video of 1-minute duration mentioning: (i). Introduction of the Coordinator mentioning the name and state of institute. (ii). Conference details and achievements attained through Conference (iii). How the Conference was beneficial to students, faculty and institute? (iv). Thanking message for AICTE support.

VI. General instructions

a. Any Change in the programme for holding Conference, change of Coordinator name, Venue and Date should be effected with prior approval of the Council, failing which the sanction for the grant already issued would be treated as automatically withdrawn.

b. The assets acquired wholly or substantially of the All India Council for Technical Education's grants shall not be disposed or encumbered or utilized for the purposes other than those for which it was given without proper sanction of the Council and should, at any time the Institution ceased to function, such assets shall revert to the All India Council for Technical Education.

c. The beneficiary institute will make best efforts to promote the scheme by mentioning the sponsorship/ support from AICTE, carrying the Logo of AICTE in conference and other means.

d. The grantee Institution shall observe all financial norms and guidelines as prescribed by the AICTE/ Government of India from time to time. GOI GFR rules (@https://doe.gov.in/order-circular/general-financial-rules2017-0) should be followed during utilization of grant.

Yours sincerely,

Neeraj Saxena
Advisor (IDC)

Copy forwarded for information and necessary action to:

1. **Name and Address of the Coordinator**
   Dr. Palani Kumar K.,
   Sri Sai Ram Institute of Technology,
   Sai Leo Nagar, Dharkast Road, West Tambaram,
   Kanchipuram, Chennai, Tamil Nadu-600044

2. **Guard File**

Dated- 11th February, 2020

F. No.67-13/IDC/GOC/POLICY-4/2019-20

All India Council for Technical Education
(A Statutory body under Ministry of HRD, Govt. of India)
Nelson Mandela Marg,Vasant Kunj, New Delhi-110070 Website: www.aicte-india.org

GOC – Sanction Letter

To

The Drawing and Disbursing Officer
All India Council for Technical Education
Nelson Mandela Marg, Vasant Kunj,
New Delhi-110070

SRI SAI RAM INSTITUTE OF TECHNOLOGY * SAI LEO NAGAR, CHENNAI-600044
691
16 MAR 2020

16/03/2020

Subject: Release of a sum of Rs. **5,00,000/- (Rupees Five lakh only)** as Grant-in-Aid to conduct Conference under the scheme **Grant for Organizing Conference (GOC)** for the year 2019-20 payable during the current financial year 2019-20-reg.

Sir,

With reference to the proposal submitted by the institute, this is to convey the sanction of the Council for payment of Rs. **5,00,000/- (Rupees Five lakh only)** to conduct Conference under the scheme **Grant for Organizing Conference (GOC)**, as per details given below:

1.	Name and address of the Beneficiary Institution:	**Director/ Principal/ Registrar** **Sri Sai Ram Institute of Technology, Sai Leo Nagar,** **Dharkast Road, West Tambaram, Kanchipuram,** **Chennai, Tamil Nadu-600044**
2.	Permanent ID of Institute:	**1-2501960**
3.	Title of Conference:	International Conference on Mechanical, Manufacturing and Materials Engineering for Sustainable Development
4.	Name of Coordinator:	**Dr. Palani Kumar K.**
5.	Grant-in-aid Sanctioned:	**Rs. 5,00,000/- (Rupees Five lakh only)**
6.	Amount to be released during the year 2019-20:	**Rs. 5,00,000/- (Rupees Five lakhonly)**
7.	Sanctioned grant-in-aid is debitable to:	**Major Head 601. 17 (a) Gen (GOC) Plan Head)**

Grant file

1. The amount of the Grant shall be drawn by the Drawing and Disbursing Officer, All India Council for Technical Education, New Delhi on the Grant-in-aid bill and shall be disbursed to and credited to the account of Registrar/Director/Principal of the institute through RTGS.
2. This grant-in-aid is being released in conformity with the terms & conditions as well as norms of the scheme as already communicated and also being communicated in this letter.

The instructions/guidelines to be followed by College/Institution

I. Release of funds

a. The Principal/Director of the institute and the Coordinator of the program are hereby requested to verify the correctness of the undermentioned bank account/ RTGS details submitted by them alongwith the Proposal/Estimated expenditure details, against which the grant is being released:

Institute PAN No.	Bank Name	Bank Branch Name	Bank Branch Address	Account Holder Name	Account Type	Account Number	IFSC Code
AABTS7101F	ICICI BANK LTD	TAMBARAM BRANCH	Plot.No.27&29, Ayyasamy st., West Tambaram, Chennai	SRI SAI RAM INSTITUTE OF TECHNOLOGY	Current Account	139305000416	ICIC0001393

Copy to: HOD / Teeh.

In case of any omission the same should be reported to AICTE immediately.

b. The full amount of the grant sanctioned is being released as advance to the College/ Institute.
c. This sanction is issued in exercise of the powers delegated to the Council and other terms and condition laid down in the guidelines of the scheme.

II. Limit of Funding

a. The total required fund of Rs. 15 Lakhs for organizing conference will be Rs 10 Lakhs contributed by the Institute and the remaining Rs. 5 Lakhs shall be granted by the AICTE.
b. However, the grant from AICTE will be Rs. 5 Lakhs **or** 1/3rd of the total expenditure incurred for organizing the Conference, whichever is lesser, if expenditure/ estimate/ budget for the conference is less than Rs. 15 Lakhs.

III. Submission of documents by college/institution to AICTE on receipt of grant

a. The Acceptance letter with dates for Organizing Conference should reach this office within 15 days from the date of receipt of this Sanction Letter duly signed and sealed by Coordinator and Head of the Institutions alongwith permission/clearance of Govt. of India for Organizing Conference.

IV. Maintenance of accounts

a. The Institute shall strictly follow the provisions laid down in the scheme document and sanction Letter No F. No. 67-13/ IDC/GOC/Policy-4/2019-20 dated: 11.02.2020_ issued by this office. All correspondence related to the conference must contain this number alongwith year of sanction of the conference failing which correspondence will not be entertained.
b. Funds covered by this grant shall be kept separately and would not be mixed up with other funds, so as to know the amount of interest accrued on the grant.
c. The University/College/Institute shall maintain proper accounts of the expenditure out of the grant.
d. The Council or its nominee shall have the right to check/verify the account to satisfy that the fund has been utilized for the purpose for it was sanctioned.

V. Refund of grant to AICTE (by way of a demand draft in favour of Member Secretary, AICTE, New Delhi)

a. In case the event is cancelled, the fund released should be immediately refunded to AICTE with interest accrued thereon.
b. The grant shall be refunded to AICTE if the Letter of Approval (LOA) or Extension of Approval is not issued by AICTE to the institute for the academic year 2019-20.
c. The proposed/approved Conference shall be conducted within 12 months from the date of receipt of grant. If conference is not conducted within stipulated time period, the released amount, alongwith interest accrued thereon, has to be necessarily returned to AICTE within one month, failing which penalty @ 18% will be levied.
d. Interest accrued on the grant released, shall be refunded to AICTE.
e. No payment is permissible against the conference **already conducted**. Institutions are liable to refund the grant if received after the conduct of conference and have no plan of conducting the conference ahead.
f. As AICTE needs adequate time for depositing the Demand Draft in the bank, the same be immediately dispatched to avoid any lapse of the validity period.

VI. Submission of documents by college/institution to AICTE after conduct of conference

The following documents must be submitted to AICTE within a period of one month, from the date of conduct of Conference:

a. Feedback form in the prescribed proforma

b. Original Statement of actual Expenditure & Utilization Certificate in the prescribed proforma duly signed by the Head of the institution and countersigned by Registrar/Finance Officer/Govt. Auditor. In case of self-financing/private institutions, Statement of actual Expenditure & Utilization Certificate are required to be audited & signed by a Charted Accountant (with membership no., full address & stamp). Photocopies of formats are enclosed.

c. Copy of the proceedings/Project completion report.

d. Attested photocopies of supporting vouchers/bills of expenditure incurred for Organizing Conference.

e. Soft copy of photographs of conference.

f. One video of 1-minute duration mentioning: (i). Introduction of the Coordinator mentioning the name and state of institute. (ii). Conference details and achievements attained through Conference (iii). How the Conference was beneficial to students, faculty and institute? (iv). Thanking message for AICTE support.

VII. General instructions

a. Any Change in the programme for holding Conference, change of Coordinator name, Venue and Date should be effected with prior approval of the Council, failing which the sanction for the grant already issued would be treated as automatically withdrawn.

b. The assets acquired wholly or substantially of the All India Council for Technical Education's grants shall not be disposed or encumbered or utilized for the purposes other than those for which it was given without proper sanction of the Council and should, at any time the Institution ceased to function, such assets shall revert to the All India Council for Technical Education.

c. The beneficiary institute will make best efforts to promote the scheme by mentioning the sponsorship/ support from AICTE, carrying the Logo of AICTE in conference and other means.

d. The grantee Institution shall observe all financial norms and guidelines as prescribed by the AICTE/ Government of India from time to time. GOI GFR rules (@https://doe.gov.in/order-circular/general-financial-rules2017-0) should be followed during utilization of grant.

e. This Sanction Letter may be treated as Offer Letter for all purposes.

Yours sincerely,

11/2/20

Dr. Neeraj Saxena
Advisor-II (IDC)

Copy forwarded for information and necessary action to:

1. **Name and Address of the Coordinator**
   Dr. Palani Kumar K.
   Sri Sai Ram Institute of Technology,
   Sai Leo Nagar, Dharkast Road, West Tambaram,
   Kanchipuram, Chennai, Tamil Nadu-600044

2. **The Registrar / Director / Principal**
   Sri Sai Ram Institute of Technology,
   Sai Leo Nagar, Dharkast Road, West Tambaram,
   Kanchipuram, Chennai, Tamil Nadu-600044

3. **Guard File**

All India Council for Technical Education

(A Statutory body under Ministry of HRD, Govt. of India)

Nelson Mandela Marg,Vasant Kunj, New Delhi-110070 Website: www.aicte-india.org

STTP- Sanction Letter

Ref. No. 34-65/68/RIFD/STTP/Policy-1/2018-19 Date_____

To

The Drawing and Disbursing Officer,
All India Council for Technical Education,
Nelson Mandela Marg,
Vasant Kunj, New Delhi – 110070

Sub: Release of grant for conduct of Short Term Training Programme (STTP) under AQIS 2018-19 during the financial year 2019-20– reg.

Sir,

This is to convey the sanction of the Council for payment of **Rs. 207000/- (Rupees Two Lakh Seven Thousand Only)** for conduct of Short Term Training Program as per details given below:-

1.	Name and address of the beneficiary University / Institution	SRI SAI RAM INSTITUTE OF TECHNOLOGY , SAI LEO NAGAR, DHARKAST ROAD, WEST TAMBARAM, CHENNAI.600 044 KANCHIPURAM-600044 Tamil Nadu
2.	Permanent ID of Institute	1-2501960
3.	Institute type	Unaided - Private
4.	Name of Coordinator	Dr. PALANI KUMAR K
5.	Amount sanctioned	Rs. 207000/-
6	Amount to be released	Rs. 207000/- Full & final payment
7.	Head of account	**601.15(a) Gen. Short Term Training Programme (Plan)**
8	The authorized officer in whose favour Cheque/ Demand Draft/ RTGS is to be made	REGISTRAR / DIRECTOR / PRINCIPAL
9.	Title of the programme	Energy Storage Characteristics, Surface Treatment, Durability, Sustainability and Micro Structural Evaluation of Smart and Phase change Materials and its Applications

1. The amount of the grant shall be drawn by the Drawing and Disbursing Officer, All India Council for Technical Education on the grant-in-aid bill and shall be disbursed to and credited to the Registrar/ Director/Principal of the institute through RTGS.

2. This grant-in-aid is being released in conformity with the terms & conditions as well as norms of the scheme as already communicated, and also being communicated in this letter.

3. The Principal of the Institute and the Coordinator of the Program are requested to verify the correctness of the under-mentioned Bank Account / RTGS Details submitted by them alongwith the proposals, in which the grant is being released:-

Institute PAN No.	Bank Name	Bank Branch Name	Bank Branch Address	Account Holder Name	Account Type	Account Number	IFSC Code
AABTS7101F	ICICI BANK LTD	TAMBARAM BRANCH	Plot.No.27&29, Ayyasamy st., West Tambaram, Chennai.45	SRI SAI RAM INSTITUTE OF TECHNOLOGY	Current Account	139305000416	ICIC0001393

Instructions/Guidelines to be followed by the University/Institution

I. Disbursement of funds to University/Institutions

a. The full amount of the grant sanctioned is being released as advance to the University/Institute.

b. The amount spent by the institute on the conduct of STTP shall be adjusted on the basis of utilization certificate and detailed expenditure statement submitted by the University/Institution on the prescribed format along with other mandatory documents viz feedback form, copy of proceedings and completion report etc.

c. The above said amount of grant shall be refunded back to AICTE if the Letter of Approval (LOA) / Extension of Approval (EOA) is not issued by AICTE to the institute for the academic year 2019-20.

II Maintenance of Accounts

a. The Institute shall strictly follow the provisions laid down in the scheme document as available on the portal.

b. Funds covered by this grant shall be kept separately and would not be mixed up with other funds so as to know the amount of interest accrued on the grant.

c. The University/College/Institute shall maintain proper accounts of the expenditure out of the grants, which shall be utilized only on approved items of expenditure.

d. The grant is intended to cover items of expenditure connected with the Short Term Training Programme such as Boarding & Lodging to the participants, TA to outstation participants, Honorarium to Course Coordinator, reading material to participants, Honorarium to resource persons, TA/DA to resource persons including two outstations resource persons & working expenses (reprographic services, postage, transport, daily wages, tea/coffee etc.

III. Conduct of test and issuance of certificate

A test shall be conducted by Program Evaluation Committee (PEC) at the end of the program and the certificates shall be issued to those participants who have attended the program and have qualified in the test.

IV. Submission of Documents by the University/Institutions to AICTE

a. The following mandatory relevant documents are required to be submitted by the University/Institution within one month of the completion of the program:-

(i) Original Statement of actual expenditure & Utilization Certificate in the prescribed proforma duly signed by the Head of the institution and countersigned by Registrar/Finance Officer/Govt. Auditor. In case of self-financing/private institutions, Statement of actual Expenditure & Utilization Certificate are required to be audited & signed and sealed by a Chartered Accountant endorsing the membership number and complete postal address. Format for the same is available on AICTE web portal.

The University/Institution is not required to submit bills/vouchers/invoices etc for the expenditure incurred out of recurring grants. However, such copies of bills/vouchers/invoices shall be digitized by respective institutions receiving grant and uploaded scanned copies of such bills/vouchers/invoices etc on the portal for availability and view at any point of time.

(ii) Feedback form in the prescribed proforma.

(iii) Copy of the proceedings and completion report.

(iv) List of candidates who have successfully completed the program on the basis of the test conducted by Program Evaluation Committee (PEC).

(v) Report submitted by Program Evaluation Committee (PEC).

b. The amount of the grant shall be adjusted on submission of utilization certificate & detailed expenditure statement by University/Institution. On receipt of these documents, the total amount of financial assistance, admissible as per the norms, shall be worked out and grant-in-aid adjusted.

V. General instructions

a. **Preferably 10% of the participants may be industry professionals deputed by industry. Further, not more than 2 participants shall be from the host institution/group of institutions.**

b. **Money to be reimbursed on the grant (for any reasons to include unspent amount, interest , penalty if imposed) shall be refunded back to AICTE in the form of Demand Draft payable to Member Secretary, AICTE, New Delhi.**

c. **As AICTE needs adequate time for depositing the Demand Draft in the bank, the same be immediately dispatched to avoid any lapse of the validity period.**

d. **The STTP is a residential program of a duration of six days with minimum 40 participants.** The approved STTP shall be conducted within three months from the date of release of funds.

e. **If programme is not conducted in the period of three months of the issuance of this Sanction Order, the released amount, alongwith interest accrued thereon, has to be necessarily returned back to AICTE within a month.**

f. The expenditure under the Heads **'Honorarium to Course Coordinator' and 'Honorarium to Resource Persons'** shall not exceed **1% & 20% respectively** of

the total sanctioned grant for the Programme. However, overall expenditure shall not exceed the funds sanctioned for the Programme.

g. Any extra money required to complete the programme must be borne by the institute from their own resources. But the quality of the activities should not be compromised.

h. Any unavoidable circumstantial change in the program with respect to name of Project Coordinator, Venue and date for organizing STTP would mandatorily require prior approval of the Council. All such requests should be addressed to AICTE, in advance, recording the specific reasons for proposed changes, failing which the offer for the grant already issued would be treated as automatically withdrawn and the financial assistance released in favour of the beneficiary institution shall be refunded immediately to the Council. Kindly mention the File No. 34-65/68/RIFD/STTP/Policy-1/2018-19 in your future correspondence.

i. **Program Evaluation Committee (PEC)** is required to be constituted at institutional level. The constitution of the PEC shall be as under:

   (i) Principal/Director/Registrar of the institution (Chairperson).
   (ii) Coordinator of the program (Member Secretary).
   (iii) Two HoDs and one subject expert (members).

   The members of the said PEC shall not be below the rank of Associate Professor. A test shall be conducted by Program Evaluation Committee (PEC) at the end of the program and the certificates shall be issued to those participants who have attended the program and have qualified in the test. The minutes of the meetings, along with PEC report, are to be submitted to the Council at end of the program along with other mandatory documents.

j. **GoI GFR rules** (@https://doe.gov.in/order-circular/general-financial-rules2017-0) should be followed during utilization of grant.

k. This Sanction Order may be treated as Offer Letter for all purposes.

NOTE:- Any deviation from the above will invoke serious action against the Institute.

Yours sincerely,

(Dileep N Malkhede)
Advisor-I (RIFD)
12 DEC 2019

Copy forwarded for information and necessary action to: -

1. **Name and Address of the Coordinator**
   Dr. PALANI KUMAR K
   SRI SAI RAM INSTITUTE OF TECHNOLOGY
   SAI LEO NAGAR, DHARKAST ROAD, WEST TAMBARAM, CHENNAI.600 044
   CHENNAI. 600044 Tamil Nadu
2. **The Registrar / Director / Principal**
   SRI SAI RAM INSTITUTE OF TECHNOLOGY
   SAI LEO NAGAR, DHARKAST ROAD, WEST TAMBARAM, CHENNAI.600 044
   CHENNAI. 600044 Tamil Nadu
3. **Guard File**

Phone : 011-26131576, 77, 78, 80
Website : www.aicte-india.org

सत्यमेव जयते

अखिल भारतीय तकनीकी शिक्षा परिषद्
(भारत सरकार का एक सांविधिक निकाय)
मानव संसाधन विकास मंत्रालय, भारत सरकार
नेल्सन मंडेला मार्ग, नई दिल्ली-110067
ALL INDIA COUNCIL FOR TECHNICAL EDUCATION
(A Statutory Body of the Govt. of India)
Ministry of Human Resource Development, Govt. of India
Nelson Mandela Marg, New Delhi-110067

Col. B. Venkat
Director (FDC)
E-mail: director.fdc@aicte-india.org
Mob. No. 8130255472

25 June 2020

Sub:-For information of AICTE approved institutes which have received grants for conducting STTP's/FDP's under AQIS 2018-19.

Sir,

This is in reference to grants released by AICTE under AQIS 2018-19 for conduct of STTP's/FDPs. It is being observed that due to present circumstances of ongoing pandemic of COVID-19, most of Institutes are facing difficulties in organizing and conducting STTP's. This office has received a number of requests from various institute to allow on line method of conducting STTP/FDP to complete their commitments.

In this regard, it is to inform that all such institutes, which have already received grants for conducting STTP's/FDPs through prevailing contact mode, are **allowed to conduct STTP's through online mode subject to following conditions:**

(i) The Institute will be allowed to adjust the grants received for STTP at following rates:-

a.	Honorarium for Coordinator	Rs. 5000.00
b.	Honorarium to experts	Rs. 75000.00
c.	Provision for payment to lab attendant engaged during lab practices	Rs. 3000.00
d.	miscellaneous charge	Rs. 10000.00
	Total for each STTP's	**Rs 93000.00**

(ii) The Institute will conduct more than one STTP's in multiples of Rs. 93000.00 within the total grant received by it and shall return the balance unspent amount to AICTE.

e.g.

if an Institute has received grant for STTP,	=Rs 3,00,000.00
Cost of three STTP	3x93000= Rs. 279000.00
Balance	**= Rs. 21,000.00**

The institute will return the balance unspent amount of Rs.21,000.00 alongwith interest earned on such amounts to AICTE while submitting UC for adjustment of accounts for keeping its eligibility for receiving grants in next AQIS.

सूचना का अधिकार

(iii) The institute will conduct all three STTP's as explained above on the same topic which has been approved by AICTE while releasing the grants.

(iv) Firm dates for each program will be intimated to AICTE beforehand.

On similar lines FDP (02 week program) to be conducted online has the following approval totaling to Rs. 1,86,000.00.

a.	Honorarium for Coordinator	Rs. 5000.00
b.	Honorarium to experts	Rs. 1,68,000.00
c.	Provision for payment to lab attendant engaged during lab practices	Rs. 3000.00
d.	miscellaneous charge	Rs. 10000.00
	Total for each FDPs	**Rs 1,86,000.00**

The conducting of FDP's (two weeks program) shall be subjected to the similar conditions (i) to (iv) given above for conduct STTP courses, except rates of Honorarium to experts.

You are requested to acknowledge receipt of above guidelines and convey your consent if your institute is ready for conducting the STTP through online format on conditions explained above.

It is once again reiterated that online conduct of FDP & STTP will be on explicit permission of AICTE.

Yours sincerely,

25 June 2020

Director (FDC)

3.2.1 Workshops/Seminars Conducted on Intellectual Property Rights (IPR) and Industry-Academia Innovative practices during the year

Title of Workshop/Seminar	Name of the Dept.	Date(s)
IOT and Robotics	ECE	5.8.2019-10.8.2019
Data structures	ECE	16.8.2019
Cloud computing	ECE	18.7.2019
Digital Electronics	ECE	30.8.2019
Robotics and Embedded Systems	ECE	9.9.2019-10.9.2019
Verilog HDL	ECE	9.1.2020
Skill Development program on testing and servicing measuring equipments for technical staff members	ECE	10.1.2020-11.1.2020
Workshop on PCB design using Orcad Pspice and applications of MATLAB	ECE	20.1.2020 to 25.01.2020
FDP on Internet of Things	ECE	6.2.2020
Webinar on Scope of Industrial Automation and Digital Marketing	ECE	02.05.2020
Webinar on Probable Impacts of Pandemic Crisis on Small and Medium Business in India	ECE	14.05.2020
Enchancing the Skill for Interviews	ECE	11.05.2020
The magic Word ATTITUDE	ECE	29.05.2020
The insights and focus on higher studies	ECE	23.5.2020
A Pathway to Employability skills	ECE	30.05.2020
Awareness program on Government Jobs	ECE	19.02.2020
Paper presentation on Social Innovation & Entrepreneurship	ECE	20.12.2019
FDP on Computer and Communication Networks	ECE	21.05.2020-27.05.2020
National conference on advanced research and innovations in information and communication engineering	ECE	6.3.2020
Webinar on A day in the life of a Red Hat Solution Architect	CSE	02.07.2019
Seminar On “DATA ANALYTICS”	CSE	8/8/2019
FDP on Emerging trends of cloud computing and Industry Adaptation	CSE	16/07/2019 &17/07/2019
Industrial Oriented training by CSS Corp	CSE	06/08/2019 to 22/08/2019
FDP on "Machine Learning using Python"	CSE	12/12/2019 & 13/12/2019
Red Hat Certified value added course(RHCSA)	CSE	16/12/2019 to 20/12/2019
International seminar on “Industry 4.0”	CSE	8/23/2019
seminar on Higher Education from Education Matters	CSE	7/12/2019

workshop on Cloud Computing with AZURE	CSE	11/07/2019 to 13/07/2019
Workshop on “Java Fundamentals”	CSE	04/07/2019 to 06/07/2019
Electric Vehicles	EEE	12.09.19
Innovation & Design Thinking	EEE	16.12.19
Three days Workshop on Proteus and Arduino	EEE	17.02.2020 to 19.02.2020
Design, Control & Application of Autonomous Vehicles” (Motivation towards Technology Development in Industry 4.0)	EEE	13.05.2020
An Introduction to E-mobility	EEE	16.05.2020
Machine vision and Industrial automation	EEE	06.06.2020
HVDC and the changing world - Reskilling the new normal	EEE	07.06.2020
Role Of Machine Learning And Optimization Algorithm In Electrical Engineering	EEE	13.06.2020 & 14.06.2020
Protective Device for Industry and Utility	EEE	14.06.2020
seminar on 'DURABILITY OF CONCRETE '	CIVIL	03.10.2019
webinar on good practices in construction	CIVIL	11.05.2020
webinar on career guidance for engineering and medicine	CIVIL	18.05.2020
Guest lecture on BIM Modeling	CIVIL	07.08.2019
National Conference on Recent Innovation in Civil Engineering	CIVIL	13.03.2020
Webminar on Civil Engineering Future oppurtunities	CIVIL	26.05.2020
Workshop on Total station	CIVIL	02.03.2020 to 05.03.2020
one day seminar on “Quality In Engineering”	MECH	05.08.2019
one day seminar on “Industry 4.0”	MECH	13.08.2019
one day Workshop on “Recent Trends in Automobile Technology”	MECH	12.07.2019
one day Workshop on “Awareness of Entrepreneurship Development”	MECH	19.12.2019.
Six days FDP Program on “Finite Element Analysis”	MECH	18.11.2019 to 23.11.2019.
one day seminar on “Fundamentals of Automotive Brake Friction Materials”	MECH	10.01.2020.
one day seminar on “Brake System Design and Latest Advancements”	MECH	11.01.2020
one day seminar on “Engineering and Management”	MECH	21.01.2020
SEVEN DAYS FDP ON “ENGINEERING AND MANAGEMENT TEACHING PEDAGOGY AN INDUSTRY PERSPECTIVE”	MECH	11.05.2020 TO 16.05.2020
WEBINAR ON Automotive Mechatronics – Global Trends & Opportunities	MECH	5/24/2020

Full Stack Java Web development	IT	18.7.19
Next Generation Computing	IT	18.7.19
Empower yourself on data computing	IT	9.8.19
VM ware IT Academy	IT	4.9.19
Deep Learning Techniques in Healthcare Applications in association	IT	16.3.20
ADVANCED JAVA PROGRAMMING	IT	5.8.19 to 7.8.19
Skill training on technology and soft skills	IT	5.8.19 to 22.8.19
Social innovation and entrepreneurship 2020	IT	6.1.20
Machine learning using open source tools	IT	13.2.20,14.2.20
International Conference	MBA	25.02.2020-26.02.2019
One Week online Faculty Development Programme on "Engineering and Management Teaching Pedagogy – An Industry Perspective"	MBA	11.05.2020 - 16.05.2020
Webinar on "Research and Post Doctoral Fellowship Opportunities in Foreign Universities"	MBA	29.05.2020
2 Weeks Online Refresher Course for Management and Commerce Faculty On E-learning Resources & Teaching Methodology in Education & Research Development	MBA	27 .04.2020 - 9.05.2020
Seminar On Advertising Strategies The Speaker Was Mr.Ramesh Prabha Chairman & Managing Director Galaxy Group Of Companies.	MBA	26.02.2020
Internet of things using Raspberry Pi	IT	26/6/2019 to 28/6/2019
Salesforce Platform Developer 1	IT	12/9/2019 – 14/9/2019
Online FDP on Computer and Communication Network	IT	21.5.2020 to 27.5.2020
Program on IPR	ECE	11.05.2020
Program on IPR	EEE	02.07.2019-03.07.2019
Program on IPR	CSE	06.09.2019 – 07.09.2019
Program on IPR	IT	26.12.2019-27.12.2019

Program on IPR	MECH	26.06.2019-27.06.2019
Program on IPR	CIVIL	16.04.2020

D **OTICS**
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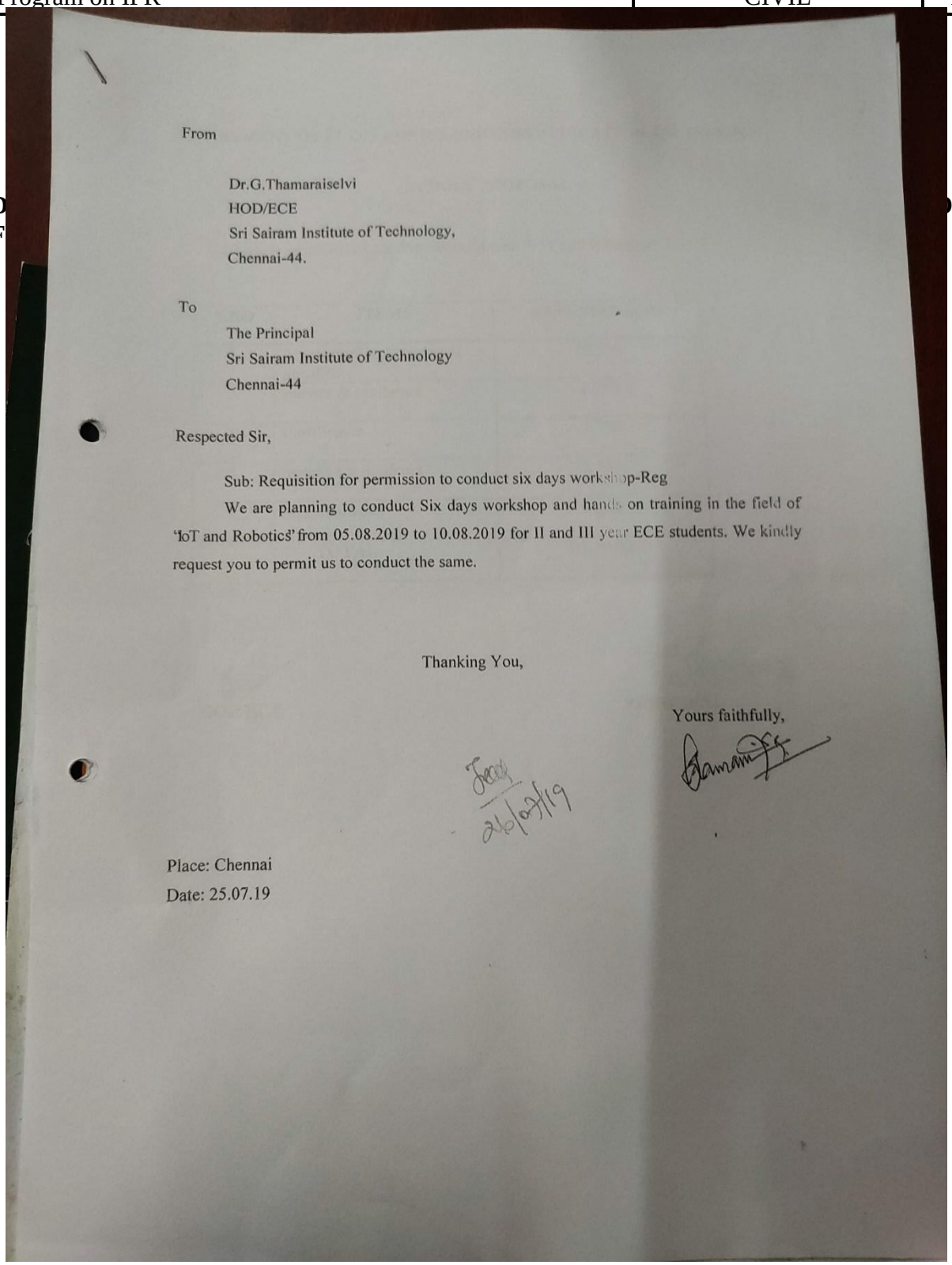


From

Dr.G.Thamaraiselvi
HOD/ECE
Sri Sairam Institute of Technology,
Chennai-44.

To

The Principal
Sri Sairam Institute of Technology
Chennai-44

Respected Sir,

Sub: Requisition for permission to conduct six days workshop-Reg

We are planning to conduct Six days workshop and hands on training in the field of 'IoT and Robotics' from 05.08.2019 to 10.08.2019 for II and III year ECE students. We kindly request you to permit us to conduct the same.

Thanking You,

Yours faithfully,

26/07/19

Place: Chennai
Date: 25.07.19

SRI SAIRAM INSTITUTE OF TECHNOLOGY, CHENNAI - 44

Admn. Office, T.Nagar, Chennai – 17.

No. 19/SIT/TBM/WORKSHOP/2019 Dated: 29.07.2019

Sub: SIT –TBM – Admn. – Permitted to conduct Workshop and Hands on training on "IoT and Robotics" for Second and Third year students of ECE Department – Orders issued.

Ref: Letter No. 294/S2/SSIT, Ch-44/2019 dated 27.07.2019 from the Principal.

ORDER:

The Principal has been permitted to organize Six Days Workshop and Hands on Training in the field of **"IoT and Robotics" for Second and Third Year Students of ECE Department** in our College Campus from **05.08.19 to 10.08.2019.**

Sanction has been accorded for a sum of **Rs. 20,000/- (Rupees Twenty Thousand Only)** towards Expenditure for this purpose. The amount should be released from the **'Department Association Fund'**, as requested in the reference cited.

For SRI SAIRAM INSTITUTE OF TECHNOLOGY,
(Sd/xxxxxxxx)
CHIEF EXECUTIVE OFFICER

/ By order of Chief Executive Officer /

EXECUTIVE DIRECTOR

To:
The Principal,
Sri Sairam Institute of Technology,
Chennai -44.

Copy to:
Accounts Section

Sairam

Sri SAI RAM INSTITUTE OF TECHNOLOGY

Accredited by NBA and NAAC "A+"
ISO 9001:2015 Certified and MHRD NIRF ranked institution
West Tambaram, Chennai - 600044.

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

Cordially invites you for

IEI Sponsored Six Days Workshop on

IoT & ROBOTICS

from 05th August 2019 to 10th August 2019

Inauguration

on 05th August 2019, at 9.30 am @ Smart Class Room

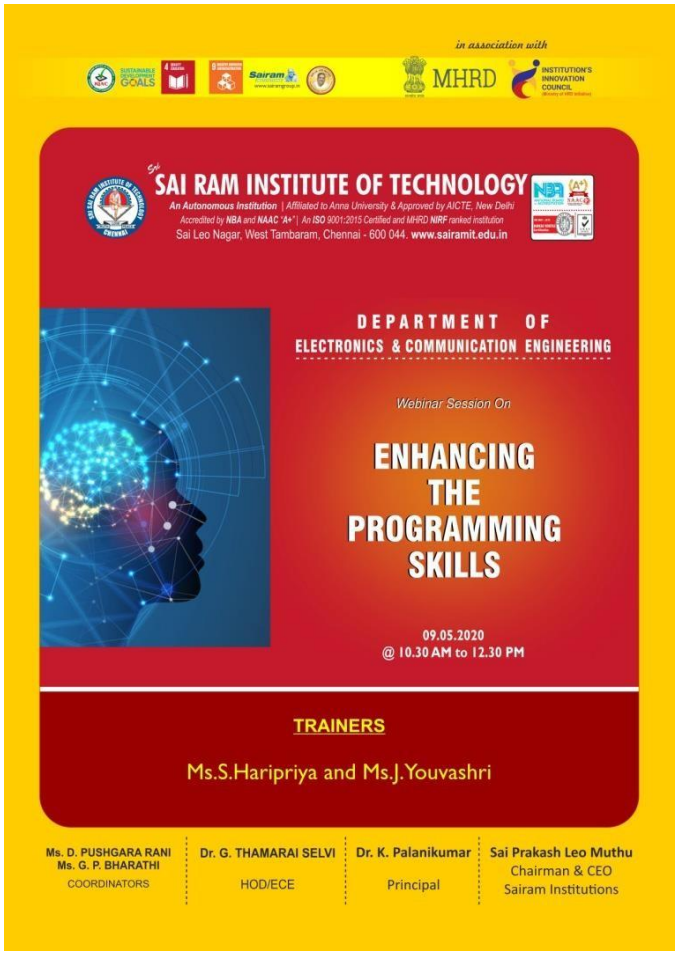
Mr. T. KARTHIKEYAN

Chief Operating Officer
EPR Labs, Chennai.

Ms. D. Pushgara Rani CO-ORDINATOR	Dr. G. Thamarai Selvi HOD/ECE	Dr. K. Palanikumar Principal	Sai Prakash Leomuthu CEO

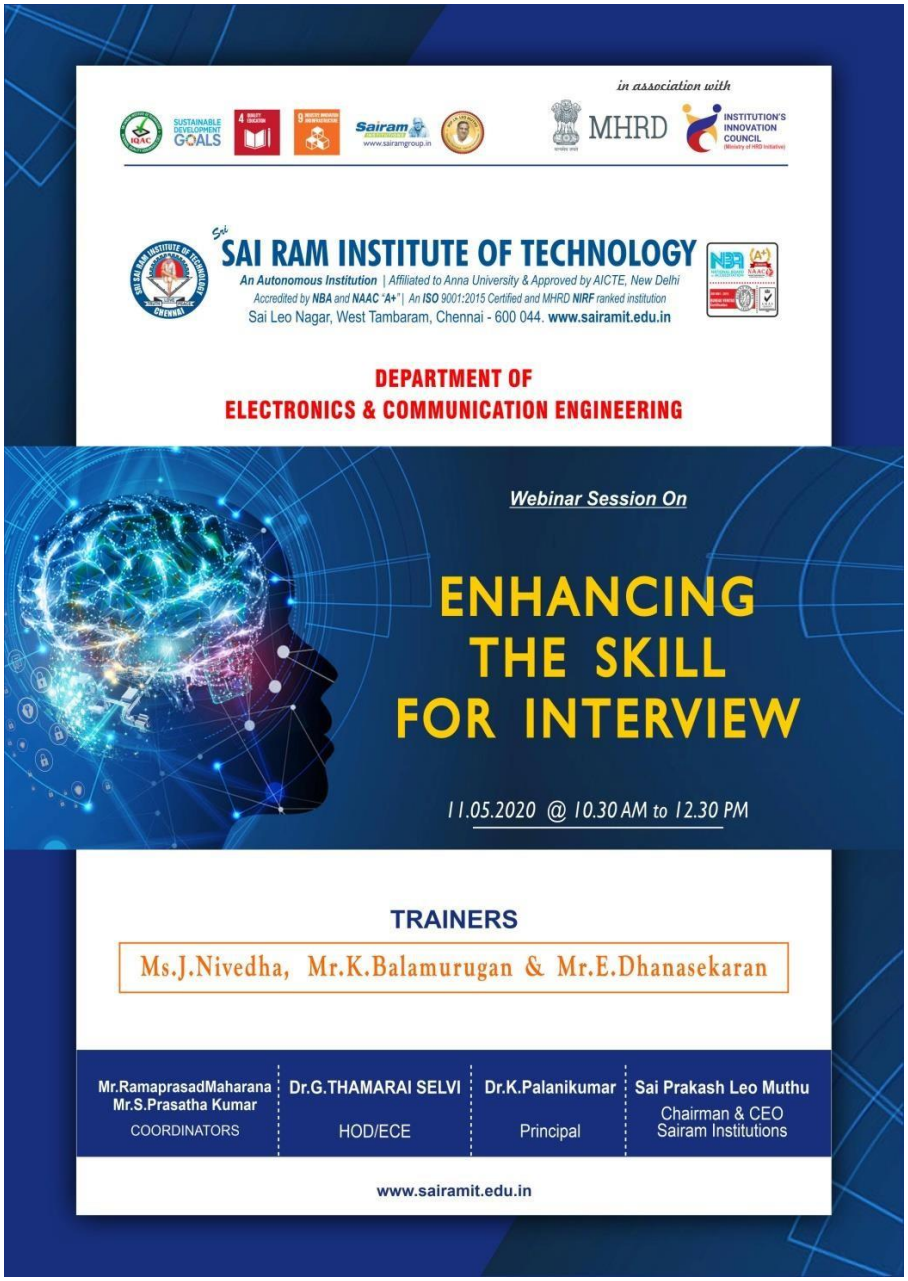
www.sairamit.edu.in

DEPARTMENT OF ECE CONDUCTED WEBINAR ON ENCHANCING THE PROGRAMMING SKILLS ON 09/05/2020



DEPARTMENT OF ECE CONDUCTED WEBINAR ON THE MAGIC WORD ATTITUDE ON 29/05/2020

DEPARTMENT OF ECE CONDUCTED WEBINAR ON ENCHNCING THE SKILLS FOR INTERVIEW ON 11/05/2020



DEPARTMENT OF ECE CONDUCTED WEBINAR ON PROBAABLE IMPACTS OF PANDAMIC CRISISON SMALL AND MEDIUM BUSINESS IN INDIA ON 14/05/2020

GUEST LECTURE ON ENVIRONMENTAL PROTECTION ON 24/01/2020

Sairam INSTITUTIONS

Sri SAI RAM INSTITUTE OF TECHNOLOGY

Accredited by NBA and NAAC "A+"
ISO 9001:2015 Certified and MHRD NIRF ranked Institution

DEPARTMENT OF CIVIL ENGINEERING

Cordially invite you for a Guest Lecture on

ENVIRONMENTAL PROTECTION

on 24th January 2020,
@ 11.00 am at Smart Class Room (Ground Floor SSIT)

Chief Guest

Dr. M. VELAN

Former Advisor (Environment),
NLC India Ltd, Tamilnadu, India.

has kindly consented to be chief guest and to deliver the lecture

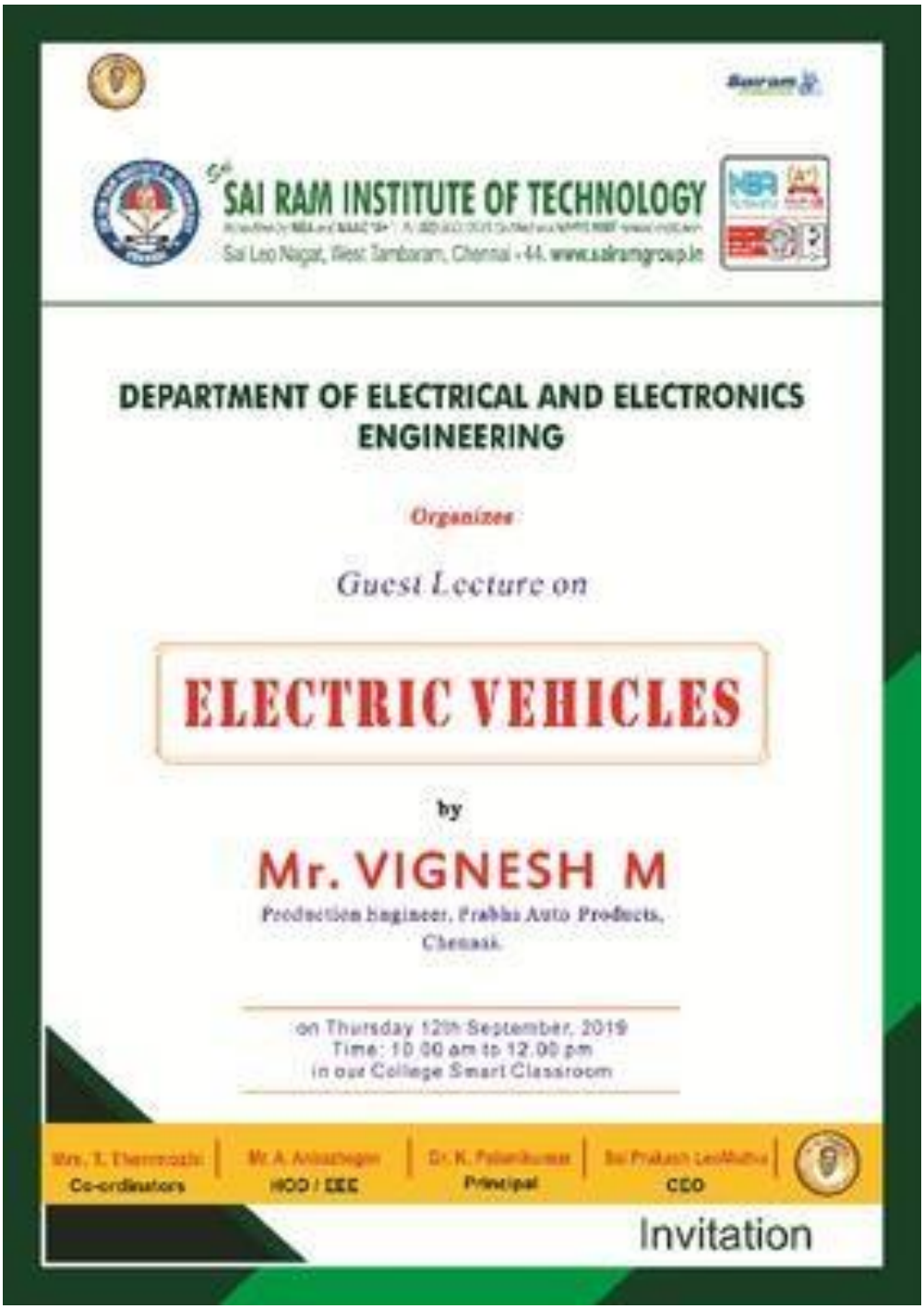
Mr. SIVAGUR C Mr. DILIPKUMAR G Organiser / Civil	Mrs. RAMYA HOD / Civil	Dr. K. PALANIKUMAR PRINCIPAL	SAI PRAKASH LEOMUTHU CEO

WEBINAR ON GOOD PRACTICES ON CONSTRUCTION ON 11/05/2020

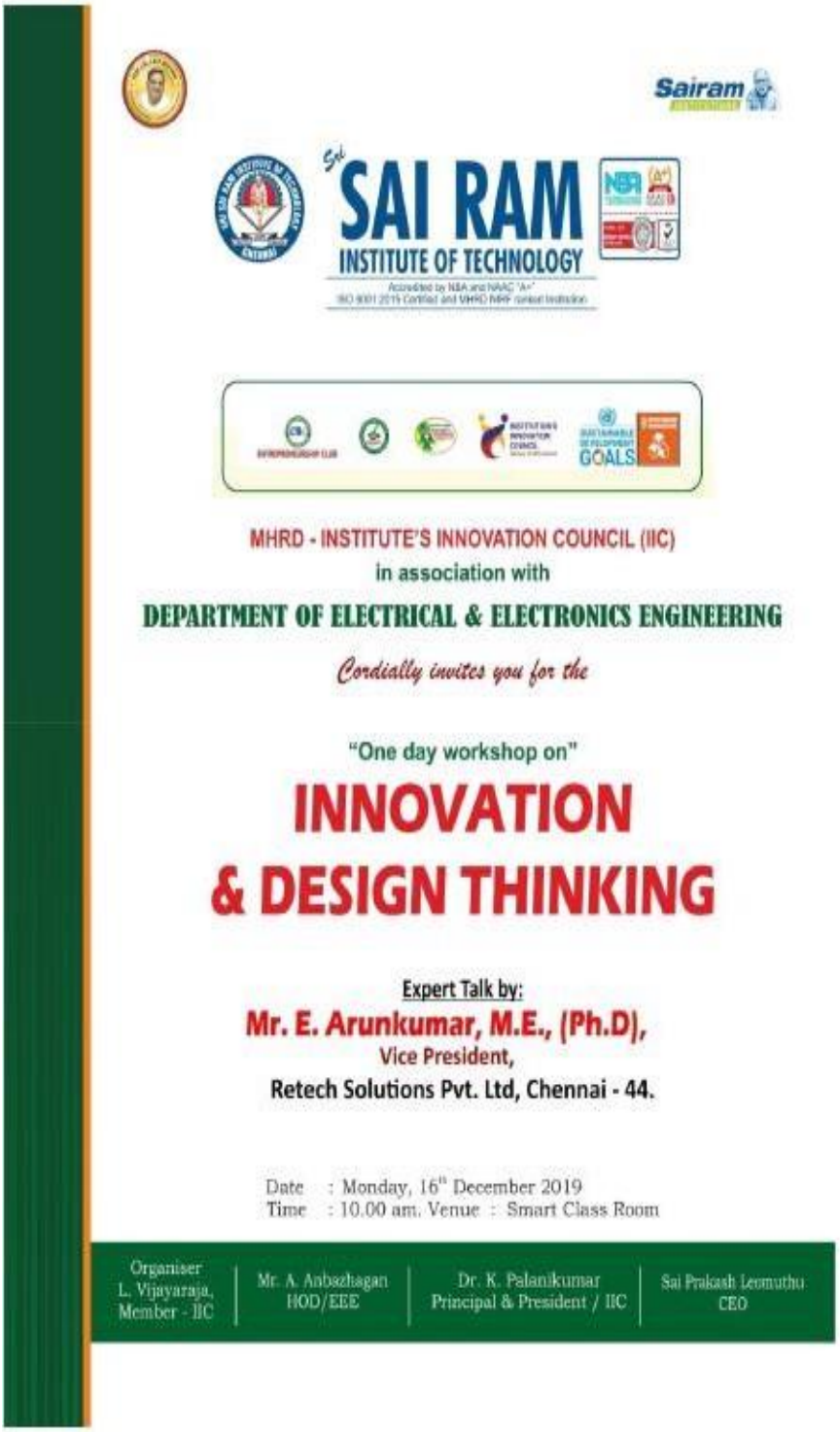
WEBINAR ON CARRIER GUIDANCE FOR ENGINEERING AND MEDICINE ON 18/05/2020

NATIONAL CONFERENCE ON RECENT INNOVATIONS IN CIVIL ENGINEERING ON 13/03/2020

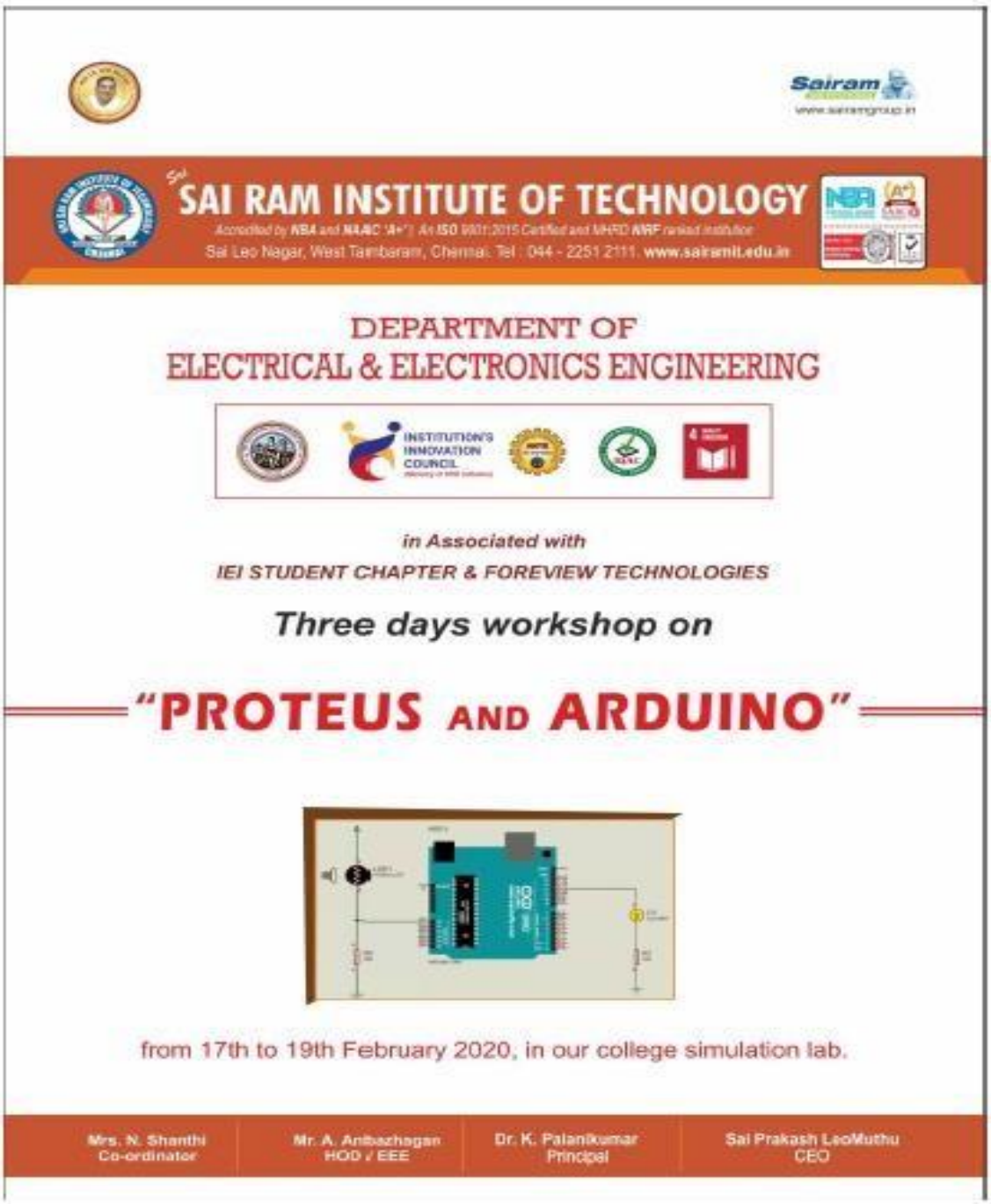
Department of EEE organised one day Technical Lecture on " Electric Vehicles" on 12.09.19 for II Year EEE students inaugurated by Mr.M.Vignesh,Production Engineer, Prabha Auto Products Pvt.,Chennai



One day workshop on "Innovation and Design thinking" dated : 16.12.2019, expert talk by Mr. E. Arunkumar, VP, Retech Solutions Pvt. Ltd

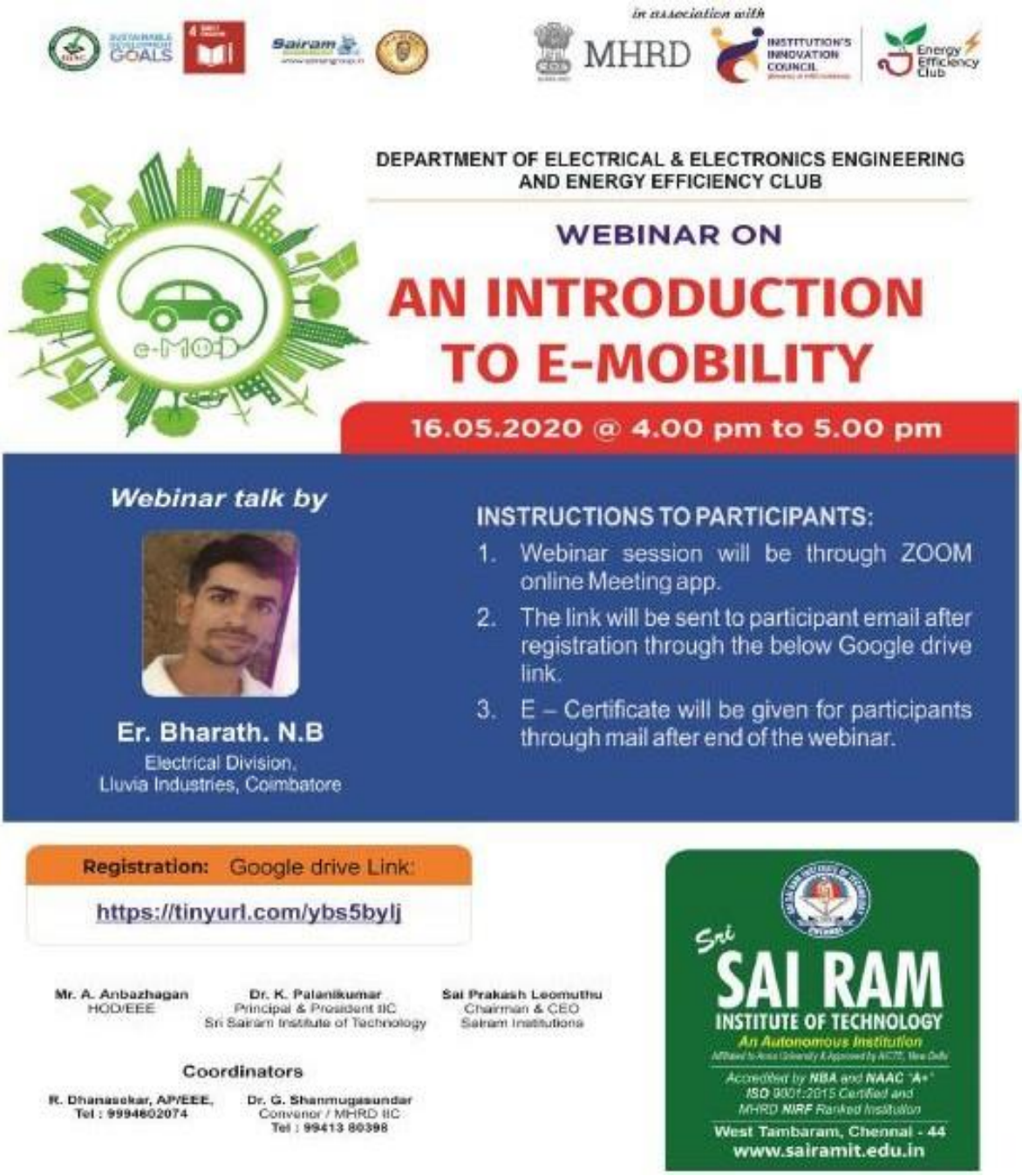


Department of EEE in association with IEI Students Chapter and Foreview Technologies organized 3 days workshop on "PROTEUS and ARDUINO" from 17th to 19th Feb 2020



Department of EEE conducted a Webinar on "Design, Control & Application of Autonomous Vehicles" (Motivation towards Technology Development in Industry 4.0) in association with MHRD and IIC on 13.05.2020 for our students.

Department of EEE conducted a Webinar on "An Introduction to E-Mobility" in association with MHRD, IIC and Energy Efficiency Club on 16.05.2020 for our students



Department of EEE conducted a Webinar on "Machine Vision and Industrial Automation" in association with IEEE on 06.06.2020 for our students.

Department of EEE conducted a Webinar on "HVDC & THE CHANGING WORLD – RESKILLING THE NEW NORMAL" on 07.06.2020 for our students

Department of EEE conducted a Webinar Series on "ROLE OF MACHINE LEARNING AND OPTIMIZATION ALGORITHM IN ELECTRICAL ENGINEERING" in association with ISTE Chapter on 13.06.2020 and 14.06.2020 for our students

Department of EEE conducted a Webinar on "Protective Device for Industry and Utility" in association with IEI on 14.06.2020 for faculties and students of various Engineering Colleges.

Department of EEE conducted a IEEE Webinar on "Recent trends in Power system Protection & Industrial Automation"

SKILL TRAINING ON TECHNOLOGY AND SOFT SKILLS 05/08/2019 TO 22/08/2019

Implementation partner

CSS CORP

Sairam INSTITUTIONS

ICT ACADEMY

Sri SAI RAM INSTITUTE OF TECHNOLOGY

Accredited by NBA and NAAC "A+" | An ISO 9001:2015 Certified and MHRD NIRF ranked institution

Sai Leo Nagar, West Tambaram, Chennai. Tel : 044 - 2251 2111. www.sairamit.edu.in

Department of Information Technology

In association with **CSS Corp & ICT Academy**

cordially invites you for the

SKILL TRAINING ON TECHNOLOGY AND SOFT SKILLS

05.08.2019 to 22.08.2019

Inaugural on Monday, 5th August, 2019 at 10:00 am
in our College Seminar Hall

Chief Guests

Mr. G. SARAVANAN
Head-Marketing & Products
ICT Academy

&

Ms. PRATHEEKSHA JAYAPRIYADHARSAN
Mentor - CSS Corp

P. SHARMILA J. ILAKKIYA Co-ordinators	Dr. V. BRINDHA DEVI HOD / IT	Dr. K. PALANIKUMAR Principal	SAI PRAKASH LEOMUTHU Chief Executive Officer

www.sairamgroup.in

WEBINAR on "A day in the life of a Red Hat Solution Architect" 2.7.19.

Workshop on "Java Fundamentals" for II CSE by Mr.Anand Kumar,Senior Technology Analyst,Infosys Technologies from 4.7.19 to 6.7.19.

Department of CSE in association with The Institution of Engineers (India) organized a 3 days workshop on Cloud Computing with AZURE From 11.07.2019 to 13.07.2019.

Department of CSE organised a seminar on Higher Education from Education Matters on 12.7.19.

CSS Corp in association with ICTACT conducted industrial oriented training for IV yr students from 6/8/19 to 22/8/19.

Department of Computer Science and Engineering Organized Seminar On "DATA ANALYSTICS"on 08.08.2019.

International seminar on "Industry 4.0" by Dr. Anand Nayyar Professor, Researcher and Scientist in Graduate School, Duy Tan University, Da Nang, Viet Nam in our VRR Auditorium on 23.8.2019.

Department of CSE conducted Five days value added Red Hat Certified System Administrator (RHCSA) course From 16.12.2019 to 20.12.2019.

Dept. of CSE ,organised a Guest lecture on Artificial intelligence and Robotics by Mr. Ganapathy EPR Labs for III CSE Students on 10.2.20

3.2.2 Awards for Innovation won by Institution/Teachers/Research scholars/Students during the year

Title of the innovation	Name of Awardee	Awarding Agency	Date of award	Category
ARIIA (Atal Ranking of Institutions for Innovation Achievements) - Ranked in 6 to 25	Sri Rai Ram Institute of Technology	MOE- Govt.of.India	18.08.2020	National
Best performing MOE-Instituion's Innovation Council (IIC)	Sri Rai Ram Institute of Technology	MOE- Govt.of.India	28.09.2020	National
ISTE TN Section Appreciation Award for mobilizing Maximum Number of Faculty Life	Sri Rai Ram Institute of Technology	ISTE	2019	National
UTHAMA ACHARYA PURASKAR- A national award	Dr.B.SREEDEVI	lions club Vijayawada	2019	National
Best Faculty Advisor Award	Dr.B.SREEDEVI	Institution Engineers India	2019	National
Best teacher award	Ms.D.ROOPA	Madras library association	2019	National
Best Women Faculty Award	Ms.D.RAJALAKSHMI	DK International Research Foundation	2019	National
Elite	DR. T. MUTHAMIZHAN	NPTEL	2019	National
Successfully	RAJESH	NPTEL	2019	National

completed				
Successfully completed	RATHNAVEL P	NPTEL	2019	National
Elite	ASHWIN SAILESH	NPTEL	2019	National
Successfully completed	ASHWIN SAILESH	NPTEL	2019	National
Elite+Silver	SHANTHI.N	NPTEL	2019	National
Elite	VENKATASUBRAMANIAN.M.A	NPTEL	2019	National
Successfully completed	SUGANTHI	NPTEL	2019	National
Successfully completed	S.SWEETLINE SHAMINI	NPTEL	2019	National
Successfully completed	A.MANISH SENTHIL CHAKRAVARTHY	NPTEL	2019	National
Elite	C R SENTHILNATHAN	NPTEL	2019	National
Elite+Silver	MAHESWARI.E	NPTEL	2019	National
Elite	B.ANUSHA	NPTEL	2019	National
Elite	DEEPA.C	NPTEL	2019	National

Elite	G.EZHILARASI	NPTEL	2019	National
Elite	V.SELVAKUMAR	NPTEL	2019	National
Elite	T. ARIVAZHAGAN	NPTEL	2019	National
Successfully completed	V.RAMYA	NPTEL	2019	National
Elite+Silver	SURENDERANATH S	NPTEL	2019	National
Elite	NIKHIL R	NPTEL	2019	National
Elite+Silver	A.SASIKALA	NPTEL	2019	National
Elite	GOKULANAND G	NPTEL	2019	National
Elite	V K RAGESH	NPTEL	2019	National
Elite+Silver	DHARANIDHARAN M	NPTEL	2019	National
Elite	DHANASEKAR R	NPTEL	2019	National
Elite	SRIRAM M	NPTEL	2019	National

Elite	S.SRINIVAS	NPTEL	2019	National
Elite+Silver	YUVARAJ V	NPTEL	2019	National
Elite	S.SIVARAJESWARI	NPTEL	2019	National
Elite+Silver	RAZMAH.M	NPTEL	2019	National
Elite	THENMOZHI T	NPTEL	2019	National
Elite	SIVASANKARI KANNAN	NPTEL	2019	National
Elite+Silver	MURUGAN M	NPTEL	2019	National
Successfully completed	G.SHANMUGASUNDAR	NPTEL	2019	National
Successfully completed	KARTHIKEYAN E	NPTEL	2019	National
Elite	S.HELEN ROSELIN GRACY	NPTEL	2019	National
Successfully completed	SUJEETHA	NPTEL	2019	National
Successfully	J GHAYATHRI	NPTEL	2019	National

completed				
Successfully completed	K.P. MADHUVANTHI	NPTEL	2019	National
Elite	DINESH. S	NPTEL	2019	National
Successfully completed	GANESH	NPTEL	2019	National
Successfully completed	C JAGADEESH	NPTEL	2019	National
Successfully completed	AUSTIN MANUELRAJ P	NPTEL	2019	National
Elite	ABINAYA K	NPTEL	2019	National
Successfully completed	GOWRESHANHARAN S	NPTEL	2019	National
Successfully completed	SARAVANAN S	NPTEL	2019	National
Elite	NANTHINI K	NPTEL	2019	National
Successfully completed	REKHA K	NPTEL	2019	National
Elite	DHANUSH SRINIVASAN	NPTEL	2019	National
Elite	SARANYA J	NPTEL	2019	National

Elite	SETHU MADHAVAN	NPTEL	2019	National
Elite	D MURALIDHARAN	NPTEL	2019	National
Elite	RAVI MOUNIKA	NPTEL	2019	National
Elite	ABIRAMI SEKAR	NPTEL	2019	National
Successfully completed	P N KRUTHIGA	NPTEL	2019	National
Elite	J JAYACHANDRAN	NPTEL	2019	National
Elite	T PRABAHAR GODWIN JAMES	NPTEL	2019	National
Elite	P ANNADURAI	NPTEL	2019	National
Successfully completed	P SHARATH KUMAR	NPTEL	2019	National
Elite+Silver	KRUPHA C M	NPTEL	2019	National
Successfully completed	ARVIND RAJ T	NPTEL	2019	National
Elite+Silver	D RAJALAKSHMI	NPTEL	2019	National

Successfully completed	GANESAN G	NPTEL	2019	National
Elite	S HARANVIGNESHWARAAN	NPTEL	2019	National
Successfully completed	DR P SARAVANAN	NPTEL	2019	National
Successfully completed	G SARAVANAN	NPTEL	2019	National
Elite	R LAKSHMI DEVI	NPTEL	2019	National
Elite+Silver	S SWEETLINE SHAMINI	NPTEL	2019	National
Elite	SRITHAR A	NPTEL	2019	National
Elite+Silver	D YOKESH	NPTEL	2019	National
Elite	JOSEPH THOMAS RAJAN A	NPTEL	2019	National
Elite+Silver	HAMSSHAVARTHINI S	NPTEL	2019	National
Successfully completed	KISHORE KUMAR L	NPTEL	2019	National
Successfully	BOOJASHREE S	NPTEL	2019	National

completed				
Elite	MS S SUMATHI	NPTEL	2019	National
Elite	I JEMINA	NPTEL	2019	National
Elite	K RAJESWARI	NPTEL	2019	National
Elite	DR S RATHIKA	NPTEL	2019	National
Elite	VIJHAY SUNDHAR M	NPTEL	2019	National
Elite+Silver	DILIP KUMAR	NPTEL	2019	National
Elite+Silver	MAHALAKSHMI S	NPTEL	2019	National
Elite	SUVAATHI V	NPTEL	2019	National
Elite+Silver	JAYAJOTHI	NPTEL	2019	National
Elite+Silver	RAKSHNA N	NPTEL	2019	National
Successfully completed	DEEPA SREE K	NPTEL	2019	National
Elite	RAVI MOUNIKA	NPTEL	2019	National

Successfully completed	PRABHA R	NPTEL	2019	National
Elite+Silver	D MURUGA RADHA DEVI	NPTEL	2019	National
Successfully completed	SAIKIRAN R	NPTEL	2019	National
Successfully completed	GOMATHI CHIDAMBARAM	NPTEL	2019	National
Elite+Silver	R M ASHA	NPTEL	2019	National
Elite	ARUNKUMAR R	NPTEL	2019	National
Elite	M UDHAYANILA	NPTEL	2019	National
Elite	K VELAVAN	NPTEL	2019	National
Elite+Silver	SANGEETHA K	NPTEL	2019	National

Student Performances

Title of the innovation	Name of the Awardee	Awarding Agency	Date of Award	Category

ISTE Manakula Vinayagar Best Student Project Award 2019	MR.SUDHARSON AND MR.KRISHNAMOORTHY	ISTE	2019	National
COMPUTER SOCIETY OF INDIA CHAPTER LEVEL STUDENT CONVENTION	PRANAV KARTHICK, S.NISHANTKUMAR, T.ARVIND RAJ	CSI KANCHEEPURAM CHAPTER	06.02.2020	National
won Best NSS Volunteer Award	MR.G.PRUTHVI RAJ	ANNA UNIVERSITY	October – 2019	National
Hackathon (Second Prize)	NANDAKUMAR G MOHANRAJ G SARANYAN S.J SABARISH K	SSN College of Engineering	13.09.2019	National
Hackathon (Second Prize)	NANDAKUMAR G MOHANRAJ G SARANYAN S.J SABARISH K POTTLURI USHA SREE	Jeppiaar Engineering College	10.01.2020	National
Aimbigathon'19 (Second Prize)	NANDAKUMAR G MOHANRAJ G SARANYAN S.J SABARISH K	Sri Sai Ram Institute of Technology	26.09.2019 & 27.09.2019	National
ISTE Best Student Award	G.GARLAPATTI SREEJA	ISTE	18.12.2019	National

PROJECT EXPO	DINAKARAN M S	St.Josephs College of Engineering	21.09.2019	National
PROJECT EXPO	JOAHNES MATHEW SAJI	St.Josephs College of Engineering	21.09.2019	National
PROJECT EXPO	DINESHKUMAR R	St.Josephs College of Engineering	21.09.2019	National
PROJECT EXPO	DINESHKUMAR R	SMK FOMRA Institute of Technology	25.09.2019	National
PROJECT EXPO	VIJAY S	SMK FOMRA Institute of Technology	25.09.2019	National
PROJECT EXPO	JOAHNES MATHEW SAJI	University College of Engineering, kancheepuram	26.09.2019	National
PROJECT EXPO	DINAKARAN M S	University College of Engineering, kancheepuram	26.09.2019	National
PROJECT EXPO	S. VIJAY	University College of Engineering, kancheepuram	26.09.2019	National
PROJECT EXPO	RAGHUL G	Sri Sairam Engineering College	26.08.2019	National

PROJECT EXPO	AAKASH RAJ K	Sri Sairam Engineering College	26.08.2019	National
AIMBIGATHON	AAKASHRAJ K	Sri Sairam Institute of technology	26.09.2019 & 27.09.2019	National
AIMBIGATHON	G.RAGHUL	Sri Sairam Institute of technology	26.09.2019 & 27.09.2019	National
AIMBIGATHON	K.PRABAKARAN	Sri sairam Institute of technology	26.09.2019 & 27.09.2019	National
Best Student Award	K.GOWTHAMKUMAR	IEI	28.10.2019	IEI Student Chapter
Best Student Award	K.GOWTHAMKUMAR	ISTE	18.12.2019	ISTE Student Convention
Mr.Manufacture	SARAVANA KUMAR M SATHYA NARAYANAN V	Dhanalakshmi College of Engineering	14.08.2019	Symposium
Technical Quiz	SARAVANA KUMAR M	Meenakshi Sundararajan Engineering College	20.08.2019	Symposium
Technical Debate	SARAVANA KUMAR M	Meenakshi Sundararajan Engineering College	20.08.2019	Symposium

Auto Quiz	AUSTIN MANUEL RAJ P MUHILAN S GEORGE THEOPHILUS.S	SSN college of Engineering	1309.2019 to 14.09.2019	Symposium
ACAPELLA	VIKRAM CHANDRA V HARIHARAN V	Youth Development Consortium	2019	International Youth Fest
Best Paper	NARENDRAN.S	Chennai Institute of Technology	12.12.2019 to 13.12.2019	International conference
Best Paper	SABARI SASTHA.B.D RAJA RAMAKRISHNAN.B.U	AMET,Chennai	19.09.2019 to 20.09.2019	International conference
SUPRA	Super Nova (25 students)	SAE	15.07.19 to 20.07.19	National level competition
SOLAR VEHICLE	INFERNO (40 students)	SUVC	05.03.20 to 08.03.20	National level competition
GOKART	HAMMER HEADS(25 students)	ISNEE Motor Sports	10.02.2020 to	National level competition

			14.02.2020	
Symposium	K.S.PAVITHRA	Sri Venkateswara College of Engg, Sriperumbudur	27.09.2020	National
Symposium	A.PADMABHARATHI	Sri Venkateswara College of Engg, Sriperumbudur	27.09.2020	National
Project Exhibition	S. MAHALAKSHMI , A. PADMA BHARRATHI , N.PADMA PRIYA	7th National Level Technical Project Exhibition Competition	10.02.2020 to 11.02.2020.	National
Project Exhibition	K.S PAVITHRA AND N.PADMA PRIYA	The District Science Centre Tirunelveli	23.01.2020 to 25.01.2020.	National
PROJECT EXPO	SRINATH S, SARATH C, SARAN M	Sapthagiri Educational Trust	10.03.2020	National
PROJECT EXPO	VISWANATH S,	Sapthagiri Educational Trust	10.03.2020	National
PROJECT EXPO	SUDARSHAN SUNDARARAJAN, VISHAL M, MURUGALINGAM	Sapthagiri Educational Trust	10.03.2020	National

PROJECT EXPO	DIVYA PRIYA, ABINAYA, MONIKA, AARTHI	Sapthagiri Educational Trust	10.03.2020	National
PROJECT EXPO	S.AUROVINDHYA, V.MEKHALA, S.SUJATHA, R.G.SRENIKA	Sapthagiri Educational Trust	10.03.2020	National
PROJECT EXPO	R.ARAVINTH, P.SREENATH, V.KEERTHISWARAN	Sapthagiri Educational Trust	10.03.2020	National
PROJECT EXPO	JAYANTHI V, KALARANJANI M, NANDHINEE S, REKHA D	Sapthagiri Educational Trust	10.03.2020	National
PROJECT EXPO	HARIPRIYA.V, NIRRENJANANEHA.R, PRATHIKSHA.V	Sapthagiri Educational Trust	10.03.2020	National
PROJECT EXPO	ANANDH C, GOKUL DASS T O, SANJAYKUMAR R, SRINATH P	Sapthagiri Educational Trust	10.03.2020	National
PROJECT EXPO	FENNETH MOSES.G, JAYACHANDRAN.S, RAJAGOPALAN.R, RATHNAVEL SUBRAMANIAN .V.D	Sapthagiri Educational Trust	10.03.2020	National
PROJECT EXPO	ANOOJ M, JAYANT M, MANI PON RAJA H, YOKESH KRISHNA P	Sapthagiri Educational Trust	10.03.2020	National

PROJECT EXPO	SUBHAM S, GOKUL KRISHNAN S, ARAVINDHAN A, VAGESHWAR.B	Sapthagiri Educational Trust	10.03.2020	National
PROJECT EXPO	DEEPASARANYA.E, NAZIYA OFFRIN.M, PAVYASHRI.V, SHABNA.P	Sapthagiri Educational Trust	10.03.2020	National
PROJECT EXPO	VIJAY KARTHIC D, PRAVEEN RAJ S N, RISWANTH AKASH M, VIGNESH A	Sapthagiri Educational Trust	10.03.2020	National
PROJECT EXPO	EZHILARASAN.J, MADHAN.T, SUHAIL AHMED.D	Sapthagiri Educational Trust	10.03.2020	National
PROJECT EXPO	MAHALAKSHMI R, VIJAYALAKSHMI A, RAMYA M	Sapthagiri Educational Trust	10.03.2020	National
PROJECT EXPO	GANESHPANDI A, VELSHANKAR S, PASUPATHI M	Sapthagiri Educational Trust	10.03.2020	National
PROJECT EXPO	VELURU VAISHNAVI, PAVITHRA K, KIRUTHIKA P	Sapthagiri Educational Trust	10.03.2020	National

Dr. B. Sreedevi ,HOD/CSE,SRI SAI RAM INSTITUTE OF TECHNOLOGY Successfully Completed Training on "Design thinking & Innovations" conducted as part of IIC Innovation Ambassador Training Series Organized by Institution's Innovation Council of MHRD's Innovation Cell, AICTE held at RMK Engineering College, Chennai, Tamil Nadu on 8-9 January 2020.

CERTIFICATE OF PARTICIPATION

Dr. B. Sreedevi

SRI SAI RAM INSTITUTE OF TECHNOLOGY

Successfully Completed Training on "Design thinking & Innovations" conducted as part of

IIC Innovation Ambassador Training Series

Organized by Institution's Innovation Council of MHRD's Innovation Cell, AICTE held at

RMK Engineering College, Chennai, Tamil Nadu on 8-9 January 2020.

Prof. Anil D. Sahasrabudhe
Chairman
AICTE

Prof. M.P. Poonia
Vice Chairman
AICTE

Dr. Abhay Jere
Chief Innovation Officer
MHRD's Innovation Cell

scan to verify

eCertificate No : 19783

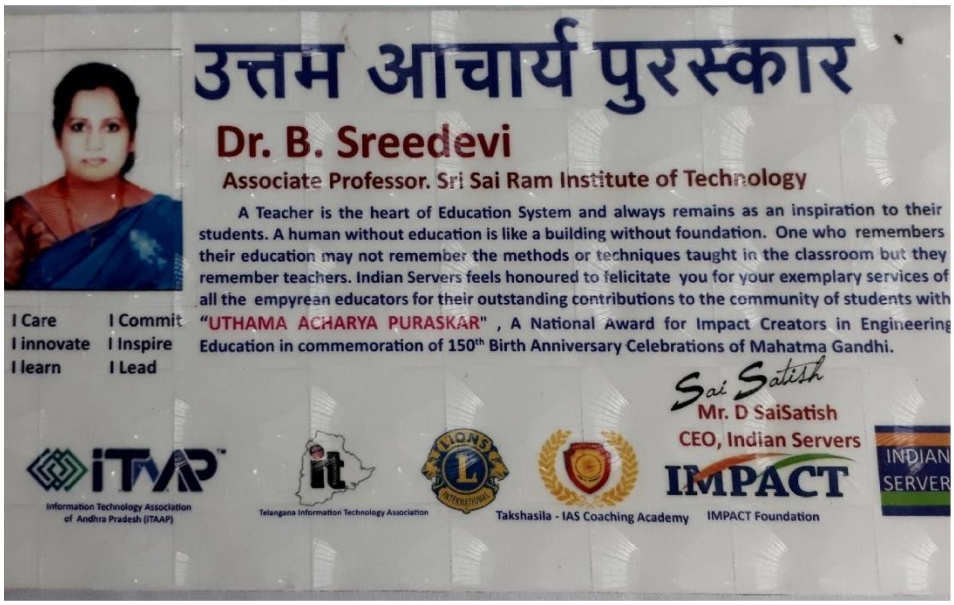
Date of issue: 31-01-2020

Ms. D. Roopa /CSE -Received best teacher award 2019 from madras library association at chennai.

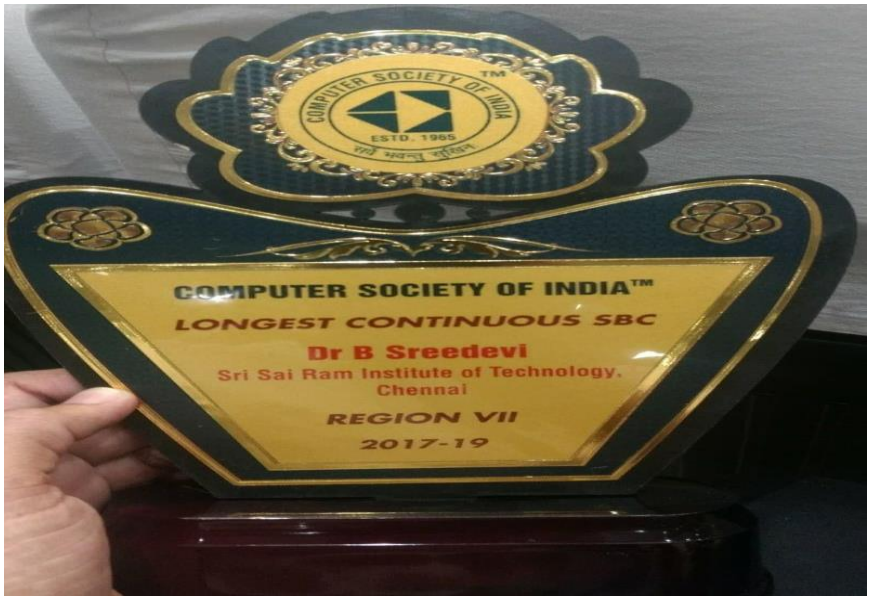
Dr. B. Sreedevi ,HOD/CSE -Received Best Faculty Advisor Award from IEI for the year 2019

Ms. D.Rajalakshmi / CSE - Received Best Women Faculty Award 2019 From DK International Research Foundation on 29.12.2019 at Dhanalakshmi Srinivasan Hotel, Perambalur.

Dr. B. Sreedevi ,HOD/CSE - was awarded UTHAMA ACHARYA PURASKAR- A national award form lions club Vijayawada.



Dr. B. Sreedevi ,HOD/CSE - was awarded LONGEST CONTINUOUS SBC from Computer Society Of India.



Roll No:NPTEL19MA14551222090

To YUVARAJ V
NO.1, VEDANTHANGAL MAIN ROAD, VAYAVOOR,
MALAI VAYAVOOR POST,
MADURANTAKAM TALUK,
KANCHIPURAM
TAMIL NADU
603308
PH. NO :9444152585

No. of weeks of NPTEL Courses	Equivalence of NPTEL course with regular FDP
4	$\frac{1}{2}$ FDP of one week
8	Full FDP of one week
12	$1\frac{1}{2}$ FDP

Duration of NPTEL course: 8 Weeks

NPTEL-AICTE
Faculty Development Programme

(Funded by the Ministry of HRD, Govt. of India)

This certificate is awarded to

YUVARAJ V

for successfully completing the course

Descriptive Statistics with R Software

with a consolidated score of **78** %

Prof. Andrew Thangaraj
NPTEL Coordinator
IIT Madras

(Feb-Apr 2019)

Prof. Dileep N. Malkhede
Advisor-I (Research, Institute & Faculty Development)
All India Council for Technical Education

Roll No: NPTEL19MA14551222090

To validate and check scores: http://nptel.ac.in/noc

The candidate has studied the above course through MOOCs mode, has submitted online assignments and passed proctored exams.
This certificate is therefore acceptable for promotions under CAS as per AICTE notifications dated 24th July 2018, similar to other refresher / orientation courses.
F.No. AICTE / RIFD / FDP through MOOCs / 2017-18

This certificate is computer generated and can be verified by scanning the QR code given below. This will display the certificate from the NPTEL repository, https://nptel.ac.in/noc/

Roll No: NPTEL19EE63S11183188

To
MAHESWARI.E
11B,SAILEJA BUILDERS,2ND MAIN ROAD,TTK NAGAR,WEST IRUMBULIYUR
CHENNAI
KANCHIPURAM
TAMIL NADU
600045
PH. NO :9790847615

Score	Type of Certificate
>=90	Elite+Gold
75-89	Elite+Silver
>=60	Elite
40-59	Successfully Completed
<40	No Certificate

No. of credits recommended by NPTEL:2
An additional 1 credit may be awarded if the University deems it fit, based on the actual student effort involved.

Elite

NPTEL Online Certification

(Funded by the Ministry of HRD, Govt. of India)

This certificate is awarded to

MAHESWARI.E

for successfully completing the course

DC Microgrid

with a consolidated score of **82** %

Online Assignments	22.42/25	Proctored Exam	59.25/75

Total number of candidates certified in this course: **417**

Prof. V. C. Srivastava
Coordinator, Continuing Education Centre
IIT Roorkee

Jul-Sep 2019
(8 week course)

Prof. Inderdeep Singh
NPTEL Coordinator
IIT Roorkee

Indian Institute of Technology Roorkee

FREE ONLINE EDUCATION swayam शिक्षित भारत, उन्नत भारत

Roll No: NPTEL19EE63S11183188

To validate and check scores: https://nptel.ac.in/noc

This certificate is computer generated and can be verified by scanning the QR code given below. This will display the certificate from the NPTEL repository, https://nptel.ac.in/noc/

Roll No: NPTEL19GE26S21180582

To
G.EZHILARASI
44,VALLALAR STREET,JAGATHAMBIGAI NAGAR
PADI,CHENNAI
THIRUVALLUR
TAMIL NADU
600050
PH. NO :9445173814

Score	Type of Certificate
>=90	Elite+Gold
75-89	Elite+Silver
>=60	Elite
40-59	Successfully Completed
<40	No Certificate

No. of credits recommended by NPTEL:1
An additional 1 credit may be awarded if the University deems it fit, based on the actual student effort involved.

Elite

NPTEL Online Certification

(Funded by the Ministry of HRD, Govt. of India)

This certificate is awarded to

G.EZHILARASI

for successfully completing the course

Stress Management

with a consolidated score of **60** %

Online Assignments	18.33/25	Proctored Exam	42/75

Total number of candidates certified in this course: **1200**

A. Goswami

Prof. Adrijit Goswami
Dean, Continuing Education & NPTEL Coordinator
IIT Kharagpur

Jul-Aug 2019
(4 week course)

Indian Institute of Technology Kharagpur

FREE ONLINE EDUCATION swayam शिक्षित भारत, उन्नत भारत

Roll No: NPTEL19GE26S21180582

To validate and check scores: https://nptel.ac.in/noc

Roll No: NPTEL19CE06S11171988

To
SURENDERANATH S
F18, E BLOCK, RUBY GATEWAY, VETRI NAGAR,
WEST TAMBARAM
CHENNAI
KANCHIPURAM
TAMIL NADU
600045
PH. NO :9884858086

Score	Type of Certificate
>=90	Elite+Gold
75-89	Elite+Silver
>=60	Elite
40-59	Successfully completed the course
<40	No Certificate

No. of credits recommended by NPTEL:1

Elite

NPTEL Online Certification

(Funded by the Ministry of HRD, Govt. of India)

This certificate is awarded to

SURENDERANATH S

for successfully completing the course

Electronic Waste Management - Issues And Challenges

with a consolidated score of **68** %

Online Assignments	19.17/25	Proctored Exam	48.98/75

Total number of candidates certified in this course: **1516**

A. Goswami

Prof. Adrijit Goswami
Dean
Continuing Education, IIT Kharagpur

Jan-Feb 2019
(4 week course)

Indian Institute of Technology Kharagpur

FREE ONLINE EDUCATION swayam शिक्षित भारत, उन्नत भारत

Roll No: NPTEL19CE06S11171988

To validate and check scores: http://nptel.ac.in/noc

Roll No: NPTEL19CE06S11171938

To
SHANTHI.N
13 B,KAVERI STREET,AK NAGAR, CHROMEPET
CHENNAI
KANCHIPURAM
TAMIL NADU
600044
PH. NO :9962159904

Score	Type of Certificate
>=90	Elite+Gold
75-89	Elite+Silver
>=60	Elite
40-59	Successfully completed the course
<40	No Certificate

No. of credits recommended by NPTEL:1

Elite

NPTEL Online Certification

(Funded by the Ministry of HRD, Govt. of India)

TOP TOPPER 5%

This certificate is awarded to

SHANTHI.N

for successfully completing the course

Electronic Waste Management - Issues And Challenges

with a consolidated score of **94** %

Online Assignments	22.25/25	Proctored Exam	71.94/75

Total number of candidates certified in this course: **1516**

A. Goswami

Prof. Adrijit Goswami
Dean
Continuing Education, IIT Kharagpur

Jan-Feb 2019
(4 week course)

Indian Institute of Technology Kharagpur

FREE ONLINE EDUCATION swayam शिक्षित भारत, उन्नत भारत

Roll No: NPTEL19CE06S11171938

To validate and check scores: http://nptel.ac.in/noc

This certificate is computer generated and can be verified by scanning the QR code given below. This will display the certificate from the NPTEL repository, https://nptel.ac.in/noc/

Roll No: NPTEL19GE21S51210303

To
REKHA K
62/15TH CROSS
BHARATHIDHASAN NAGAR
HOSUR
DHARMAPURI
TAMIL NADU
635109
PH. NO :7598027470

Score	Type of Certificate
>=90	Elite+Gold
75-89	Elite+Silver
>=60	Elite
40-59	Successfully Completed
<40	No Certificate

No. of credits recommended by NPTEL:2
An additional 1 credit may be awarded if the University deems it fit, based on the actual student effort involved.

NPTEL Online Certification

(Funded by the Ministry of HRD, Govt. of India)

This certificate is awarded to

REKHA K

for successfully completing the course

Introduction to Research

with a consolidated score of **55** %

Online Assignments	16.92/25	Proctored Exam	37.76/75

Total number of candidates certified in this course: **1903**

Devendra Jalihal

Prof. Devendra Jalihal
Chairman
Centre for Continuing Education, IITM

Aug-Oct 2019
(8 week course)

Prof. Andrew Thangaraj
NPTEL Coordinator
IIT Madras

Indian Institute of Technology Madras

FREE ONLINE EDUCATION swayam शिक्षित भारत, उन्नत भारत

Roll No:NPTEL19EE63S11183182

To DR. T. MUTHAMIZHAN
NO.3/2, 13TH STREET, VINO BAJI NAGAR,
HASTHINAPURAM,
CHENNAI
KANCHIPURAM
TAMIL NADU
600064
PH. NO :9941077477

No. of weeks of NPTEL Courses	Equivalence of NPTEL course with regular FDP
4	$\frac{1}{2}$ FDP of one week
8	Full FDP of one week
12	$1\frac{1}{2}$ FDP

Duration of NPTEL course: 8 Weeks

NPTEL-AICTE
Faculty Development Programme

(Funded by the Ministry of HRD, Govt. of India)

This certificate is awarded to

DR. T. MUTHAMIZHAN

for successfully completing the course

DC Microgrid

with a consolidated score of **60** %

Prof. Andrew Thangaraj
NPTEL Coordinator
IIT Madras

(Jul-Sep 2019)

Prof. Dileep N. Malkhede
Advisor-I (Research, Institute & Faculty Development)
All India Council for Technical Education

Roll No: NPTEL19EE63S11183182

To validate and check scores: http://nptel.ac.in/noc

The candidate has studied the above course through MOOCs mode, has submitted online assignments and passed proctored exams.
This certificate is therefore acceptable for promotions under CAS as per AICTE notifications dated 24th July 2018, similar to other refresher / orientation courses.
F.No. AICTE / RIFD / FDP through MOOCs / 2017-18

Mr. Darshan S, Mr.Banuprakash Guntupalli, Mr.Sairam T of III CSE have won 1st prize of RS.15000 in Blockhathan2k19 conducted by Malineni Lakshmaiah Group of Colleges – Guntur (Andhra Pradhesh) on 10.03.2019

IGSC Cadets Felicitation Group Commander For Chennai Region .CPL. Hariharan /IV CSE Was Awarded

Mr.G.Pruthvi Raj of IV CSE won Best NSS Volunteer Award for 2018-2019 in Anna University

ISTE Manakula Vinayagar Best Student Project Award 2019 was awarded to Mr.Sudharson and Mr.Krishnamoorthy of CSE 2019 Batch.

II CSE students Pranav Karthick,S.NishantKumar,T.Arvind Raj won First and Second Prize in COMPUTER SOCIETY OF INDIA CHAPTER LEVEL STUDENT CONVENTION 2020 (6th FEBRUARY 2020) organised by CSI KANCHEEPURAM CHAPTER at Valliammai Engineering

College.

3.2.3 No. of Incubation centre created, start-ups incubated on campus during the year:

Incubation Centre	Name	Sponsored by
AICTE - MHRD Institute Innovation Council (IIC)	AICTE - MHRD Institute Innovation Council (IIC)	AICTE – MHRD , New Delhi
IEDC	Innovation and Entrepreneurship Development Center	DST , New Delhi
Innovation Labs (in each department)	Sri Sai Ram Institute of Technology	Supthagiri Educational Trust
Entrepreneurship Club	Sri Sai Ram Institute of Technology	Supthagiri Educational Trust
UBA	AICTE	AICTE
National Innovation Startup Cell	AICTE - MHRD Institute Innovation Council (IIC)	AICTE – MHRD , New Delhi

Ministry of Education
Government of India
MoE's
INNOVATION CELL
(GOVERNMENT OF INDIA)
INSTITUTION'S
INNOVATION
COUNCIL
AICTE
CERTIFICATE
Institution Innovation Council (IIC) established at
SRI SAI RAM INSTITUTE OF TECHNOLOGY, CHENNAI.
had undertaken various activities prescribed by Innovation Cell, Ministry of Education, Govt. of India to promote Innovation and Start-up in campus during the IIC calendar year 2019-20.
Prof.Anil D.Sahasrabudhe
Chairman, AICTE
Sh. Amit Khare
Secretary, Department of Higher Education, MOE
Dr. Abhay Jere
CIO, MOE, Innovation Cell
Certificate No : 798
Issued On : 2020-09-22

Sri
SAI RAM
INSTITUTE OF TECHNOLOGY
An Autonomous Institution
West Tambaram, Chennai - 44
www.sairamit.edu.in
NBA
NAAC
nirf
INSTITUTION'S
INNOVATION
COUNCIL
(Ministry of HRD Initiative)
Sri Sai Ram Institute of Technology
has recognized as TOP PERFORMING
INSTITUTION'S INNOVATION COUNCIL (IIC)
from the South Zone (SRO) during IIC Calendar
Year 2019-2020 by Ministry of Education
Sairam
INSTITUTIONS
www.sairamgroup.in

MHRD – Institute Innovation Council (IIC) Activities

Performance Report

Quarter 1 & Quarter 2 Cumulative Score

Bifurcation of Score and Reward Points

Score:48.31 Reward:214.12

MHRD – Institute Innovation Council (IIC) Activities

MHRD – Institute Innovation Council (IIC) Activities

Certificate
of Participation

This is to certify that
SHANTHI N

from SRI SAIRAM INSTITUTE OF TECHNOLOGY, CHENNAI has
Successfully attended Leadership Talk with Mr. Shridhar Venkat, CEO (Akshay Patra Foundation)
held on 20th Jun
by MHRD's Innovation Cell

Dr. Abhay Jere
Chief Innovation Officer, MHRD's Innovation Cell

Certificate
of Participation

This is to certify that
Yogesh T
from Sri sairam institute of technology has
Successfully attended the India First Leadership Talk webinar broadcasted
On 2nd May, 2020 by MHRD's Innovation Cell

Dr. Abhay Jere
Chief Innovation Officer, MHRD's Innovation Cell

MHRD – Institute Innovation Council (IIC) Activities

List of Prototype Nominated

Title	Theme	Lead Name
RIVER POLLUTION CONTROL SYSTEM THROUGH EFFECTIVE MONITORING OF INDUSTRIAL EFFLUENT DISCHARGE	IoT based technologies (e.g. Security & Surveillance systems etc)	SUBASREE
Implementation of LCC compensation topology in wireless charging system for an E-Vehicle using IOT	Smart Vehicles/ Electric vehicle/ Electric vehicle motor and battery technology.	NANDHINEE S
Trilochan smart stick	IoT based technologies (e.g. Security & Surveillance systems etc)	aishvariya.k
AUTOMATED LOAD CARRYING ELECTRIC VEHICLE	Smart Vehicles/ Electric vehicle/ Electric vehicle motor and battery technology.	ANOOJ M
Solving Privacy and Security issues in Electronic Health Record (EHR) using Blockchain	Healthcare & Biomedical devices.	G.Nandakumar

ARIIA
ATAL RANKING OF INSTITUTIONS ON INNOVATION ACHIEVEMENTS

INTELLECTUAL PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS
GEOGRAPHICAL INDICATIONS

GOVERNMENT OF INDIA

Controller General of Patents,Designs and Trademarks
Department of Industrial Policy and Promotion
Ministry of Commerce and Industry

Application Details	
APPLICATION NUMBER	202041011372
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	17/03/2020
APPLICANT NAME	1 . G. Shanmugasundar 2 . R. Sivaramakrishnan
TITLE OF INVENTION	A SEVEN DEGREES OF FREEDOM SERIAL ROBOTIC MANIPULATOR FOR DETECTING AND RECTIFYING THE WELD DEFECT ON THE CIRCUMFERENCE OF THE STORAGE STEEL CYLINDRICAL CANISTER
FIELD OF INVENTION	ELECTRONICS
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	shanmugasundar.mech@sairamit.edu.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	17/03/2020
PUBLICATION DATE (U/S 11A)	27/03/2020

INTELLECTUAL PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS
GEOGRAPHICAL INDICATIONS

GOVERNMENT OF INDIA

Controller General of Patents,Designs and Trademark
Department of Industrial Policy and Promotio
Ministry of Commerce and Industr

Application Details	
APPLICATION NUMBER	202041018449
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	30/04/2020
APPLICANT NAME	1 . S. Deivanayagi 2 . D. Pushgara Rani 3 . V. Vishall 4 . R. Nithish Senan 5 . G. Navarasu
TITLE OF INVENTION	VEHICULAR POLLUTION MONTORING AND RISK MANAGEMENT SYSTEM
FIELD OF INVENTION	COMPUTER SCIENCE
E-MAIL (As Per Record)	abganesh@live.in
ADDITIONAL-EMAIL (As Per Record)	deivanayagi.ece@sairamit.edu.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	05/06/2020

SRI SAI RAM INSTITUTE OF TECHNOLOGY

IC201811089 ★★☆☆☆

Quarter 1 Score | Quarter 2 Score

New! Quarter 1 & Quarter 2 Cumulative Score: 48.31/50 **Reward Points: 21412**

Please note that due to prolonged lockdown period,now Q3 and Q4 are merged together. Last date to submit the report is 12th July 2020.

IIC Calendar Activity | MIC Driven Activity | Self-Driven Activity | My Activity Calendar

My A

Title	Description	Activity Type	Quarter	

IIC National Innovation Contest-Prototype Submission	Prototype/Innovation: Student teams can submit their Prototypes directly through this page or through IIC Council President/Convener. The Prototype/Innovations should be from Technological Readiness Level (TRL) –4 to 73 (refer TRL). Once a team submits Prototype/Innovation(s), respective IIC-Institutes need to evaluate these prototypes/innovations based on the evaluation criteria provided to IIC-Institute and need to list/upgrade as per provision the IIC portal from 6th June to 30 June 2020. https://mic.gov.in/innovationcontest/	MIC driven Activity	Quarter IV	Upload Report (innovation_contest_prototype.
IIC National Innovation Contest-PoC Submission	IIC National Innovation Contest-POC Submission. Please refer: https://mic.gov.in/innovationcontest/	MIC driven Activity	Quarter III,Quarter IV	Upload Add More Ideas (innovation_contest_team_new.ph

Impact Lecture Series-Lecture 2	The objective of the Impact Lecture Series scheme is to promote and create awareness on innovation, startup and Intellectual Property (IP) among students and faculties in IIC institutes. Through this impact lecture series, selected IICs will organize two lecture series in the field of innovation, startup and Intellectual Property (IP) by inviting external experts or successful innovators, startup founders, patent experts to campus. This scheme is designed for aspirational Institutes that are lagging in performance. Only those institutes which are recommended for funding must select this activity as MIC driven, other institutes who conducted impact lecture series without MIC funding support can add this activity as self-driven or submit the report as MIC driven.	MIC driven Activity	Quarter III,Quarter IV	Uploaded Successfully (monthly_report.php?event

Impact Lecture Series-Lecture 2	The objective of the Impact Lecture Series scheme is to promote and create awareness on innovation, startup and Intellectual Property (IP) among students and faculties in IIC institutes. Through this impact lecture series, selected IICs will organize two lecture series in the field of innovation, startup and Intellectual Property (IP) by inviting external experts or successful innovators, startup founders, patent experts to campus. This scheme is designed for aspirational Institutes that are lagging in performance. Only those institutes which are recommended for funding must select this activity as MIC driven, other institutes who conducted impact lecture series without MIC funding support can add this activity as self-driven or submit the report as MIC driven.	MIC driven Activity	Quarter III,Quarter IV	Uploaded Successfully (monthly_report.php?event

Impact Lecture Series-Lecture I	The objective of the Impact Lecture Series scheme is to promote and create awareness on innovation, startup and Intellectual Property (IP) among students and faculties in IIC institutes. Through this impact lecture series, selected IICs will organize two lecture series in the field of innovation, startup and Intellectual Property (IP) by inviting external experts or successful innovators, startup founders, patent experts to campus. This scheme is designed for aspirational Institutes that are lagging in performance. Only those institutes which are recommended for funding must select this activity as MIC driven, other institutes who conducted impact lecture series without MIC funding support can add this activity as self-driven or submit the report as MIC driven.	MIC driven Activity	Quarter III,Quarter IV	Uploaded Successfully (monthly_report.php?event
IIC National Innovation Contest-Idea Submission	https://mic.gov.in/innovationcontest/	MIC driven Activity	Quarter III,Quarter IV	Uploaded Add More Ideas (innovation_contest_form.php?eve
India First Leadership Talk Series	India First Leadership Talk Series with Hon'ble HRD Minister Shri Ramesh Pokhriyal 'Nishank'.	MIC driven Activity	Quarter I	Report Verified.

Organise One Day Workshop on “Entrepreneurship and Innovation as Career Opportunity”	Organise One Day Workshop on mentioned topic with the help of expert.	IIC Calendar Activity	Quarter I	Report Verified.
My Story - Innovator’s Life & Crossroad Motivational Speak - To be Share by Innovators	Story Telling	IIC Calendar Activity	Quarter I	Report Verified.
Field/Exposure Visit to Village/Society /School/Industry/Market – Identity real Life Problem	Field Visit/Scouting to near by places to identify real life problems and define problem statements accordingly.	IIC Calendar Activity	Quarter I	Report Verified.
My Story - Entrepreneur’s Life & Crossroad – Motivational Speak - To be Share by Entrepreneurs	Invite relevant speaker	IIC Calendar Activity	Quarter I	Report Verified.
Engage Students for Internship at Innovation & Start-up Centre/Start-ups/Incubation Unit etc. during Semester Break (Duration may vary from minimum 15 day to 2 months or during entire semester br	Internship	IIC Calendar Activity	Quarter II	Report Verified.

Demo Day – Exhibition Cum Demo for PoCs & Mentorship Session for Innovators (or) Student Entrepreneurs	Exhibition Cum Demo	IIC Calendar Activity	Quarter II	Report Verified.
Organise a workshop/Seminar/Call for Paper presentation on Innovation/Social Innovation & Entrepreneurship	Workshop by Expert or Presentation by student	IIC Calendar Activity	Quarter II	Report Verified.
Organise a Product Design/ Design Thinking Workshop at Campus	Organise One Day Workshop on mentioned topic with the help of expert.	IIC Calendar Activity	Quarter II	Report Verified.
Field/Exposure Visit to Design Centre/Makers' Space/Fab Lab/Prototype Lab/Tinkering Lab etc	Exposure Visit	IIC Calendar Activity	Quarter II	Report Verified.
Product Development Phases - Story Telling - (Innovators in Campus)	Story Telling	IIC Calendar Activity	Quarter II	Report Verified.
Progress Monitoring and Upload of 2nd Quarter Action Plan with Minutes of Meeting of Council	Mandatory activity	IIC Calendar Activity	Quarter II	Report Verified.
NEAT Logo Contest	NEAT Logo Contest	MIC driven Activity	Quarter I	Report Verified.

Innovation Day Campaign	As we all agreed on 11th September 2019(during First Annual Innovation Festival of MHRD's Innovation Cell) to celebrate Innovation Day on 15th October 2019 to mark Dr. A. P. J. Abdul Kalam's Birth Anniversary, join us to make an impact together by organizing Innovation Campaign Activities for IICs between 23rd September 2019 to 15th October	MIC driven Activity	Quarter I,Quarter II	Report Verified.
Guest Lecture on Rf Circuit Design	Its conducted for final year students for enhancing their ideas in the design of RF circuit which is the emerging trend	Self-driven Activity	Quarter I	Report Verified.
Workshop on Iot and Robotics	Workshop was conducted for second and third years students to give an introduction for stratup /Entrepreneurship in the field of IoT and Robotics	Self-driven Activity	Quarter I	Report Verified.
Guest Lecture on E-Mobility in India	Department of EEE conducted a Guest lecture on E-Mobility in India in association with ISIE on 02.08.19	Self-driven Activity	Quarter I	Report Verified.
Guest Lecture on Electric Vehicles	Department of EEE have conducted a Guest Lecture on Electric Vehicles on 12.09.19	Self-driven Activity	Quarter I	Report Verified.
Guest Lecture on GL on Raspbeery Pi	Department of EEE have conducted Guest Lecture on GL on Raspbeery Pi - 27.9.19 in association with EPR Labs	Self-driven Activity	Quarter I	Report Verified.

Two Days Hands on Workshop on Raspberry Pi	Department of EEE organized a Two Days Hands on Workshop on Raspberry Pi from 25.09.19 to 26.09.19 in association with EPR Labs.	Self-driven Activity	Quarter I	Report Verified.
Guest Lecture on Wind turbine Technology towards mitigating the climatic change	Department of EEE Organized a Guest lecture on Wind turbine Technology towards mitigating the climatic change on 30.09.19	Self-driven Activity	Quarter I	Report Verified.
Guest Lecture on industry 4.0	Guest lecture for mechanical engineering students	Self-driven Activity	Quarter I	Report Verified.
Guest Lecture on quality in engineering	guest lecture for mechanical engineering students	Self-driven Activity	Quarter I	Report Verified.
Guest Lecture on ISRO launch vehicle development	guest lecture for mechanical engineering students	Self-driven Activity	Quarter I	Report Verified.
SAE WORKSHOP	SAE Workshop conducted for third year mechanical students (110 nos) and faculty members on Recent trends in Automobile technology	Self-driven Activity	Quarter I	Report Verified.
SAE WORKSHOP	SAE Workshop conducted for second year mechanical students (69 nos) and faculty members on Designing and advancements in Automobile technology	Self-driven Activity	Quarter I	Report Verified.

Guest Lecture on Data Structures	Department of CSE conducted a Guest Lecture on Data Structures by Dr. Thanasekar, Computer Technology, MIT, Anna University on 16.7.2019	Self-driven Activity	Quarter I	Report Verified.
Seminar on DATA ANALYTICS	Department of CSE conducted one day Seminar on DATA ANALYTICS by Mr. Ahamed Khalid, Vice President and Business Lead, Imarticus Learning on 8/8/2019	Self-driven Activity	Quarter I	Report Verified.
Guest Lecture on Computer Networks	Department of CSE conducted a Guest Lecture on Computer Networks by Dr. R. Kathiroli, Anna University Chennai 18.7.2019	Self-driven Activity	Quarter I	Report Verified.
International Seminar on Industry 4.0	International seminar on “Industry 4.0” by Dr. Anand Nayyar Professor, Researcher and Scientist in Graduate School, Duy Tan University, Da Nang, Viet Nam in our VRR Auditorium on 23.8.2019	Self-driven Activity	Quarter I	Report Verified.
Workshop on “Java Fundamentals”	Workshop on “Java Fundamentals” for II CSE by Mr.Anand Kumar,Senior Technology Analyst,Infosys Technologies from 4.7.19 to 6.7.19	Self-driven Activity	Quarter I	Report Verified.
Workshop on Cloud Computing with AZURE	Department of CSE in association with The Institution of Engineers (India) organized a Three days workshop on "Cloud Computing with AZURE" by Mr. P. Vignesh Senior System Engineer Infosys Pvt.Ltd. From 11.07.2019 to 13.07.2019.	Self-driven Activity	Quarter I	Report Verified.

Guest Lecture on Fundamentals of C	This is conducted to enrich the basic knowledge in C programming	Self-driven Activity	Quarter I	Report Verified.
Guest Lecture on Could Computing	Third year students are exposed to the openings they have in the field of Cloud Computing	Self-driven Activity	Quarter I	Report Verified.
Organise One Day Workshop on Problem Solving/Design Thinking/Ideation Workshop/ Campus Hackathon etc.	Organise One Day Workshop on mentioned topic with the help of expert.	IIC Calendar Activity	Quarter I	Report Verified.
workshop on skill Training on Technology and Soft Skills	585 students participated and 30 faculty participated	Self-driven Activity	Quarter I	Report Verified.
Workshop on Advanced java programming	98 students and 4 faculties participated	Self-driven Activity	Quarter I	Report Verified.
Guest Lecture on Next Generation Computing	98 students and 5 faculties participated	Self-driven Activity	Quarter I	Report Verified.
Guest Lecture on Empower Yourself on Data Analytics	97 students and 5 faculties participated	Self-driven Activity	Quarter I	Report Verified.
Guest Lecture on Full stack Java web development	98 students and 5 faculties participated	Self-driven Activity	Quarter I	Report Verified.

Guest Lecture on Building Information And modelling	Guest Lecture on Building Information And modelling conducted by department of civil engineering in association with MHRD IIC - SSIT , total student participated = 324 , Total Faculty = 18.	Self-driven Activity	Quarter I	Report Verified.
GUEST LECTURE ON BUILDING INFORMATION MODELLING	Innovative guest lecture on Building Information Modelling and thus it enhances the students to think beyond the syllabus.	Self-driven Activity	Quarter I	Report Verified.
INDUSTRIAL VISIT TO POONDI RESERVOIR	Students will have a wonderful exposure and innovative idea in the field of hydraulic structures.	Self-driven Activity	Quarter I	Report Verified.
SEMINAR ON DURABILITY OF CONCRETE	Seminar on the durability of concrete helps students to understand the characteristics , nature and workability of concrete.	Self-driven Activity	Quarter I	Report Verified.
Two Days faculty development Program on \" Creative thinking\"	Two Days faculty development Program on " Creative thinking" for engineering college teachers conducted by Sri Sairam institute of technology MHRD institute innovation council through department of Mechanical engineering .	Self-driven Activity	Quarter I	Report Verified.
ELEXPLORE\'19	A national level techfest was organised by the department of ECE on 25.09.2019	Self-driven Activity	Quarter I	Report Verified.

INDUSTRIAL VISIT	Field visit to company organised by department of Information Technology , Sri sairam Institute of Technology , Chennai	Self-driven Activity	Quarter I	Report Verified.
Field Visit on Industries	Industrial visit to EID PARRY INDIA LIMITED, NELLIKUPPAM, CUDDALORE DISTRICT	Self-driven Activity	Quarter I	Report Verified.
Field Visit on Industries	iNDUSTRIAL VISIT TO BUTTERFLY GANDHIMATHI APPLIANCES PRIVATE LIMITED, PUDUPAKKAM VILLAGE, CHENNAI	Self-driven Activity	Quarter I	Report Verified.
Field Visit on Industries	industrial visit to BUTTERFLY GANDHIMATHI APPLIANCES LIMITED, PUDUPAKKAM VILLAGE, CHENNAI.	Self-driven Activity	Quarter I	Report Verified.
INNOVATION FESTIVAL	INTER COLLEGE INNOVATION FESTIVAL	Self-driven Activity	Quarter I	Report Verified.
ROBOTICS AND EMBEDDED SYSTEMS	TWO DAYS WORKSHOP ON ROBOTICS AND EMBEDDED SYSTEMS WAS CONDUCTED BY DEPARTMENT OF ECE	Self-driven Activity	Quarter I	Report Verified.
SIX DAYS AICTE SPONSORED STTP ON RESEARCH AREAS IN SMART ANTENNA DESIGN FOR CUBESAT APPLICATIONS	A SIX DAYS AICTE SPONSORED STTP ON RESEARCH AREAS IN SMART ANTENNA DESIGN FOR CUBESAT APPLICATIONS WAS ORGANIZED BY DEPARTMENT OF ECE	Self-driven Activity	Quarter I	Report Verified.

Idea Submission in Smart India Hackathon 2020	The top 7 teams (5 teams for Software edition and 2 teams for Hardware edition) nominations (from internal hackathon) must be submitted on the SIH portal by the College SPOC only. SPOC registration will start from 1st December 2019 The last date for team nomination and idea submission by College SPOC on SIH portal will be 25th January 2020. This deadline will not be extended under any circumstances and no exceptions will be made.	MIC driven Activity	Quarter II,Quarter III	Report Verified.
Workshop on National Innovation and Start-up Policy (NISP)	Organise Awareness Workshop on National Innovation and Start-up Policy (NISP) for Students and Faculties in Higher Educational Institutions (HEIs)	MIC driven Activity	Quarter II	Report Verified.
Demo Day – Exhibition Cum Mentorship Session for Innovators (or) Student Entrepreneurs	Exhibition Cum Mentorship Session for Innovators	IIC Calendar Activity	Quarter III	Report Verified.
Organise One Day Awareness/Mentoring Session on IPR & IP Management for Innovation and Start-ups or Online Session on Intellectual Property (IP) Management at Early Stage of Innovation and Start-ups	Online Session 8:One Day Awareness/Mentoring Session on the campus or Online session by Dr Sanjeeva Kumar Majumdar Manager-IPR, StartUp & Incubation	IIC Calendar Activity	Quarter III	Report Verified.

Organise One/half day Interactive/online Session/Mentoring Session “Hangout with Successful Start-ups” (Entrepreneurs in Campus)	Online Session3 by 1.Ms. Vandana Thakur Female Innovator cum Entrepreneur 2.Mr. Amit Sanjay Lokhende Innovator Cum Entrepreneur (or interactive Session in Campus)	IIC Calendar Activity	Quarter III	Report Verified.
Organise One day Session on “How to plan for Start-up and legal and Ethical Steps”	Online Session 10:Organize the Interactive session on the subjects mentioned. or Online session organized by IIC: Legal and Ethical Steps - Productive Entrepreneurship and Startup by Mr. Harit Mohan: Founder & CEO of Signicent LLP in India and Signicent LLC in the US	IIC Calendar Activity	Quarter III	Report Verified.
Organise Workshop on Business Model Canvas (BMC) and (or) Business Plan Competition to Invite Innovative Business Models from Students	Online Session 14:Interactive session on campus or online session by IIC on Idea, Business Model and Business Plan Speaker: 1.Dr. Amit Dwivedi, Associate senior faculty EDII, Ahmedabad 2. Dr. S. R. Acharya Associate Sr. Faculty, EDII Ahmedabad	IIC Calendar Activity	Quarter III	Report Verified.
Field/Exposure Visit to Incubation Unit/Patent Facilitation Centre/Technology Transfer Centre	Exposure Visit	IIC Calendar Activity	Quarter III	Report Verified.
*Progress Monitoring and Upload of 3rd Quarter Action Plan with Minutes of Meeting of Council	Organise the council meeting and Upload the 3rd Quarter action plan along with meeting of minutes .	IIC Calendar Activity	Quarter III	Report Verified.

Skill Development Programme for Masons on Quality Aspects	Skill development Programme for Mason helps to enhance the quality of the work to be carried out in the site. And this skill development helps to motivate the mason to become a successfull entrepreneur.	Self-driven Activity	Quarter II	Report Verified.
Faculty Development Programme (FDP) on “Machine Learning using Python”	Two days Faculty Development Programme (FDP) on “Machine Learning using Python” is being conducted at Sri Sairam Institute of Technology to the faculty members of Engineering, Research Scholars and other allied disciplines from India. This FDP is devoted to fundamental theory, recent developments and research outcomes addressing the related theoretical and practical aspects of Machine learning techniques. In this FDP, 3 hands on lab sessions are planned to apply machine learning techniques on different data sets for prediction and estimation in Python Software.	Self-driven Activity	Quarter II	Report Verified.
Field Visit on Industries	One of our student went to ATRIBS SOFTWARE SYSTEMS PRIVATE LIMITED for a internship, where he gained knowledge about how to move forward with startup initiative.	Self-driven Activity	Quarter II	Report Verified.
Field Visit on Industries	Students went to INFOZIANT IT solution to gain knowledge about emerging areas of research.	Self-driven Activity	Quarter II	Report Verified.

Field Visit on Industries	Student went to field visit to gain knowledge about web development	Self-driven Activity	Quarter II	Report Verified.
One Day Seminar on implementation of SUSTAINABLE DEVELOPMENT GOALS in educational institutions	One Day Seminar on implementation of SUSTAINABLE DEVELOPMENT GOALS in educational institutions organized by Sri Sai Ram institute of technology in association with Institutions innovation Council (IIC) by International Society for Krishna Consciousness (ISKCON) SDG 16 Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels. The yoga most people are familiar with isn't meant for everyone. In fact, in this age it's hardly possible for anyone. The term yoga literally means "linking" and refers to linking one's consciousness with the Supreme.	Self-driven Activity	Quarter II	Report Verified.
Five Day Training (Value Added Course) on Redhat(open source) Technology & Industry Adaptation	Five Day Training (Value Added Course) on Redhat(open source) Technology & Industry Adaptation organized by Department of Computer Science and Engineering in Sri Sai Ram institute of technology in association with Institutions innovation Council (IIC)	Self-driven Activity	Quarter II	Report Verified.

Six Days Faculty Development Program on FEA	Six Days Faculty Development Program on FEA	Self-driven Activity	Quarter II	Report Verified.
entrepreneur exposure	students visited industries in order to know about the professional and technical skills required to become an entrepreneur.	Self-driven Activity	Quarter II	Report Verified.
INDUSTRIAL EXPOSURE	field visit to company to know about latest technology used for developing their product,	Self-driven Activity	Quarter II	Report Verified.
Field visit to industries	Field visit to TAMILNADU GENERATION AND DISTRIBUTION CORPORATION LIMITED NORTH CHENNAI THERMAL POWER STATION for gaining entrepreneurship experience through technology development	Self-driven Activity	Quarter II	Report Verified.
Entrepreneurship exposure to students through industry interaction	Objective of this visit : To create awareness on content beyond syllabus and Entrepreneurship through Field visit and gain Practical knowledge for Future Development. OUTCOMES: The Students gained Knowledge about Entrepreneurship activities in Industrial Environment and learned the business concepts towards new start up initiations.	Self-driven Activity	Quarter II	Report Verified.

Entrepreneurship awareness student camp at industrial environment	Objective of this visit: To create awareness on content beyond syllabus and Entrepreneurship through Field visit and gain Practical knowledge for Future Development. OUTCOMES: The Students gained Knowledge about Entrepreneurship activities in Industrial Environment and learned the business concepts towards new start up initiations.	Self-driven Activity	Quarter II	Report Verified.
Field Visit on Industries	Objective of this visit: To create awareness on content beyond syllabus and Entrepreneurship through Field visit and gain Practical knowledge for Future Development. OUTCOMES: The Students gained Knowledge about Entrepreneurship activities in Industrial Environment and learned the business concepts towards new start up initiations.	Self-driven Activity	Quarter II	Report Verified.
Internship on AAI CARGO LOGISTICS & ALLIED SERVICE COMPANY	Students have attended a six days Internship programme on Integrated Air Cargo at Chennai Airport.	Self-driven Activity	Quarter II	Report Verified.
Field visit on Bharat Eletronics Limited	The students have visited Product assurance, Testing and Quality Management in Bharat Electronics Limited.	Self-driven Activity	Quarter II	Report Verified.
Project work at Bahwan Cybertek	He has developed a machine learning algorithm to predict generator failures in wind turbines	Self-driven Activity	Quarter II	Report Verified.

Vocational training at Chennai Port Trust	He has undergone a vocational training on Electronic Data Processing at Chennai Port Trust	Self-driven Activity	Quarter II	Report Verified.
Practical training at Codebind Technologies	Students have undergone a practical training on Embedded Systems and Internet of things	Self-driven Activity	Quarter II	Report Verified.
Innovative training at Dreamfort Interiors and Constructions	Trained in Internet of Things for Smart homes at Dreamfort Interiors and Constructions	Self-driven Activity	Quarter II	Report Verified.
Innovative training at Foreview Technologies	Students learnt about Embedded technology at Foreview Technologies	Self-driven Activity	Quarter II	Report Verified.
Novel training at Hyoristic Innovations	He has learnt about Satellite and Space Debris. He was able to complete the initial stage of project and will be continuinng in the future.	Self-driven Activity	Quarter II	Report Verified.
workshop at infoziant	she has underwent on workshop on internet of things at infoziant	Self-driven Activity	Quarter II	Report Verified.
oracle training at kaashiv infotech	students have undergone oracle training at kaashiv infotech	Self-driven Activity	Quarter II	Report Verified.
Field Visit on National Institute of Ocean technology	students underwent field visit on national institute of ocean technology	Self-driven Activity	Quarter II	Report Verified.
training on networking at redback it solutions	students underwent training on networking for their project development	Self-driven Activity	Quarter II	Report Verified.

training at retech solutions	students undergone training on embedded systems	Self-driven Activity	Quarter II	Report Verified.
Department visit at Schneider Electric	Had a quality department visit at Schneider Electric	Self-driven Activity	Quarter II	Report Verified.
INNOVATIVE IDEAS INTO PRODUCT DEVELOPMENT	to develop the student innovative skills	Self-driven Activity	Quarter II	Report Verified.
Workshop at VI MIcrosystems	Gained knowledge about Embedded and IoT Technology	Self-driven Activity	Quarter II	Report Verified.
Project work at Zoho corporation PVT LTD	Doing project work in Zoho corporationPVT LTD	Self-driven Activity	Quarter II	Report Verified.
Innovative training in TV Enterprises	Developed skills in air pollution control equipment in centrifugal blowers, axial flow fans, man coolers and high ration pulse jet back filters, ventilation system	Self-driven Activity	Quarter II	Report Verified.
Entrepreneurship filed visit to company	Entrepreneurship filed visit to Research and development center / company / Industry (CSIR – Central Leather Research Institute)	Self-driven Activity	Quarter II	Report Verified.
Start-up Filed visit	Start-up Filed visit for Civil Engineering students	Self-driven Activity	Quarter II	Report Verified.

Industrial exposure Visit	Industrial exposure Visit to BRC Engineering Solutions, Thiruvananthapuram, Kerala, India.	Self-driven Activity	Quarter II	Report Verified.
Innovation & Start-up Internship	Innovation & Start-up Internship for computer science and engineering students (five days)	Self-driven Activity	Quarter II	Report Verified.
Start-up Filed visit	Start-up Filed visit for Computer science engineering students at one yes technologies , Chennai.	Self-driven Activity	Quarter II	Report Verified.
Industrial exposure Visit	Industrial exposure Visit to NLC power plant for technical inputs and knowledge sharing	Self-driven Activity	Quarter II	Report Verified.
Entrepreneurship filed visit to company	Entrepreneurship filed visit to company for computer science engineering students	Self-driven Activity	Quarter II	Report Verified.
Technical Field Innovation Training at industry	Technical Field Innovation Training at industry for Mechanical Engineering	Self-driven Activity	Quarter II	Report Verified.
Start-up training at Industry	Start-up training at Industry for mechanical Engineering & Faculty	Self-driven Activity	Quarter II	Report Verified.
One Day Seminar on Social Innovation and Entrepreneurship	One Day Seminar on Social Innovation and Entrepreneurship was conducted by department of Information Technology In association with MHRD Institute Innovation council - Sri Sai Ram Instititue of Technology .	Self-driven Activity	Quarter II	Report Verified.

Guest Lecture on Brake system design and latest advancement	Guest Lecture on Brake system design and latest advancement for mechanical Engineering students.	Self-driven Activity	Quarter III	Report Verified.
Expert Lecture on Fundamentals of Automotive friction materials	Expert Lecture on Fundamentals of Automotive friction materials for mechanical engineering Students .	Self-driven Activity	Quarter III	Report Verified.
Guest Lecture on Data Science	Organized Guest Lecture on Data Science	Self-driven Activity	Quarter III	Report Verified.
career guidance programme on higher education in australia	One day career guidance programme on higher education in australia	Self-driven Activity	Quarter III	Report Verified.
seminar on education abroad	One day seminar on education abroad	Self-driven Activity	Quarter III	Report Verified.
Guest lecture on AI and Robotics	Gained knowledge on AI and Robotics	Self-driven Activity	Quarter III	Report Verified.
Field Visit on Industries	Cement plant information including location and capacity for UltraTech Cement Ltd. - Arakkonam.	Self-driven Activity	Quarter III	Report Verified.

Guest Lecture on Environmental Protection	to deal with the release of a hazardous substance that could affect humans and/or the environment. The term clean-up is sometimes used interchangeably with the terms remedial action, response action or corrective action as opposed to the terms preventive action or anticipatory action.	Self-driven Activity	Quarter III	Report Verified.
Two days skill development program on testing and servicing measuring equipments for technical staff members	A technical skill development program for supporting staff members to develop their skills in servicing and testing equipments	Self-driven Activity	Quarter III	Report Verified.
Six days workshop on PCB design Using Orcad PSPICE and Applications of MATLAB	A six days workshop on ORCAD PSPICE and MATLAB Applications for II and III ECE students	Self-driven Activity	Quarter III	Report Verified.
Science Day	National Science Day	MIC driven Activity	Quarter III,Quarter IV	Report Verified.
Idea Submission for the Launch of 5G hackathon by Department of Telecommunications	To identify and promote applications relevant to India in the 5G realm, the Department of Telecommunications (DoT) has launched ‘5G Hackathon’ (www.5ghackathon.in) in association with a number of government, academia& industry stakeholders. This Hackathon is aimed at shortlisting India focussed cutting edge ideas that	MIC driven Activity	Quarter III	Report Verified.

	can be converted into workable 5G products and solutions. The Hackathon will be spread across three phases beginning from February 21, 2020 and culminate in a grand felicitation ceremony at India Mobile Congress on October 16, 2020. Winners of the various phases will share a total prize pool of Indian Rs. 250 Million. 5G Hackathon will convert innovating ideas into products and solutions in different verticals and develop India specific Use cases around 5G. Various phases of the Hackathon broadly include preliminary submission of ideas, selection of 100 best ideas, mentorship and support from the Hackathon partners, development of solutions/products, selection and testing of 30 best solutions/ products on 5G trial network followed by felicitation of the 3 best ideas during India Mobile Congress (IMC), 2020. Participants can develop 5G solutions from across 10 categories including Healthcare, Education & Governance, AgriTech & Livestock, Environment, Public Safety & Disaster Management Enterprise, Smart Cities & Infrastructure, Cyber Security, Banking, Finance & Insurance, Logistics & Transportation, Multimedia & Broadcast, among others			

Leadership Talk	Leadership Talk with Mr. Abhishek Suryawanshi, Director, Wikipedia Swastha	MIC driven Activity	Quarter III	Report Verified.
Leadership Talk	Leadership talk with Prof. K Vijay Raghavan, Principal Scientific Adviser, Government of India	MIC driven Activity	Quarter III	Report Verified.
Leadership Talk	Leadership talk with Prof. Anil D.Sahasrbudhe, Chairman, AICTE	MIC driven Activity	Quarter III	Report Verified.
Leadership Talk	Leadership talk with prof. Partha Chakraborty, Chairman National Digital Library,Ex-Director, IIT Kharagpur	MIC driven Activity	Quarter III	Report Verified.
Leadership Talk	Leadership talk with Mr.Abhishek Singh,CEO, My Gov	MIC driven Activity	Quarter III	Report Verified.
MHRD Mega Online Challenge Samadhan	The mega online challenge "SAMADHAN" (www.mic.gov.in/samadhan) has been launched by MIC and AICTE in collaboration with Forge and InnovatioCuris to test the ability of students and Educators to innovate	MIC driven Activity	Quarter III	Report Verified.
Leadership Talk	Dr. VK Saraswat, Member NITI Aayog.Dr. Saraswat will talk about how Make in India will become more relevant in post-Covid world.	MIC driven Activity	Quarter III	Report Verified.

Leadership Talk	Talk with Dr. Anand Deshpande, Founder, Chairman & Managing Director, Persistent Systems Ltd	MIC driven Activity	Quarter III	Report Verified.
Leadership Talk	leadership talk is with Ms. Shradha Sharma, Founder, and Chief Editor, YourStory.com	MIC driven Activity	Quarter III	Report Verified.
Leadership Talk	Leadership talk with Dr. Vinay Sahasrabhddhe, President, ICCR	MIC driven Activity	Quarter IV	Report Verified.
Leadership Talk	Leadership talk with Mr. Ronnie Screwvala	MIC driven Activity	Quarter IV	Report Verified.
Leadership Talk	Leadership Talk with Prof. K.K Aggarwal, National Board of Accreditation(NBA), Govt. of India	MIC driven Activity	Quarter IV	Report Verified.
Leadership Talk	Leadership talk with Mr. Yashraj Bhardwaj, Co-Founder, Zenith Vipers & Partner Ensure Equity	MIC driven Activity	Quarter IV	Report Verified.
Leadership Talk	Leadership talk with Dr.Gurung Desh Deshpande,Indian-American Venture Capitalist & Entrepreneur	MIC driven Activity	Quarter IV	Report Verified.
National Innovation and Startup Policy for Students and Faculty 2019	Online Session1 on NISP 2019 by Mr. Dipan Sahu,National Coordinator - IIC, ARIIA, NISP Innovation Cell, Ministry of HRD, Govt. of India	MIC driven Activity	Quarter IV	Report Verified.
Leadership Talk	leadership talk is with Padma Shri, Vaidya Rajesh Kotecha, Secretary Ministry of Ayush, Govt of India	MIC driven Activity	Quarter IV	Report Verified.

Leadership Talk	Leadership talk with Mr. Gautam Bambawale, Ex-India's Ambassador to China on how this Covid crisis offers unique opportunity for India vis-à-vis China.	MIC driven Activity	Quarter IV	Report Verified.
Leadership Talk	#LeadershipTalk! Don't Miss! Tomorrow 27 Apr 11.00 am on Twitter @abhayjere discussion with Dr.BVR Mohan Reddy, Chairman Cyient & Ex-Chairman NASSCOM. Dr. Reddy talks about silver lining for industry in #Covid crisis.	MIC driven Activity	Quarter IV	Report Verified.
Role of Network Enablers in driving I&E in HEIs - A Case of TiE, India	Online Session 4: > TiE Network and Chapters in India > Role of TIE as Ecosystem Enablers > Services and Collaboration Opportunities with HEIs to Drive I&E Ecosystem	MIC driven Activity	Quarter IV	Report Verified.
Leadership Talk	The next episode of India First Leadership Talk Series scheduled on 2nd May 2020 at 11.00AM with Dr. Madhuri Kanitkar, Lieutenant General who is the only 3rd women to become 3 Star-General in India Arm Forces. Live Session Detail: Date: 2nd May 2020 Time: 11.00 AM	MIC driven Activity	Quarter IV	Report Verified.

Understanding Angel and Venture Capital Funding - What is there for Early Stage Innovator & Entrepreneurs	Online Session 9 > Right stage of innovation or startup to approach Angel or VC > What is the checklist before approach angle and VC fund > How to make background check to identify Right Angel/ VC Agency > What are the stage of VC and angel funding	IIC Calendar Activity	Quarter IV	Report Verified.
Session on Accelerator/Incubation - Opportunity for Student Faculty - Early Stage Entrepreneurs	Online Session2:Role and Importance of Pre-Incubators, Incubators and Accelerators in HEIs - Harnessing Innovation and Entrepreneurial Potential of Students and Faculties at Early Stage	IIC Calendar Activity	Quarter IV	Report Verified.
Hangout with Successful Startup Founder and Learn on Design thinking Approach for Hardware Innovation	Online Session 5: * Life of a Startup Founder and Myths and take home Messages * Learn Design thinking for Hardware Innovation	MIC driven Activity	Quarter IV	Report Verified.
Entrepreneurship, Business Idea and Business Model Canavas	Online Session 6 -Entrepreneurial Motivation -Empathy and Business Idea -Business Model Canvas	MIC driven Activity	Quarter IV	Report Verified.
How to Identify Right Problem and Solution using the Double Diamond Approach in Design	Online Session 7:> What is Design thinking and the importance of problem finding > Steps and Approaches of Double Diamond Process in design thinking > Tools in the Double Diamond process > Strategize product innovation and business offerings using design thinking	MIC driven Activity	Quarter IV	Report Verified.

Leadership Talk	#LeadershipTalk We will give 'Certificate of Participation' to all students/faculty attending tomorrow's interesting talks with Prof. DP Singh, Chairman on 9th May at 11.00 am on Dr. Abhay Jere Twitter handle @abhayjere So don't miss the opportunity! We Will share link on twitter.	MIC driven Activity	Quarter IV	Report Verified.
Understanding Role and Application of Marketing Research at Idea to StartUp Stage - Foundation Level	Online Session 12-What is Market Research -Importance of Market Research Starting from Idea to Startup Phase -Open Source Tools and Their Application	MIC driven Activity	Quarter IV	Report Verified.
Innovation Risk Diagnostic: Product Innovation Rubric (PIR)	Online Session 13: > Understand the different risks inherent to Product Innovation and how you can validate the true market potential of the product innovation by linking it to customer motivation, customer-acceptance, and customer-commitment > Learn the fundamentals of PIR and the diagnostic tool to evaluate and assess the potential of the Product Innovations and to gauge its progress.	MIC driven Activity	Quarter IV	Report Verified.
Leadership Talk	#LeadershipTalk Please note the Revised Time (now 1.00 pm on 16 May) of the broadcast of Dr. Abhay Jere interaction with Dr. Pramod Chaudhari, Founder & Chairman, PrajIndustries	MIC driven Activity	Quarter IV	Report Verified.

Innovating Self- Screen and Identify right opportunities	Online Session 11 by Prof. Sanjay Inamdar Entrepreneur and Founder of Flucon MIT, Harvard, and Carnegie Mellon alumni Chairman, AICTE Startup Policy Implementation Committee: 13th May 2020, Time 03.00 PM to 04.00 PM	IIC Calendar Activity	Quarter IV	Report Verified.
Use of Market Data and Application of Marketing Research Tools and Methodology - Advance Level	Online Session 15: -Increasing Chances of Survivality of Innovation and Venture -Actually applying data and market research for survival -B2B and B2C case studies	MIC driven Activity	Quarter IV	Report Verified.
Frugal Innovation and Social Entrepreneurship	Online session 16:Frugal Engineering and Social Entrepreneurship	MIC driven Activity	Quarter IV	Report Verified.
Interaction with Student Innovators and Entrepreneurs Emerged from Smart India Hackathon (SIH)	Online Session 17:Interaction with Student Innovators and Entrepreneurs Emerged from Smart India Hackathon (SIH)	MIC driven Activity	Quarter IV	Report Verified.
Leadership Talk	The next episode of India First Leadership Talk Series scheduled on 23rd May 2020 at 1.00 PM with Shri Mahesh Babu, CEO, Mahindra Electric Mobility Ltd. Shri Mahesh Ji will discuss opportunities in the auto-sector in the post-COVID-19 world. Please do join at the talk series on Twitter https://twitter.com/abhayjere	MIC driven Activity	Quarter IV	Report Verified.

Leadership Talk	#LeadershipTalk Very interesting interaction with @NileshOak which every Indian should watch. Nilesh emphasizes why every youngster should know about 24000 years of Indian civilization & how it will help them in having a great career & successful life.	MIC driven Activity	Quarter IV	Report Verified.
Webinar series from 30.5.2020-4.6.2020	Webinar series on block chain technology with its tools.	Self-driven Activity	Quarter IV	Report Verified.
Webinar on EXPECTATIONS OF ENVISIONED FUTURE	Motivational talk for Startup/Entrepreneurship.	Self-driven Activity	Quarter IV	Report Verified.
Online Leadership talk	28 April 11.00 am on twitter on @abhayjere sir discussion with Ms. Anu Acharya, Serial Entrepreneur and winner of Young Entrepreneur Award by World Economic Forum.	Self-driven Activity	Quarter IV	Report Verified.
Webinar on AN INTRODUCTION TO CLOUD HOSTED SERVERS AND SERVICES	Webinar about Servers and its services in cloud.	Self-driven Activity	Quarter IV	Report Verified.
Webinar on career pathway for engineering and medicine	Career guidance program for engineering and medicine.	Self-driven Activity	Quarter IV	Report Verified.

Six Days Faculty development program on TOOLS EXPLORED IN DISRUPTIVE TECHNOLOGIES	Six Days Faculty development program	Self-driven Activity	Quarter IV	Report Verified.
Six Days Faculty Development Program on Computer and Communication Networks	Six Days Faculty Development Program about Communication Networks	Self-driven Activity	Quarter IV	Report Verified.
ONE DAY WORKSHOP ON ANGEL FUNDING FOR EARLY STAGE ENTREPRENEURS	ONE DAY WORKSHOP FOR EARLY STAGE ENTREPRENEURS	Self-driven Activity	Quarter III	Report Verified.
Industrial visit for Regional Meteorological Center, Chennai	Industrial Visit	Self-driven Activity	Quarter III	Report Verified.
Career Pathway Session S2T Webinar on \"Know - What\'s Next? \" for HSC Students	Career Pathway Session #S2T Webinar on "Know - What's Next? " for HSC Students by Mr.J.P Gandhi Career Consultant and Analyst given a Speech on "What Next after School?"	Self-driven Activity	Quarter IV	Report Verified.
Promoting Employability Skills	Sri Sairam Institute of Technology - Department of Information Technology and Alumni Association is organizing One Week Webinar Series on "Promoting Employability Skills" from 18.05.2020 to 24.05.2020 for II and Pre-Final Year Students.	Self-driven Activity	Quarter IV	Report Verified.

Career Pathway Session for Engineering and Medicine	Career Pathway Session for Engineering and Medicine	Self-driven Activity	Quarter IV	Report Verified.
Live Webinar on Team Work	Live Webinar on Team Work in association with ICT Academy	Self-driven Activity	Quarter IV	Report Verified.
Awareness on Arogya Setu App	Make Awareness about Covid-19 during this lockdown period and Importance of Arogya Setu Mobile App	Self-driven Activity	Quarter IV	Report Verified.
ONLINE ISTE - STTP ON INDUSTRIAL ROBOTICS AND MACHINE VISION TECHNOLOGY	ONLINE SHORT TERM TRAINING PROGRAM ON ROBOTICS	Self-driven Activity	Quarter IV	Report Verified.
WEBINAR ON WOOD CONSTRUCTION	Guest lecture on wood construction to enhance their knowledge and their skills and this makes to create innovative ideas and design thinking.	Self-driven Activity	Quarter IV	Report Verified.
WEBINAR ON GOOD PRACTICES IN CONSTRUCTION	Good practices in construction in the civil industry helps students to enhance the carrier skills.	Self-driven Activity	Quarter IV	Report Verified.
Webinar on The Civil Engineering Future opportunities ……	interaction between alumni and students about The Civil Engineering Future opportunities	Self-driven Activity	Quarter IV	Report Verified.
Webinar on Career Guidance for Engineering and Medicine	This program career guidance for engineering and medicine. Program explains about the study options after 12th and also the opportunities to enhance their carrier.	Self-driven Activity	Quarter IV	Report Verified.

Story telling workshop on \" Innovative product ideas into development Phase\"	Story telling workshop on " Innovative product ideas into development Phase"	Self-driven Activity	Quarter III	Report Verified.
GPS TOTAL STATION - CONCEPTS AND APPLICATIONS	Total station training programme helps to learn the practical usage of equipments in the construction site and also learn how to plot the points . Thus finally this training program can be a booster for start up.	Self-driven Activity	Quarter III	Report Verified.
ONLINE FDP PROGRAM ON MATERIALS FOR THERMAL AND RENEWABLE ENERGY RESEARCH	ONLINE FACULTY DEVELOPMENT PROGRAM ON MATERIALS FOR THERMAL AND RENEWABLE ENERGY RESEARCH	Self-driven Activity	Quarter IV	Report Verified.
How to plan for Startup legal and ethical Steps	Motivational talk on " How to plan for Startup legal and ethical Steps "	Self-driven Activity	Quarter III	Report Verified.
National Conference on Recent Innovation in Civil Engineering	National Conference on Recent Innovation in Civil Engineering	Self-driven Activity	Quarter III	Report Verified.
Incubation visit for students	Incubation visit for students	Self-driven Activity	Quarter III	Report Verified.
Innovative product display cum EXPO participation at Anna University	Innovative product display cum EXPO participation at Anna University through social innovative products	Self-driven Activity	Quarter III	Report Verified.

Oneday Seminar on IOT And Machine Learning for Technical startups	Oneday Seminar on IOT And Machine Learning for Technical startups	Self-driven Activity	Quarter III	Report Verified.
Three Days workshop on proteus and aurdino handss on training for successful students startups	Two Days workshop on proteus and aurdino handss on training for successful students startups	Self-driven Activity	Quarter III	Report Verified.
ONLINE IEI-WEBINAR ON ROBOT AUTOMATION AND INDUSTRIAL 4.O	ONLINE IEI-WEBINAR ON ROBOT AUTOMATION AND INDUSTRIAL 4.O FOR VARIOUS INSTITUTION FACULTIES AND STUDENTS ACROSS THE COUNTRY	Self-driven Activity	Quarter IV	Report Verified.
ONLINE WEBINAR ON APPLICATIONS OF ARTIFICIAL INTELLIGENCE IN MANUFACTURING INDUSTRY	ONE DAY ONLINE WEBINAR ON APPLICATIONS OF ARTIFICIAL INTELLIGENCE IN MANUFACTURING INDUSTRY	Self-driven Activity	Quarter IV	Report Verified.
Guest Lecture on “ENTERPRISE DATA LAKE	Guest Lecture on “ENTERPRISE DATA LAKE	Self-driven Activity	Quarter III	Report Verified.
ONLINE WEBINAR ON MECHANICAL ENGINEERING RECENT TRENDS & OPPORTUNITIES.	ONLINE WEBINAR ON MECHANICAL ENGINEERING RECENT TRENDS & OPPORTUNITIES.	Self-driven Activity	Quarter IV	Report Verified.
National Business Communication skills development	National Business Communication skills development	Self-driven Activity	Quarter III	Report Verified.

National conference on Advanced Research and Innovations in Information and Communication Engineering (ARICE 2020) on 06.03.2020.	National conference on Advanced Research and Innovations in Information and Communication Engineering (ARICE 2020) on 06.03.2020.	Self-driven Activity	Quarter III	Report Verified.
ONLINE WEBINAR ON HOW TO GET PUBLISHED IN A SCIENTIFIC JOURNAL FROM RESEARCH TO PUBLICATION	ONE DAY ONLINE WEBINAR ON HOW TO GET PUBLISHED IN A SCIENTIFIC JOURNAL FROM RESEARCH TO PUBLICATION	Self-driven Activity	Quarter IV	Report Verified.
Innovative product / project Expo	Innovative product / project Expo	Self-driven Activity	Quarter III	Report Verified.
ONLINE WEBINAR ON BIO DIVERSITY : ITS TIME FOR NATURE	ONE DAY ONLINE WEBINAR ON BIO DIVERSITY : ITS TIME FOR NATURE	Self-driven Activity	Quarter IV	Report Verified.
ONLINE WEBINAR ON OPPORTUNITIES AT SAE EVENTS FOR STUDENTS	ONLINE WEBINAR ON OPPORTUNITIES AT SAE EVENTS FOR STUDENTS	Self-driven Activity	Quarter IV	Report Verified.
Online webinar on \" E mobility vehicles \" - startup motivation for students	Online webinar on " E mobility vehicles " - startup motivation for students	Self-driven Activity	Quarter IV	Report Verified.

INNOVATION AND BUSINESS PLAN COMPETITION FOR YOUNG ENTREPRENEURS	INNOVATION AND BUSINESS PLAN COMPETITION FOR YOUNG ENTREPRENEURS	Self-driven Activity	Quarter IV	Report Verified.
ONLINE Webinar on \"UM4EM (Use of Mathcad 4 Engineering Mathematics Subject)\"	ONLINE Webinar on "UM4EM (Use of Mathcad 4 Engineering Mathematics Subject)"	Self-driven Activity	Quarter IV	Report Verified.
online webinar on \"3D Printing - Applications in Fighting with Covid 19\"	Department of Mechanical Engineering is organizing online webinar on "3D Printing - Applications in Fighting with Covid 19" on 09.05.220 Expert Talk by Mr.Raj Soni, Fouder, Edu Tech3D, Gujarat, India at 3:30 pm.	Self-driven Activity	Quarter IV	Report Verified.
FIELD VISIT ON DIAMOND GROUP PVT LTD	INDUSTRIAL VISIT FOR STUDENTS ON 10.3.2020	Self-driven Activity	Quarter III	Report Verified.
FIELD VISIT ON DIAMOND GROUP PVT LTD	INDUSTRIAL VISIT FOR STUDENTS ON 10.3.2020	Self-driven Activity	Quarter III	Report Verified.

FIELD VISIT to TVS Training and Services Limited, Ambathur to TVS Training and Services Limited, Ambathur to TVS Training and Services Limited, Ambathur to TVS Training and Services Limited, Ambathur to TVS Training and Services Limited, Ambathur to TVS Training and Services Limited, Ambathur to TVS Training and Services Limited, Ambathur to TVS Training and Services Limited, Ambathur	FIELD VISIT to TVS Training and Services Limited, Ambathur to TVS Training and Services Limited, Ambathur to TVS Training and Services Limited, Ambathur to TVS Training and Services Limited, Ambathur to TVS Training and Services Limited, Ambathur to TVS Training and Services Limited, Ambathur to TVS Training and Services Limited, Ambathur	Self-driven Activity	Quarter III	Report Verified.
FACULTY FIELD VISIT TO RENAULT NISSAN PVT LTD	TO DEVELOP THE INNOVATION IDEA AND INDUSTRIAL EXPOSURE KNOWLEDGE	Self-driven Activity	Quarter III	Report Verified.
Online webinar on \" Automated guided vehicle \" (towards students startups)	Online webinar on " Automated guided vehicle " (towards students startups)	Self-driven Activity	Quarter IV	Report Verified.
Online Faculty training program on Renewable energy resources	Online Faculty training program on Renewable energy resources	Self-driven Activity	Quarter IV	Report Verified.

WEBINAR ON INTELLECTUAL PROPERTY RIGHTS (IPR) AND PATENT PRACTICES IN INDIA	WEBINAR ON INTELLECTUAL PROPERTY RIGHTS (IPR) AND PATENT PRACTICES IN INDIA - INNOVATION AND RESEARCH IN TO PATENT	Self-driven Activity	Quarter IV	Report Verified.
Online webinar on \" scope of industrial automation and digital marketing to wards startups\"	Online webinar on " scope of industrial automation and digital marketing towards startups"	Self-driven Activity	Quarter IV	Report Verified.
online webinar on \" Probable impacts of pandemic crisis on small and medium business in India	online webinar on " Probable impacts of pandemic crisis on small and medium business in Indi	Self-driven Activity	Quarter IV	Report Verified.
Leadership Talk	#LeadershipTalk Don't miss the interaction with @ashwinielephant Founder Elephant Design on 6 June 1.00 pm on Twitter handle @abhayjere Ashwini talks about the design elements which every youngster should know to succeed in life.	MIC driven Activity	Quarter IV	Report Verified.
Leadership Talk	The next episode of India First Leadership Talk Series scheduled on 13 Jun at 1.00 PM with Shri R Subrahmanyam, Secretary, Department of Social Justice and Empowerment. Please do join at the talk series on Twitter https://twitter.com/abhayjere	MIC driven Activity	Quarter IV	Report Verified.

Progress Monitoring and Upload of 4th Quarter Action Plan with Minutes of Meeting of Council		IIC Calendar Activity	Quarter I	Report Verified.
Leadership Talk	The next episode of India First Leadership Talk Series scheduled on 20th June 2020 at 1.00 PM with @ShridharVenkat,CEO @AkshayaPatr . Shridar-ji talks about opportunities for youngsters not only at Akshaya Patra but also in social entrepreneurship. AP is the world's biggest midday meal scheme .Please do join at the talk series on Twitter https://twitter.com/abhayjere	MIC driven Activity	Quarter IV	Report Verified.
6th International Day of Yoga 2020	6th International Day of Yoga 2020 - for students and Faculty	Self-driven Activity	Quarter IV	Report Verified.
Online Faculty development program on \" Heat Transfer and CFD towards industrial Applications\"	Online Faculty development program on " Heat Transfer and CFD towards industrial Applications"	Self-driven Activity	Quarter IV	Report Verified.
Online 5 days Webinar on Composite materials , testing and applications	Online 5 days Webinar on Composite materials , testing and applications	Self-driven Activity	Quarter IV	Report Verified.
5 days online webinar on \" Modern materials and industrial automation\"	5 days online webinar on " Modern materials and industrial automation"	Self-driven Activity	Quarter IV	Report Verified.

Webinar on \"Machine Vision and Industrial Automation\"	Webinar on "Machine Vision and Industrial Automation"	Self-driven Activity	Quarter IV	Report Verified.
S2T Webinar Series 2.0	S2T Webinar 2.0 for School Students to Choose their career after +2.	Self-driven Activity	Quarter IV	Report Verified.
Webinar on HVDC & THE CHANGING WORLD-RESKILLING THE NEW NORMAL	Webinar on HVDC & THE CHANGING WORLD-RESKILLING THE NEW NORMAL	Self-driven Activity	Quarter IV	Report Verified.
Two Days Webinar Series \"ROLE OF MACHINE LEARNING AND OPTIMIZATION ALGORITHM IN ELECTRICAL ENGINEERING\"	Two Days Webinar Series "ROLE OF MACHINE LEARNING AND OPTIMIZATION ALGORITHM IN ELECTRICAL ENGINEERING"	Self-driven Activity	Quarter IV	Report Verified.
Webinar on Software Software Configurations Management in Devops	Webinar on Software Software Configurations Management in Devops	Self-driven Activity	Quarter IV	Report Verified.
Candid Talk	Recent Technologies in IT Industry	Self-driven Activity	Quarter IV	Report Verified.
Impact Lecture Series-Lecture 1 \" IPR awarness Program for students and faculty \"	Impact Lecture Series-Lecture 1 " IPR awareness Program for students and faculty "	Self-driven Activity	Quarter III	Report Verified.

Impact Lecture Series-Lecture 2 \" Webinar on Startup and Innovation , IPR in Automobile technology\"	Impact Lecture Series-Lecture 2 " Webinar on Startup and Innovation , IPR in Automobile technology"	Self-driven Activity	Quarter IV	Report Verified.

QUICK LINKS

- Home (https://mic.gov.in)
- Innovation Council (https://mic.gov.in/iic.html)
- SIH (http://www.sih.gov.in)
- ARIIA (https://ariia.gov.in)

SOCIAL MEDIA LINKS

- Twitter (https://www.twitter.com/mhrd_innovation)
- Facebook (https://www.facebook.com/mhrdinnovationcell)
- Youtube (https://www.youtube.com/mhrdinnovationcell)
- Instagram (https://www.instagram.com/mhrd_innovationcell/)

CONTACT US

- www.mic.gov.in (http://mic.gov.in)
- iic.mhrd@aicte-india.org (mailto:elangovan.kariappan@gov.in)
- 011-29581239/1513/1223 (tel:011-29581232)

BY SPEED POST

GOVERNMENT OF INDIA
MINISTRY OF SCIENCE & TECHNOLOGY
Department of Science & Technology
Technology Bhawan, New Mehrauli Road,
New Delhi 110 016. **Phone** : 2653 7982, 2659
0312 **Fax** : 91-11-2653 7982
Email: sujit@nic.in

SUJIT BANERJEE
SCIENTIST F

No. 11/03/2015 -NEB

Dated 11th August, 2015

Dear Sir/Madam,

I hope by now you would have got the grants-in-aid for both recurring grants and capital grants credited to your account. You may kindly start the work of IEDC at the earliest, if you have not done so far.

You may also constitute your Advisory Committee for IEDC, as per the instructions given in the guidelines. DST is also a Member of the Committee and kindly inform me as and when you have constituted the committee. I would also request you to convene the first meeting of this Advisory committee by October/November period.

As a part of the financial support you would be required to submit UC & SAE at the end of the FY i.e. after 31st March, 2016. A copy of the format of UC & SAE is enclosed herewith. A copy of the UC is also required to be uploaded to CPSMS.

With kind regards,

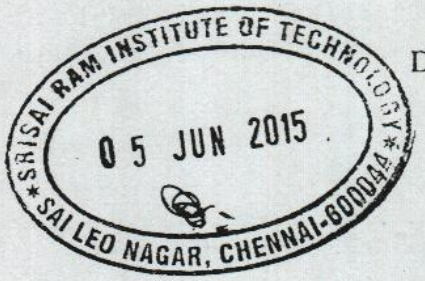
Yours sincerely,

(Sujit Banerjee)

Dr. K Palanikumar,
Sri Sai Ram Institute of Technology,
Sai Leo Nagar,
West Tambaram,
Chennai – 600 044

MR. Shanmugasundaram, APG II, Mech.

11/03/2015-NEB (C)
Government of India
Ministry of Science & Technology
Department of Science & Technology



Technology Bhawan,
New Mehrauli Road,
New Delhi 110 016.
Dated the 28 May 2015

ORDER

Sub: Establishment of an Innovation and Entrepreneurship Development Centre (IEDC) at Sri Sai Ram Institute of Technology, Chennaiduring 2014-15.

Sanction of the President is accorded for the establishment of an Innovation and Entrepreneurship Development Centre (IEDC) at SriSai Ram Institute of Technology, Chennaiat a total cost of Rs 13,30,000/- (Rupees thirteen lakhs thirty thousand only). Sanction of the President is also accorded for the release of an amount of Rs 530,000/- (Rupees Five lakh thirty thousand only) as one time non-recurring (capital) grants. The recurring financial assistance to the IEDC from this Department would be available for a maximum period of five years. However, the quantum of assistance and its continuation would be on yearly basis subject to the review of the performance of IEDC by the Department.

2. The host Institute would appoint a Co-ordination of IEDC immediately to oversee the operations of the IEDC on day to day basis.

3. The coordinator should undergo Faculty Development Programmes (FDP) as early as possible, which are sponsored by the Department and other agencies for developing trainers in entrepreneurship area.

4. *The manpower employed in the IEDC project would be co-terminus with the duration of the IEDC project and the Department(DST) would have no liability to meet the manpower costs beyond the duration of the project (Vide Order No. A-20020/11/97 IFD dt.16.8.2002). In order to ensure this, IEDC is advised to enter into yearly contract with the persons to be employed under the project.*

5. The host institution should also appoint an Advisory Board to be headed by the Principal/Head of the institution to monitor the progress of implementation of the IEDC project and its activities. This Board may advice the host Institute for raising funds from other sources for the IEDC for its activities.

6. The Drawing & Disbursing Officer, Department of Science & Technology, shall arrange to release an amount of Rs. 530,000/-(Rupees five lakhs thirty thousand only) to Sri Sai Ram Institute of Technology, Sai Leo Nagar, West Tambaram, Chennai – 600 044 by means of RTGS as per the following details given below --

Name of the Account Holder	Sri Sai Ram Institute of Technology
Name of the Bank	Central Bank of India
Branch Address	Sathyam Plaza, 198 GST Road, Chrompet, Chennai – 600 044
IFSC code	CBIN0281267
Account No.	3458218052
MICR Code	600016017

7. The sanction of this grant is subjected to the terms and condition mentioned in the Annexure.

8. The expenditure is debitable to Demand No. 86-Department of Science & Technology (DST) for the year 2015-16 (Plan):-

3425 Other Scientific Research (Major Head)
60 Other (Sub Major Head)
60.200 Assistance to Other Scientific Bodies (Minor Head)
08 Grants-in-aid for S&T programmes for Socio-economic Development
08.10 Science & Technology Entrepreneurship Development activities
08.10.35 Grants for creation of capital assets

9. The grantee should submit a six monthly progress report of activities of IEDC to the Department.

10. The grantee will submit the Utilization Certificate and the Statement of Audited expenditure as per the enclosed format of the department after the end of the current F.Y. They may also forward the budget for the next F.Y. along with it after the approval of the competent authority/monitoring committee.

11. As per Rule 211(1) of GFRs, the accounts of all grantee institutions shall be open to inspection by the sanctioning authority audit whenever the institution is called upon to do so.

12. This issues with the approval of Integrated Finance Division, Department of Science & Technology vide their sanction no. IFD/ 893/2015-16 dated 13/05/15.

13. The sanction order has been entered in the sanction order register as per GFR-39 at Sl.No.15 of the register.

14. "The Institute will maintain separate audited accounts for the project and the amount of grant will be kept in a bank account earning interest. The interest earned should be reported to DST while submitting the Statement of Expenditure/Utilization Certificate. The interest thus earned will be treated as a credit to the institute to be adjusted towards further installment of the grant".

15. It is certified that no UC is pending from the grantee in regards to the grants-in-aid released under the programme.

(Sujit Banerjee)
Scientist F

To,

The Pay & Accounts Officer
Department of Science & Technology
New Delhi.

Copy to:

1. Dr. K Palanikumar
   Sri Sai Ram Institute of Technology,
   Sai Leo Nagar,
   West Tambaram,
   Chennai – 600 044
2. Office of the Principal Director & Audit, AGCR Building, III Floor, I P Estate, New Delhi-110002.
3. Office of the Accountant General, Chennai.
4. Head (NEB)/Sanction Folder
5. Cash Section/IFD/Accounts Section

(Sujit Banerjee)
Scientist F

11/03/2015-NEB(G)
Government of India
Ministry of Science & Technology
Department of Science & Technology

SAI RAM INSTITUTE OF TECHNOLOGY
05 JUN 2015
SAI LEO NAGAR, CHENNAI-600044

05/06/15

Technology Bhawan,
New Mehrauli Road,
New Delhi 110 016.
Dated the 28 May 2015

ORDER

Sub: Establishment of an Innovation and Entrepreneurship Development Centre (IEDC) at Sri Sai Ram Institute of Technology, Chennai during 2015-16.

Sanction of the President is accorded for the establishment of an Innovation and Entrepreneurship Development Centre (IEDC) at Sri Sai Ram Institute of Technology, Chennaiat a total cost of Rs 13,30,000/- (Rupees thirteen lakhs thirty thousand only). The financial assistance to the IEDC from this Department would be available for a maximum period of five years. However, the quantum of assistance and its continuation would be on yearly basis subject to the review of the performance of IEDC by the Department.

2. Sanction of the President is also accorded for the release of grants- in- aid of Rs 800,000/- (Rupees eight lakh only) as the recurring expenditure for the first year of operation of IEDC to Sri Sai Ram Institute of Technology, Chennai.

3. Head wise break –up of the approved budget is shown below:

Sl No	Items of expenditure	Amount Rs
	Recurring	
1	Student projects (five Nos @ Rs 1.00 lakhs each)	5,00,000
2	Contingencies (phone fax stationery travel and honorarium to the Co-ordinator of IEDC etc)	3,00,000
	Total	8,00,000

4. The host Institute would appoint a Co-ordination of IEDC immediately to oversee the operations of the IEDC on day to day basis.

5. The coordinator should undergo Faculty Development Programmes (FDP) as early as possible, which are sponsored by the Department and other agencies for developing trainers in entrepreneurship area.

6. *The manpower employed in the IEDC project would be co-terminus with the duration of the IEDC project and the Department(DST) would have no liability to meet the manpower costs beyond the duration of the project (Vide Order No. A-20020/11/97 IFD dt. 16.8.2002). In order to ensure this, IEDC is advised to enter into yearly contract with the persons to be employed under the project.*

7. The host institution should also appoint an Advisory Board to be headed by the Principal/Head of the institution to monitor the progress of implementation of the IEDC project and its activities. This Board may advice the host Institute for raising funds from other sources for the IEDC for its activities.

8. The Drawing & Disbursing Officer, Department of Science & Technology, shall arrange to release an amount of Rs. 8,00,000/-(Rupees eight lakh only) to Sri Sai Ram Institute of Technology, Sai Leo Nagar, West Tambaram, Chennai – 600 044by means of RTGS as per the following details given below.

Name of the Account Holder	Sri Sai Ram Institute of Technology
Name of the Bank	Central Bank of India
Branch Address	Sathyam Plaza, 198 GST Road, Chrompet, Chennai – 600 044
IFSC code	CBIN0281267
Account No.	3458218052
MICR Code	600016017

9. The sanction of this grant is subjected to the terms and condition mentioned in the Annexure.

10. The expenditure is debitable to Demand No. 86-Department of Science & Technology (DST) for the year 2015-16 (Plan):-

3425 Other Scientific Research (Major Head)
60 Other (Sub Major Head)
60.200 Assistance to Other Scientific Bodies (Minor Head)
08 Grants-in-aid for S&T programmes for Socio-economic Development
08.10 Science & Technology Entrepreneurship Development activities
08.10.31 Grants –in -aid (General)

11. The grantee should submit a six monthly progress report of activities of IEDC to the Department.

12. The grantee will submit the Utilization Certificate and the Statement of Audited expenditure as per the enclosed format of the department after the end of the current F.Y. They may also forward the budget for the next F.Y. along with it after the approval of the competent authority/monitoring committee.

13. As per Rule 211(1) of GFRs, the accounts of all grantee institutions shall be open to inspection by the sanctioning authority audit, whenever the institution is called upon to do so.

14. This issues with the approval of Integrated Finance Division, Department of Science & Technology vide their sanction no. IFD/892/2015-16 dated 13/05/2015.

15. The sanction order has been entered in the sanction order register as per GFR-39 at Sl.No.14 of the register.

16. "The Institute will maintain separate audited accounts for the project and the amount of grant will be kept in a bank account earning interest. The interest earned should be reported to DST while submitting the Statement of Expenditure/Utilization Certificate. The interest thus earned will be treated as a credit to the institute to be adjusted towards further installment of the grant".

17. It is certified that no UC is pending from the grantee in regards to the grants-in-aid released under the programme.

Sujit Banerjee
Scientist F

To,

The Pay & Accounts Officer
Department of Science & Technology
New Delhi.

Copy to:

1. Dr. K Palanikumar,
   Sri Sai Ram Institute of Technology,
   Sai Leo Nagar,
   West Tambaram,
   Chennai – 600 044
2. Office of the Principal Director & Audit, AGCR Building, III Floor, I P. Estate, New Delhi-110002.
3. Office of the Accountant General, Chennai.
4. Head (NEB)/Sanction Folder
5. Cash Section/IFD/Accounts Section

(Sujit Banerjee)
Scientist F

Sri
SAI RAM INSTITUTE OF TECHNOLOGY
An Autonomous Institution | Affiliated to Anna University & Approved by AICTE, New Delhi
Accredited by NBA and NAAC "A+" | An ISO 9001:2015 Certified and MHRD NIRF ranked institution
Sai Leo Nagar, West Tambaram, Chennai - 600 044. www.sairamit.edu.in

PUBLICATIONS OF STAFF MEMBERS IN SCOPUS/SCI/WEB OF SCIENCE

(01/01/2019-31/01/2019)

S.no	Name of the Author	Scopus	Web of Science	Total No of Publications	Amount
1	Dr.K.Palanikumar	27	8	35	94,000
2	Mr.P.Nanthakumar	1	1	2	7,000
3	Dr.G.Shanmugasundar	2.5		2.5	5,000
4	Mr.A.Ponshanmugakumar	2		2	4,000
5	Mr.M.Balachandar	3	1	4	11,000
6	Mr.S.Balasubramani	1		1	2,000
7	Mr.R.Arunkumar	2		2	4,000
8	Mr.A.Sridhar	0.5		0.5	1,000
9	Mr.P.Ramu	0.5		0.5	1,000
10	Mr.B.Karthikeyan	0.5		0.5	1,000
11	Mr.N.Premkumar		1	1	5,000
12	Mr.E.Balakrishnan	1		1	2,000
13	Dr.G.Thamarai Selvi	1		1	2,000
14	Dr.G.Saravanan	1.5		1.5	3,000
15	Dr.P.Saravanan	1		1	2,000
16	Ms.R.Lakshmi Devi	1.5		1.5	3,000
17	Ms.G.Valarmathi	1		1	2,000
18	Ms.V.Subashini	1		1	2,000
19	Dr.Su.Suganthi	1		1	2,000
20	Ms.R.Janaki	1		1	2,000
21	Ms.S.Sweetline Shamini	1		1	2,000
22	Mr.Prasath Kumar.S	1		1	2,000
23	Ms.S.Deivanayagi	1		1	2,000
24	Dr.S.Rajarajan		1	1	5,000
25	Dr.C.R.Senthilnathan	2		2	4,000
26	Ms.S.Helen Roselin Gracy	1		1	2,000
27	Dr.B.Sreedevi	1			
28	Ms.D.Rajalakshmi	1		1	2,000
29	Mr.P.Rayavel	3.5			7,000
30	Mr.P.Ashok	0.5		0.5	1,000
31	Mr.J.Jayachandran	0.5		0.5	1,000
32	Dr.K.C.Suresh		1	1	5,000
33	Dr.M.Pachhaiammai@priya	2.5			5,000
34	Ms.P.Subha	1		1	2,000
35	Ms.A.Ponmalar	1		1	2,000
36	Ms.K.Anuratha	1		1	2,000
37	Ms.S.Sujeetha	1			2,000
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S. No.	Publications in various journals (01.01.2019 to 31.12.2019)	Amount to be fixed Per paper
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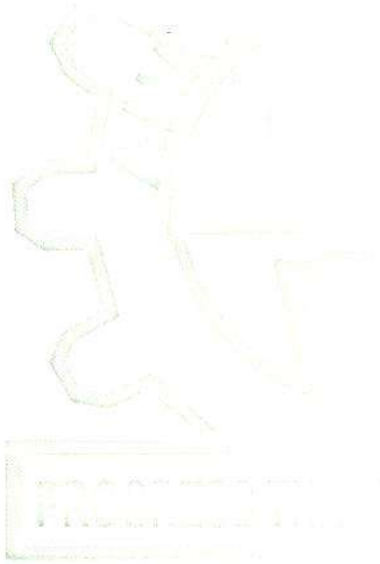

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Study on a Novel natural cellulosic fiber from *Kigelia africana* fruit: Characterization and analysis

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ABSTRACT

In recent days, there is an increasing use of green composites in composite manufacturing, where cellulosic natural fibers have been started using for this purpose. In line with this, a novel cellulose fiber was extracted from the *Kigelia africana* fruit and its physical, chemical and thermal properties, crystallography and surface morphology analysis were studied and reported in this investigative research paper. The physical analysis revealed the mean tensile strength as 50.31 ± 24.71 to 73.12 ± 32.48 MPa, diameter as 0.507 ± 0.162 to 0.629 ± 0.182 mm and density as 1.316 g/cm^3 for the *Kigelia africana* fiber. The proximate chemical analysis estimated the cellulose percentage to be 61.5 % and the existence of different basic components like cellulose, hemicellulose and lignin are confirmed by Fourier transform infrared spectroscopy analysis. Thermogravimetric analysis establishes the thermal stability of the fiber as 212 ^{0}C. The crystallinity index, 57.38 % of the fiber was determined by X-ray diffraction. Surface morphology by field emission scanning electron microscopy reveals the presence of protrusions in fiber which aid in the better adhesion with the matrix in composite manufacturing.

1. Introduction

The fast dwindling petroleum resources and changes in regulations on environmental policies have prompted researchers to focus on biodegradable, non-toxic and renewable resources (Porras, Maranon, & Ashcroft, 2015; Ramesh, Palanikumar, & Reddy, 2017). Synthetic fibers like carbon fiber, glass fiber and aramid fiber tend to cause cancer with prolonged exposure (Lee, Kelly, & Kennedy, 1983; Shannon, Muir, Haines, & Verma, 2005). Exposure to high dosage of glass fiber particles eventually leads to DNA damage by oxidative stress which was evidenced in human alveolar epithelial cell line (A549) exposed to glass fiber (Rapisarda et al., 2015). In addition, depression of lymphocytes in blood and allergies due to increase in eosinophil activators also occur (Indran & Raj, 2015). Many researchers have promoted the use of natural fibers over synthetic fibers due to their many favorable characteristics such as biodegradability, low cost of fiber extraction, less hazardous manufacturing process, low density, non-pollutant nature, low specific strength based on its texture and hydrophilic nature, acoustic and insulating properties (Senthamaraikannan & Kathiresan, 2018). The usage of natural fibers in composite manufacturing has increased recently, particularly in areas like construction, sports equipment, automobiles, aircrafts, naval, household appliances, textile and many more (Ramesh, Palanikumar, & Hemachandra Reddy, 2013). The plant parts like stem, root, fruit, leaf and bark determine the choice of extraction techniques (Mechanical, Chemical or Biological technique) which play a significant role on the quality and performance of the fiber (Belouadah, Ati, & Rokbi, 2015; Palani Kumar & Shadrach Jeya Sekaran, 2014). Researchers have focused on investigating newly discovered natural fibers from *Thespesia populnea* barks (Kathirselvam, Kumaravel, Arthanarieswaran, & Saravanakumar, 2019), *Coccinia grandis* stem (Jebadurai, Raj, Sreenivasan, & Binoj, 2019), Aerial roots of banyan tree (Ganapathy, Sathiskumar, Senthamaraikannan, Saravanakumar, & Khan, 2019), *Tridax procumbens* (Vijay et al., 2019), *Dracaena reflexa* (Manimaran et al., 2019), *Ficus religiosa* root (Moshi et al., 2020) to fulfill the growing industrial needs which are not fully met with existing cellulosic fiber production (Balaji & Nagarajan, 2017; Palanikumar & Subbiah, 2019). This research focuses on investigating the fiber extracted from *Kigelia africana* (Lam.) tree or also known as sausage tree fruit. No research work has been carried out on extraction and characterization of the physical, chemical and thermal properties of *Kigelia africana* fiber thus far, to the best of the author's knowledge. The tree belongs to the Bignoniaceae family. It is commonly found in

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Current Opinion in Chemical Engineering

Technologies in additive manufacturing for fiber reinforced composite materials: a review

Palanikumar K.[1], Mudhukrishnan M.[2] and Soorya Prabha P.[3]

The increase in demand and high product diversification range with reduced unit quantities leads to the innovation of flexible and digitized production. The emerging concept, like Additive Manufacturing (AM), is extensively used to make a prototype with insufficient mechanical strength. For addressing this problem, advancement in the production of Fiber Reinforced Plastic (FRP) composites is introduced in AM. At present, the significant challenges are there in this area in exact fiber placement, sizing of fiber, and their reality into engineering problems through effective control of the process parameters. The growing demand for the prototype and tailored properties of FRP components leads to new inventions intending to acquire short production cycle time and low cost in the manufacturing process. This paper presents the recent advances in the Additive Manufacturing of FRP composite materials using Vat Photopolymerization and Material Extrusion techniques.

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This review comes from a themed issue on **Material engineering: principles and technologies in additive manufacturing**

Edited by **M Nadagouda**, **Thein Kyu**, and **JA Sekhar**

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Introduction

Nowadays, engineering industries face many challenges to transfer the new light weight-based products from its original phases of the new product development cycle, which extends from design to start-of-production with distinct specifications [1•,2]. A new innovative concept like Additive Manufacturing (AM) generates new openings for the widespread product development and manufacturing of engineering components [3,4•]. In AM, the products are fabricated through layer-by-layer. In this technique, digital information of part geometries is converted into the final part [5]. It is one of the disruptive technologies because it intensively affects the timeline of the products from being designed and manufactured to customer requirements. Components with sophisticated internal features are produced by AM, which is a challenging task in the traditional manufacturing processes [6,7•]. At present, AM is also used in the field of biomedical, aerospace, and other engineering industries, due to their quick fabrication of prototype without any additional tool cost or special tooling.

AM technology is extensively used to manufacture plastic products, like prototypes and end-user products. Several AM technologies are established concerning feed materials, methods, and applications. In Stereolithography (SLA), a liquid phase photopolymer is used [8•], wherein, the Selective Laser Sintering (SLS) uses powder form of polymers. Filaments of polymers are used in the Fused Deposition Modelling (FDM) process [9], which is the most extensively used technique owing to its less cost, less wastage of feed materials, and ease of use.

In the present industrial scenario, AM technology is utilized to manufacture a part using FRP composite material. The SLA technique is used to make FRP components, but most of the industries use Fused Layer Modelling (FLM) [10]. The mechanical properties of FRP composite materials are increased with the increase in length and continuous form of the fibres [11].

The Fused Deposition Modelling (FDM) is a technique in which continuously heated fibre material is fed through the extruder. These extruding components are generally fixed on CNC x-y gantry, which helps to print intricate 3D profile. In AM Technology, numerous materials have been developed for printing the components [12,13]. For example, the thermoplastic polymer filament is manufactured for Fused Filament Fabrication (FFF), which is similar to FDM [14]. A new class of polymer powder is made for the SLS process, and a unique type of polymer liquids is processed for Poly-jet and SLA processes [15,16].

Current development in AM, especially with high mechanical properties, shows the increase in the manufacture of composite materials when compared to conventional polymeric materials [17]. The fillers and fibre reinforcement increase the strength, whereas; filler materials are

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Evaluation of a Suitable Material for Soft Actuator Through Experiments and FE Simulations

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ABSTRACT

Soft actuators are generally built to achieve extension, contraction, curling, or bending motions needed for robotic or medical applications. It is prepared with a cylindrical tube, braided with fibers that restrict the radial motion and produce the extension, contraction, or bending. The actuation is achieved through the input of compressed air with a different pressure. The stiffness of the materials controls the magnitude of the actuation. In the present study, Silastic-P1 silicone RTV and multi-wall carbon nanotubes (MWCNT) with reinforced silicone are considered for the evaluation. The dumbbell samples are prepared from both materials as per ASTM D412-06a (ISO 37) standard and their corresponding tensile strength, elongation at break, and tensile modulus are measured. The Ogden nonlinear material constants of respective materials are estimated and used further in the finite element analysis of extension, contraction, and bending soft actuators. It is observed that silicone RTV is better in high strain and fast response, whereas, silicone/MWCNT is better at achieving high actuation.

KEYWORDS

Braided Soft Actuator, FEA, Multiwall Carbon Nanotubes, Nonlinear Material Constants, RTV

INTRODUCTION

The traditional robots exist in the industries are made of metallic parts, motors and fluidic actuators. In contrast, the soft robot uses compliant materials that well suit it for handling soft or fragile materials or unshaped objects. The robot that uses soft material for gripper design is ultimately called as soft robot. It could be applied in medical or industrial applications in order to handle fragile objects like organs, fabrics, papers, vegetables, meat, eggs, etc. The soft actuators are pneumatic actuators that made of polymeric materials. They have been prepared as a key component in soft mechanism in order to directly contact or manipulate the object. Many different kinds of soft actuators have been investigated in the past. The McKibben actuator is the earliest developed pneumatic actuator which

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Investigation of the effect of process parameters on surface roughness in drilling of particleboard composite panels using adaptive neuro fuzzy inference system

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ABSTRACT

Particleboard wood composites are immensely used for many general and manufacturing applications. In this study, an analysis of various machining conditions has been performed to obtain good surface quality in the hole making of particleboard by varying the input parameters. The surface roughness (R_a) values obtained are ranging from 6.03 to 28.32 µm, and the minimum value is achieved at a higher speed, lower feed, and smaller point angle combinations. From ANOVA analysis, it has been observed that the model developed is adequate, and the influence on surface roughness is strong for feed (56.68%) followed by a point angle (28.42%) and then speed (9.37%). Mathematical models have been developed using two different criteria such as response surface methodology (RSM), adaptive neuro-fuzzy inference system (ANFIS) and compared for their effectiveness. The coefficient of determination (R^2(*R-Sq*)) values of 98.5% (RSM) and 99.9% (ANFIS) indicates that the models are useful to predict R_a of particleboard. The average checking error percentage (0.20098) has been obtained for the ANFIS model trained using '*gaussmf' membership function* with 100 epochs.

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Wood; particleboard; composites; carbide; drill; drilling; roughness; SEM; speed; feed; point angle; Taguchi; modeling; RSM; ANFIS

Introduction

Particleboard (PB) is finding increased applications in wall partitions, roofing, and flooring panels. The particleboard is a composite panel product manufactured by using wood waste particles. PB is a good alternative for wooden boards or plywood if the cost is a necessary criterion than strength. Drilling is extensively needed in all fields of manufacturing, furniture and automotive industries, aerospace, and structural applications. As the material removal in the drilling process is invisible during dynamic machining conditions, the selection of proper drill material, type, and geometry is a prerequisite to obtaining a smooth and functional valued drilled surface. The board density of wood-based composites has finding an essential role in the physical, chemical, and flexural properties and also the fasteners holding capabilities of the composite panels.[1–4] The tool wear is found to be higher in the machining of wood composites than the wood machining process. The tool wear in wood composites is due to abrasion and adhesion because of the presence of resin and other filler materials, also the increase of cutting forces and temperature during machining of composites.[5] The tool life is exceptionally very short in the machining of particleboards. Even the mineral contamination influences the wear on cutting edges of the tool in particleboard machining.[6] Because of high wear, oxidation, and scraped area utilization of tungsten carbide are restricted in the cutting of PB and fiberboard.[7] The influence of feed is affecting the surface quality in drilling of SiCp/Al composite with the PCD tool.[8] The rotary ultrasonic drilling of float glass is carried out and obtained good chips.[9] The delamination developed during drilling of composite laminates is found to be more when using high feed rates and larger drill diameters.[10] Thrust force and torque in drilling are more with more massive diameter drills[2,11] and less with a tremendous chisel edge and helix angle[12] and a small point angle.[13] Delamination and thrust force developed is reduced when small diameter drills are used in the drilling of wood composite panels.[14–16] The use of cellular materials for green energy in the automotive application has been analyzed.[17]

The surface quality using flat drills with a different tip angle and a spade drill at different feed (f) at a constant speed (N) has been analyzed. They reported that an increase in feed increases delamination.[18] Standoff distance has more influence, followed by jet pressure and traverse speed on R_a in $LaPO_4$-Y_2O_3 composite.[19] The effect of speed, fly ash, feed, drill diameter has been analyzed using ANOVA for R_a of CFRP.[20] The impact of the pressure of water, standoff – distance, the flow rate of abrasive, and traverse speed was studied on the R_a of Inconel 718.[21] Tool life of gun drills made of cemented carbide is more than the drills made of steel, and surface roughness is reduced with the use of coated drills.[22] The nose radius, feed and speed are affecting the surface quality and profile errors more in turning of C18000.[23] Nose radius, geometry, etc. have more influence on surface roughness.[24] RSM can be effectively used to model, optimize, and analyze various input parameters of

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Subsurface integrity studies on the drilling of Al/B_4C/mica hybrid metal matrix composites

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ABSTRACT

When components are drilled for use in critical applications, some components might undergo surface defects and subsurface deformations. These defects arise due to microstructural and microhardness variations. This leads to sudden failure of these components. The present investigation focuses on Al/B_4C/Mica hybrid composites and Al/B_4C composites specimen with drilled surface and sub-surfaces. The goal is to identify measures to reduce surface integrity issues like microhardness, drilled surface morphology, and chip morphology on these specific components. Moreover, as a novel research, elemental and microstructural characterization of mica particles is carried out. The evaluation techniques used are Optical, EDX, SEM, and Vickers microhardness test. The stir cast specimens are drilled with process parameters of weight % B_4C and mica at specified cutting speed and feed rate. Tungsten carbide twist drill of 8 mm diameter is used. The investigation reveals that addition of mica particles causes reduction in the microhardness of drilled surfaces. The % of reduction observed is up to 13.7, 5.2 and 3 (in H_v) on 4%, 8%, and 12% B_4C reinforced Al/B_4C/3%mica hybrid composites, respectively, in comparison with that of Al/B_4C composites.

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KEYWORDS
Aluminium; composites; B_4C; mica; surface; subsurface; microhardness; deformation; drilling; characterization; surface; defects

Introduction

In the present decade, Aluminium matrix composites (AMCs) are finding application in various industries, including automobile and aviation. It is due to its advantage over aluminium alloy in terms of improved hardness, strength, modulus, and corrosion resistance. The past works of literature, reports experiments on mechanical and machining properties of AMCs reinforced with Al_2O_3 and SiC composites. In recent years, researchers focus their attention toward the investigation of wear, mechanical, and machining properties of B_4C reinforced AMCs. It is preferred over other reinforcements due to its lower density (than Al alloy), higher hardness, chemical stability, melting point, and wear resistance. According to a study by Hakami et al.[1], composites show improved hardness, strength and mechanical properties, over its base material, when reinforcements are added. While it is advantageous to have an addition of reinforcements in the composite, on the contrary, it poses threat to its machinability and uniformity in tool wear in the drilling process. As a result, surface quality is deteriorated, and there is an increase in surface roughness and subsurface deformation. Subsurface is the volume of material beneath the drilled surface. Subsurface variation in the machined surface is considered as a measure to improve the machinability in the composites.[1]

Farid et al. observed that surface integrity studies include examination on surface roughness, microhardness, microstructure, and metallurgical variation in subsurface. They also experimented drilling of Al-Si alloy with a HSS drill and identified that the drilling parameters influence the surface quality and surface integrity of the hole.[2] Machined surfaces vary from the parent material in terms of metallurgical and physical characteristics. Also, machined surfaces are subject to changes in the mechanical behavior, as a result of plastic deformation. A study by Mathew[3] reveals that metal cutting in drilling operation undergo increased friction due to clogging of the chip in between the twist drill and drill surface. There is no such hurdle in other machining processes like milling, shaping and turning. As a result of chip clogging, defects like chip fusing and material amassing in the drilled surface occur. These defects affect the surface quality of the component.

An experiment by Basavarajappa et al.[4] shows that the holes produced in the drilling process attract stress concentration in the material. Hence, added attention to be paid, to prevent failures in the material.

Griffiths et al.[5] have learned that the mechanical, metallurgical, morphological, and chemical characteristics of the drilled surface are related to the surface integrity, and these properties affect the functioning of the drilled surface. Davim et al.[6] have observed that the study on the surface integrity of the drilled hole is limited, as compared to study on operations like turning, milling, and grinding. To the best of authors' knowledge, no research has yet been carried out on the

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Natural sisal fiber-based woven glass hybrid polymer composites for mono leaf spring: Experimental and numerical analysis

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Abstract

Reducing weight and stabilizing or upgrading the strength is more important. Automotive and related industries are making a progress to replace the conventional steel leaf spring to composites material made from glass fibre, natural fibres, and so on. In this study, woven E-glass fibre, woven sisal and hybridization of woven glass and sisal fibre have been selected as materials. The resin used in this study is epoxy (B-11(3101)) VHV and the hardener is (K-6(5205)). The mono leaf spring is fabricated using hand lay-up process, which tends to be simple and cost effective. The existing dimensions of a conventional Tata Ace leaf spring are selected for modelling and analysis. Stress and deflection is tested experimentally by flexural testing. The hardness of the composites is determined with the help of Rockwell and Brinell hardness testing machine and the values are correlated with each other. Leaf spring is modeled in CREO Parametric 2.0 and introduced in ANSYS 14.5 for the numerical analysis. The results suggest that the composites have reduced weight up to 75% in comparison with the conventional one. With reduced component weight and better performance achieved by composite material, the replacement of conventional material with that of the composite is efficient. The efficiency of a vehicle will improve with a reduced component cost when composite leaf spring is used.

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Bio Caryota Chopped Fibre Reinforced Polyester Composites: Evaluation Vibration Analysis

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Abstract:
In nowadays the natural fiber reinforced composites use in automobiles, aerospace in terror parts and other application becomes raise due to less weight, low cost ,bio degradability and simple to manufacture. The natural fiber reinforced polymer composites necessary to know the vibration behavior to effectively use for the right engineering application. This work introduce the free vibration analysis of chopped caryota fiber reinforced polyester composites(CCFRPC) of cantilever beam. Also present the physical, chemical and mechanical characteristic of fiber was found by experimental methods. The vibration analysis is measured out in the beam having varying fiber lengths such as 10mm,25mm,50mm,100mm and 125mm.The 50mm fiber length of chopped fiber reinforced composites has optimum frequency than the other lenths of chopped fiber reinforced composites. Hence the 50mm length of chopped fiber reinforced composites suggested for automobile and industrial application.

Keywords: *Caryotafiber, Free vibration and Cantilever beam*

I. INTRODUCTION

Recent scenario the research is coming out in large quantum and is varied in nature in terms of its input, deliverable and utilization. It is important the quality of composite material can be used in automotive industry work flow of the improvement of natural fiber reinforced composites. V.S.Sreenivasan et al [1]identify the newely developed sansevieria cylindrical fibers,to determine the characteristic of fibers. Also studied the microstructural,XRD and FTIR analysis of fibers.Sathiskumar et al [2] found the physical , chemical and mechanical properties of sansevieriaehrenbergii fibers and also studied the thermal stability of the fibers using TGA and DTG analysis.Arthanarieswaran et al [3]. They have observed that the addition of glass fiber in the matrix along with the natural fibres increases the strength of composite material, also indicated that the performance of these materials are affected by inefficient fabrication in the composites, voids formed during the fabrication, etc.Nilza et al [4] have analyzed the characterization test such as ash content, carbon content. They have used Jamaican cellulose fibre, and indicated that this fiber can be used in interior work, also these composite may be used in structural application.Ratna Prasad and Mohan Rao [5] have tested the Jower, bomboo and sisal fibre reinforcements, and they have found that these fibres are available in large quantity, cheaper than other fiber used and renewable. Also they have asserted that the fiber arrangements and the volume fraction of fibres in the composites mainly affect the properties of this composite.Sathishkumar et al [6] They have

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Bio Caryota Fiber Reinforced Polyester Composites: A Study on Fracture Toughness Mode I

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Abstract:
The aim of the paper found the fracture toughness of caryota fiber loading with 35wt%, 40wt% and 45wt% having different fiber length of 10mm, 25mm, 50mm, 100mm and 125mm. The fiber have been used in many applications such as automotive, aircraft house hold, sports good etc. The natural fiber posses light weight, low cost and easily available. The stiffness and strength is high for the given weight. In this work caryota fiber reinforced composites were prepared by compression molding machine the chopped fiber varying length varying fiber loading ,the hardener used for the composites 10:1. The SEM analysis has conducted after the fractured specimen to found mode of failure of fractured specimen.

Keywords:*Reinforced polyester, composites, bio caryota fiber.*

I. INTRODUCTION

Recent scenario the natural fiber composites have been used in many applications such as automotive, aircraft house hold things, sports good etc.The natural fiber mainly focus on many filed ,it can be biodegradable,eco-friendly,easily available and low density.The natural fiber has high strength and stiffness for given light weight material.The natural fiber reinforced composites can be easily processing,cost reduction, increase the productivity and low environment pollution.This test can be conducted for valuable information about the toughness of material, which can be used in an engineering critical assessment. The design consideration the fracture toughness is important parameter to manufacturing the components.Santhanamet al.[1]. Banana fiber and glass fiber with varying volume fraction and 10mm chopped fiber and polyster resin used prepare the composites by hand lay- upprocess,they have reported mode one fracture toughness banana fiber reinforced polymer composites is in closeness for the glass fiber reinforced polymer composites and also banana fiber better alternative for future application.ParweenaliKhudhur et al. [2]investigated different orientation of treated and untreated sugar palm fiber reinforced epoxy composite fabricated ,they have found fracture toughness sea water treated better performance than untreated fiber.Silva et al.[3]reported fabricated the treated and untreated polyurethane composites,they have studied treated sisal fiber best performance tan the untreated composites.Venkateshwaranetal.[4] fabricated banana epoxy reinforced composites in three pattern weaving , found the tensile,flexural and impact properties plain weave pattern higher performance than other two pattern,also studied the dynamic characteristic of weaving pattern composites.Vasumathi[5] fabricated the hybrid laminate with natural fiber and with out natural

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Sustainable drilling performance optimization for Nano SiC reinforced Al matrix composites

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ABSTRACT

Metal Matrix Composites (MMC) reinforced by nanoparticles are competent materials, appropriate for functional and structural applications. Green manufacturing is a style for mechanized that minimizes dissipate and contamination. The pollution prevention resolves in manufacturing industries to expand and execute various environmentally-friendly strategies. The primary purpose of green machining is to hold up future generations by attaining process sustainability. In the present investigation, cryogenic machining (CM) of Nanoscaled SiC reinforced Aluminum (Al) matrix composites gives experimental outcomes and also the correlation of its performance with dry machining (DM) and Minimum Quantity Lubrication (MQL). The drilling tests are organized using a vertical machining center (VMC), which is directed by computer numeric control (CNC) employing carbide drills of 10 mm dia with cutting point angles of 90, 118, and 135 degrees. Experiments have planned as per the response surface methodology (RSM) based on Box-Behnken design (BBD). Teaching–Learning-Based Optimization (TLBO) is implemented to optimize the drilling criteria such as the speed of the spindle, feed rate, weight % of nano SiC, and cutting angle. Subsequently, Scanning Electron Microscope (SEM) is utilized to inspect the subsurface of the machined specimen.

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Nano SiC particles; drilling; Box Behnken design (BBD): cryogenic; LN_2; MQL; surface roughness; TLBO

Introduction

The Metal Matrix Nano Composites (MMNCs) has been exceptionally attentive over many of the years, primarily because of their broader functional and structural characteristics.[1] MMNC have high mechanical strength with higher resistance to distortion, production from these advanced class of materials with the desired dimensional, and efficient quality and performance seem to be a significant challenge.[2] Machining the ceramic reinforced composites' consequences in the generation of the substantial amount of heat and consumptions of energy. Traditional cooling agents and their practices were not adequately active enough to boost the machining efficiency of MMC .[3] Hence, researchers have been conducting the feasibility of green machining of MMNCs, to decrease the undesirable influence of machining on the environment and to reduce the pollution initiated from the machining processes.[4] The potency of conventional machining processes is highly reliant on the existence of cutting fluids to decrease cutting temperatures and cutting forces. These cutting fluids have a high impact on the environment and health issues. For overcoming these effects, a handful of researches have been explored with environmental conscious machining such as MQL, vegetable oil-based cutting, nano-filled cutting fluids, etc.[5]

Cryogenic Machining (CM) is a modern method of providing cooling in the specimen-tool interface, to decrease the tool wears, to modify the features of the material, consequently which develop machining performance and product excellence. High abrasive materials, super alloys, and novel machine tools have utilized cryogenic machining for safe and environmental-friendly method.[6] The majority of CM studies have been observed in turning. However, there were applications in other machining activities such as grinding, drilling, and turning.[7] Investigators have made an experimental investigation to recognize the effect of liquid nitrogen spray (LN_2) in atomized condition, and LN_2 assisted machining on the wear of tool while performing turning operation on Al-TiCp composites. Experimental results have proved that liquid nitrogen-based CM is the technically feasible substitute for the traditional machining approach.[8] Wang et al.[9] had explored the role of a fully submerged cryogenic machining environment on the machining performance of the component. Liquid nitrogen is used to immerse the cutting area for facilitating natural energy dissipation and work hardening. The grains get refined, thereby improving the mechanical properties of the workpiece.

Vegetable-based bio-oils are professed to be a substitute for synthetic oils as a lubricant. They posses the natural properties like, higher flash point, higher viscosity index, higher lubricating ability, lower evaporative loss and biodegradability.[10] Shankar et al.[11] have studied the performances of four different vegetable-based cutting fluids (VBCF) by performing milling operation on 7075-T6 Al hybrid MMC employing a tool of carbides. They have measured various responses, such as cutting force and vibration signals. They have

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Evaluation of mechanical properties of coconut flower cover fibre-reinforced polymer composites for industrial applications

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Abstract

In recent times, polymer composites have played an epochal role in transforming material science. Some of their properties such as toughness, strength, flexibility and rigidity have helped them supplant conventional materials such as iron, steel, and aluminium on several occasions. Apart from this, they are light in weight and more cost-efficient, which make them a viable alternative. They have found their application in several fields such as automobile industry, aerospace industry, construction and pipeline industry. Owing to its excellent impact strength, tensile and hardness, natural fibres serve as an excellent replacement. Natural fibres are an environmental friendly, biodegradable and are readily available. The present investigation uses a new fibre for manufacturing the eco-friendly composite material. Mechanical properties such as tensile strength, shear stress, flexural rigidity, impact strength and hardness of a coconut fibre-reinforced polymer composite material are evaluated as per respective ASTM standards. A surface analysis of the material using a scanning electron microscope is also performed. The results are categorized and tabulated accordingly. The values obtained appear to fall in line with the experimental data and hence can be espoused as an alternative material especially in the automotive sector.

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Measurement and analysis of thrust force and delamination in drilling glass fiber reinforced polypropylene composites using different drills

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ABSTRACT

Fiber Reinforced Plastic (FRP) composites are widely used in various engineering fields and applications. FRPs were initially fabricated using thermoset polymers owing to ease of manufacturing. Of late, FRP based thermoplastics is gaining importance due to various factors such as impact resistance, recycling, and an absence of any chemical reaction. In the present investigation, Glass Fiber Reinforced Plastic (GFRP) laminates of woven glass fabric reinforcements with Polypropylene (PP) thermoplastic matrix is manufactured using film stacking technique. To analyze the performance in machining, drilling studies are carried out using a 6 mm diameter twist drill of High Speed Steel (HSS) drill, tipped carbide and solid carbide drill. The drilling experiments are conducted on a CNC Vertical Machining Centre (VMC) to measure and assess the drilling induced thrust force and the respective exit delamination. The drill spindle speed and feed rate are considered as process parameters. To correlate the process parameters with responses, the regression models are developed. The results indicate that the most significant control parameter for process responses and also it shows the developed regression models are highly reliable. The influence of drill materials on the performance of the responses is also discussed in detail.

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1. Introduction

In recent years, FRP composite materials in engineering fields have applications in automotive, aircraft, chemical industry and many other related sectors due to their superior properties. Drilling process is the frequently used machining process for the fastening of the mechanical components used in structures. The measurement of drilling associated delamination accounts for the rejection during an assembly of composite parts. In machining, the defects associated are: material degradation, peel up delamination, push out delamination, thermal damage, and matrix cracking. These defects can be reduced by the appropriate selection of drilling process variables and associated conditions.

Kumar and Singh [1] have highlighted the various conventional and unconventional machining procedures for composite materials. Ali Faraz and others [2] have measured the cutting loads and damage mechanism with respect to control factors on hole making of FRPs. Rajesh Mathivanan et al. [3] have measured the machining force and its effects on process parameters in machining of carbon and glass fiber laminates and thereby concluded that cutting force gradually increases with an increase of spindle speed. Latha et al. [4] have measured the exit delamination in machining of composite materials and found the most significant control parameters. Palanikumar and others [5] have observed the increase of delamination with rise of induced thrust force. Kumar et al. [6] have measured and analysed the machinability on vinyl ester/fiber glass and concluded that the point angle is the top most factor which produce the better hole quality. Rajamurugan et al. [7] have measured the drilling induced delamination in GFR-polyester composites using a cemented carbide drill of 4, 6, 8, 10, and 12 mm diameter. It is observed that 6 mm diameter drill performs better than the other drill. Srinivasan et al. [8] have measured the thrust force and concluded that the drill travel speed and diameter are highly influences the machining performances. Vinodkumar and Venkateswarlu Ganta [9] have measured circularity error in drilling of GFRP and concluded that chisel edge width and spindle rotation are most significant control factors compared to feed rate and drill tool point angle for circularity error.

Eneyew et al. [10] have measured the delamination and found the effect of control parameter in drilling of CFRP and concluded that the drill tool feed rate is highly affects the machining characteristics. Kumar and Singh [11] have reported that solid

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Optimization and sensitivity analysis of drilling parameters for sustainable machining of carbon fiber–reinforced polypropylene composites

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Abstract

Machining processes face two major challenges: sustainability and cleaner production. However, the effective utilization of tool and methods of lubrication system in sustainable machining have been dealt in depth in earlier investigations. This work aims to optimize sustainable machining parameters in drilling process for recyclable carbon fiber-reinforced polypropylene (CFR-PP) composites. This work is focused on modeling and optimization of drilling parameters for sustainable machining with respect to thrust force and torque for CFR-PP composites. The response surface method based on D-optimal design of experiments is used for modeling and optimization with variables such as drill spindle speed and drill feed rate as numerical factors, which includes different drill material as the categorical factor. The influences of tool materials on the sustainable machining are also discussed in detail. Further, the sensitivity analysis is applied to compare the relative impact of control parameters (spindle speed, feed rate, and drill materials) on thrust force and torque. The scanning electron microscope images are used for analyzing the morphologies of drilled surfaces.

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Original Article

Strength and hardness studies of C44300 tube to AA7075-T651 tube plate threaded and unthreaded dissimilar joints fabricated by friction welding process

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ABSTRACT

Friction welding is an important process used nowadays especially for joining dissimilar metals in engineering and allied industries. The joining of dissimilar materials is different from the conventional materials and needs proper care and technology advancement. The objective of the present research is to investigate the strength of friction welded joints in the absence of backing block. Two conditions of tube and tube plates with thread pair and without thread pairs are considered for the experimentation. The effect of process parameters on the strength has been arrived. Microstructure at the weld joint interface indicates the high level of refinement at the weld zone. Scanning Electron Microscopic (SEM) images are used for investigating the intermolecular bonding of the tube and tube plate. Micro cracks are observed at the interface. Absence of backing block is the cause for the defect. Energy Dispersive Analysis (EDX) and X-Ray Diffraction (XRD) test are used for analyzing the material properties and quantification of crystalline phases.

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1. Introduction

Industrial sectors like power plant equipment manufacturers are involved with welding fabrication process. Different welding techniques like arc welding and gas welding are being employed to join the components. Though these techniques are highly versatile, there are some limitations like restricted suitability, limited process parameters, non-economic and process hazard. These noticeable limitations restrict wider applications. Conventional welding processes are not suitable to join similar/dissimilar non-ferrous metals at higher production levels. To overcome these difficulties, friction welding process is placed in the front line to take a prime role in fabrication. Friction Welding of Tube–Tube Plate using External Tool (FWTPET) is an economical, eco-friendly and a wider input variant method. FWTPET is a superior process to make a joint

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Influence of mica particles as secondary reinforcement on the mechanical and wear properties of Al/B_4C/mica composites

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ABSTRACT

The present investigation is to study the influence of Mica as secondary reinforcement particles on ultimate tensile strength, yield strength and elongation of Al/B_4C/mica hybrid composites of 1 and 3 weight% of mica. It also focuses on microstructure of Al/B_4C and Al/B_4C/mica hybrid composites. The investigation reveals that the mica particles improve the yield strength by 5.85% and ultimate tensile strength by 3.9% on Al/12%B_4C/3%mica hybrid composite consequently reducing its elongation by 11.62%. The scanning electron microscope (SEM) microstructure reveals that the mica particles improve the interface between the matrix and B_4C particles. Also this study focuses on the wear characteristics such as wear rate and coefficient of friction on Al6061/8%B_4C and Al6061/8%B_4C/mica hybrid composites. A dry sliding wear test was carried out at varying process parameters namely load and wt.% of secondary reinforcement. The pin-on-disc wear test was carried out at the load of 9.81 N, 19.62 N and 29.43 N on a specimen prepared by stir cast technique. The size of the reinforcement particle is 40–60 μm and 3–10 μm for B_4C and mica respectively. A study was carried out on the worn surface of the composites using SEM. Moreover, the worn surface profiles of the composites were studied by atomic force microscope (AFM). The investigation reveals that Al6061/8%B_4C/3%mica hybrid composites cause a reduction in wear rate up to 35.4% in comparison with Al6061/B_4C composites at 9.81 N load. The coefficient of friction diminishes up to 5.55% at 19.62 N loads. Mica reinforced worn surface reveals that there is an improvement in the recasting of wear debris and smoothening of the surface.

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Keywords: Metal-Matrix Composite, B_4C Particles, Mica Particles: Mechanical Properties, Sliding Wear, Surface Analysis, SEM, AFM.

Article

1. INTRODUCTION

Particles made of ceramics act as load carrying medium for composite materials. In aluminium matrix composites, if more than one element is added either as particles or as fibres, the composite becomes hybrid. Silicon carbide (SiC), aluminium oxide (Al_2O_3) and boron carbide (B_4C) are some of the familiar reinforcements normally added in the matrix material.[1–3] Among the above reinforcements, B_4C is a superior material, owing to its high stiffness, excellent hardness, high elastic modulus, low density, and better chemical stability. Hence, the B_4C particle is well suited for resisting the wear in

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International Conference on Advances in Materials, Manufacturing and Applied Sciences (ICAMMAS17)

Editorial Preface: A Special issue on Advances in Materials, Manufacturing and Applied Sciences

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Abstract

The contributions to this special issue are from young researchers to experts in their relative areas from across the world and represents a current and up to date research overview on materials and manufacturing. Participants from educational institutions, research organizations and industries presented their research work and latest developments. A Pre-conference workshop was organized on 29th March, 2017 with four sessions in area of Automotive materials and live demonstrations also given to the participants. Totally we received around 220 Articles and Selected 154 Articles for Conference presentation and for publication. The papers were peer reviewed and selected papers are recommended for publication in this special issue.

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***Keywords**:* Automotive materials, Manufacturing, Materials, demonstration

1. About the Conference

International Conference on Advances in Materials, Manufacturing and Applied Sciences (ICAMMAS'17) is organized by the Department of Mechanical Engineering of Sri Sai Ram Institute of Technology in association with the Department of Science & Humanities of Sri Sai Ram Institute of Technology. The conference will be held on 30th and 31st March, 2017 at Sri Sai Ram Institute of Technology, Sai Leo Nagar, West Tambaram, Chennai-600044, Tamil Nadu, India.

2. About the Organisers

2.1 Sri Sai Ram Institute of Technology, Chennai

Sri Sai Ram Institute of Technology, Chennai, established in the year 2008 by MJF.Ln.Leo Muthu, Chairman of Sapthagiri Educational Trust, is non-profitable, and non-minority institution. The College is functioning at Sai Leo Nagar near the well-known fascinating Theme Park, "Kishkinta". The college buildings are architecturally designed as per AICTE . The college buildings are architecturally designed as per AICTE norms. Imbibed with the message of Sri Shirdi Sai Baba, our Chairman ventured into the realm of providing quality technical education to both urban and rural students from Tamil Nadu as well as other states.

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Analysis of Toughness in Multi-walled Carbon Nano Tubes for Resin and Resin Glass Fiber Composites

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Abstract

By adding of carbon nano-particle to composite material improves the Mechanical properties of the material leading to many more applications of these composite mixtures in various fields. Carbon nano-tubes (CNTs) are being used to enhance the performance of polymer composite materials. The two different combinations of composite polymers are manufactured with correct proportions with CNTs for better mechanical efficiency. The following two combinations of CNT's -based composites are resin carbon nano-tube and resin-glass fiber carbon nano-tube. For future studies is to create structured composites in which each composition contributes a unique function to yield a mechanically integrated, multifunctional material.

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Keywords: *Carbon Nano Tube, Polymer Composites, Glass Fibers, Mechanical properties*

Introduction

Polymer nano composites represented a new alternative to conventionally filled polymers. Because of their nanometer sizes, filler dispersion nano composites exhibit markedly improved properties when compared to the pure polymers or their traditional composites.

These include increased modulus and strength, outstanding barrier properties, improved solvent and heat resistance and decreased flammability[1]. In comparison with other commercial polymers, ultrahigh-molecular weight polyethylene (UHMWPE) exhibits increase in mechanical properties, such as high wear resistance, low density and high impact strength. Consequently, UHMWPE is widely used as a wear-resistant material in gears, seals, and bearings.

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ICAMMAS17

Mechanical Characteristics and Terminological Behavior Study on Natural Fiber Nano reinforced Polymer Composite – A Review

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Abstract

In recent years, natural fibers with nano polymer composites are useful in the field of research, Engineering and Science as well it is used as an alternative reinforcement for conventional composite. Natural fibers are not only strong and light weight, but also relatively cheap and have properties like high specific strength, low weight, non-abrasive, eco-friendly and biodegradable. Generally used natural fibers like Jute, Sisal, Banana, Hemp, etc…, The reuse of waste natural fiber reinforcement of polymer is a sustainable option for the environment. The polymeric matrix materials along with suitable and proper filler and better filler/matrix create strong interaction between advanced and new methods or approaches. This enable to develop polymeric composites which shows great prospective applications in the construction of buildings, automotive, aerospace and packaging industries. Nano polymer composite shows considerable applications in different fields because of larger surface area, and greater aspect ratio, with fascinating properties. Being environmentally friendly, applications of nano polymer composites offer new technology and business opportunities for several sectors, such as aerospace, automotive, electronics, and biotechnology industries. Hybrid nano-polymer composites exploit the synergy between natural fibers in a nano-reinforced polymer-based composites. This leads to improve the properties along with the environmental appeal. The mechanical properties of a natural fiber reinforced nano polymer composite depend on parameters like fiber strength, fiber length, chemical treatment and orientation in addition to fiber-matrix interfacial bond strength. This review article aims at the clarification of the research and development in the improvement of mechanical properties of natural fiber reinforced polymer composites along with end applications.

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Keywords: Natural Fibers, nano fillers, natural fibers, polymers, nano composites and hybrid composites

1. Introduction

Natural fibers with Nano reinforced composites have been proven as an alternative to synthetic fiber in transportation such as wind turbine blades, prosthetics, smart memory, ship structures, bridge construction, automobiles, railway coaches and aerospace. Other applications include military, building, packaging, consumer products and construction industries for ceiling paneling, partition boards. Vogelesang and Vlot [1] have reported that the natural fiber nano reinforced composite is widely increased in both industrial and domestic applications and also fundamental research. They are renewable, cheap, completely or partially recyclable, biodegradable and non hazardous material.

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Some Studies on Waste Animal Tallow Biodiesel Produced by Modified Transesterification Method Using Heterogeneous Catalyst

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Abstract

This research work deals with production of biodiesel from tallow waste through the transesterification process by miniature reactor with heterogeneous catalyst. The production of biodiesel and biomass are solid waste removing process from odor environment. Now a days the biodiesel extraction from the various seeds and animal wastes are in progress to balance the fossil fuels demands. The heterogeneous catalyst are diluted sodium hydroxide (NaOH) and potassium hydroxide (KOH) with Methanol (CH3OH) as an alcohol used in transesterification reaction. In biodiesel production experimental and optimized process parameters are rated temperature at 600C, reaction time 90 mins and agitation speed 400 rpm. The functionality process parameters are 6.5:1 molar ratio, 2.5 wt% catalyst concentration. Finally the Tallow biodiesel has been yielded 62% with (NaOH) catalyst and 10% higher than potassium hydroxide (KOH) (grade-1) and also physicochemical properties are studied and compared as per the ASTM standards.

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Keywords: CH3OH, Tallow fats, Molar ratio, Transesterification, NaOH, KOH.

1. Introduction

Biodiesel is a clean and green, renewable energy source and is an alternative for fossil fuel. Many researchers have attempted to produce biodiesel because of its high advantages such as emissions characteristics, renewable and low cost comparing with the commercial fossil fuels. The micro emulsion, pyrolysis and transesterification are the common methods to produce the biodiesel [1-2] from fatty oils, new vegetable species and animal fats [3–13].

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Pitting corrosion studies on Ti6Al4V alloy weldments in marine environment

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Titanium and its alloys are widely used owing to their high strength-to-weight ratio, good tensile strength, and resistance to corrosion. The Ti6Al4V alloy is called the workhorse among the titanium alloys owing to its wide application. Even though the Ti6Al4V alloy is immune to corrosion, improper welding conditions lead to contamination, making the weldments prone to stress corrosion cracking (SCC). These weldments are susceptible to SCC if they show sensitivity to pitting. This study examines the effect of welding conditions on the pitting corrosion behavior of 3 mm thick plates of Ti6Al4V alloy. The Ti6Al4V weldments were fabricated using fusion welding methods, namely, the gas tungsten arc welding (GTAW) and laser beam welding (LBW) techniques. The pitting corrosion studies were carried out by a potentiodynamic polarization technique, using non-deaerated 3.5% NaCl solution of pH 7, to create a marine corrosion environment. The pitting corrosion studies yielded good results as there was corrosion resistance in weldments fabricated under controlled conditions.

[**Keywords:** Ti6Al4V; Pitting corrosion; Marine; Stress cracking corrosion; Weldment]

Introduction

Titanium is widely used in a variety of applications, such as aerospace, marine, offshore, surgical implants, racer cars, armaments, and chemical processing equipment. The Ti6Al4V titanium alloy designated as ASTM B265 Grade5 is the most commonly used among the 39 grades of titanium alloys[1,4]. Ti6Al4V is considered the military grade of titanium. Titanium has good corrosion resistance due to the spontaneous formation of a passive oxide film of TiO_2 at room temperature. The oxide film is very stable, continuous, and highly adherent. The oxide film may comprise a mixture of titanium oxides, such as TiO_2, Ti_2O_3, and TiO[5]. Pitting corrosion is localized corrosion resulting in the appearance of holes on the metal surface. Even though pitting causes minimal loss of metal, pitting leads to perforation, causing loss of functionality and reliability of the equipment and components. Therefore pitting corrosion has been studied in this investigation[6].

Inspite of its good weldability, Ti6Al4V is prone to contamination by the atmospheric gases, leading to hydrogen embrittlement and poor mechanical properties. Traditionally, the gas tungsten arc welding (GTAW) technique is used to weld Ti6Al4V. Owing to high heat input for a longer duration, GTAW produces a broader heat affected zone (HAZ). In critical applications, the high-energy beam technique of laser beam welding (LBW) is preferred to GTAW since it produces a smaller HAZ[7]. In this investigation, both GTAW and LBW were studied to determine the effect of these processes on the pitting corrosion of Ti6Al4V alloy. The objective of this study is to evaluate the quality of the weld and explore the feasibility of welded titanium components in marine applications.

Materials and Welding Process

The square butt joints were autogenously fabricated from cold-rolled, annealed plates of Ti6Al4V of size 50 mm × 125 mm × 3 mm along the rolling direction. The composition of the base metal was determined using a vacuum optical emission spectrometer (SPECTRO-LAB, Germany) (Table 1).

The GTAW was done manually by a highly skilled welder, using Easy Weld SSR 400/600, 3 phase, 415 V ± 10%, 50 Hz AC equipment. The GTAW was done with a root gap of 1.6 mm, while LBW was done with no root gap, since any gap between the plates allows the laser beam to pass through without any welding taking place. Proper care was taken to prevent contamination, distortions, and embrittlement, by using 99.9% pure argon with top and bottom purging and suitable clamping. The frequency of the GTAW was kept constant at 6 Hz. The laser beam-welding machine used for this experiment was a transverse-flow, carbon dioxide LASER. The LBW was done by conduction method, which is used for low-power heat

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Mechanical Property Evaluation of Hybrid Reinforced Epoxy Composite

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Abstract

Fibre reinforced polymer composites has been used in a variety of applications because of there many advantages such as relatively low cost of production, easy to fabricate, and superior strength. The use of natural fibre as reinforcement in polymer has gained importance in recent years due to the eco-friendly nature. Past studies show that only artificial fibres such as glass, carbon fibre, etc have been used in fibre reinforced plastic. Glass and other synthetic fibre reinforced plastic poses high specific strength. But their fields of application are very limited due to their inherent higher cost of production. In this study the chemical treatment of natural fibres are done with one percentage of NaOH and one percentage of sodium lauryl sulphate (SLS). The composites are developed with bamboo fibre / glass fibre /epoxy resin, caryota fibre / glass fibre/ epoxy resin , bamboo fibre + caryota fibre / glass fibre / epoxy resin, the property evaluated are tensile strength flexural strength, impact strength and water absorption. It was observed that the material treated with 1% of SLS possess high flexural strength and material treat with 1% NaOH possess high tensile strength. NaOH treated Bamboo caryota glass fibre mix offer better impact strength. The surface morphology study of the specimen has done after testing with help of scanning electron microscopy (SEM).

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Keywords: Natural Fibre , Bmbooa Fibre , Caryota Fibre ,Hybrid Composite, SEM

1. Main Text

Now a days green composites mainly focused on research and development,but green composites have medium strength used for medium load application. This paper works hybridization of two natural fibres and one glass fibre.This composites are mainly used for replacement of synthetic fibre composites. The hybridization of fibres and stacking sequence of laminates to increase the strength of composites. Because of their numerous advantages they are widely used in the aerospace industry, commercial mechanical engineering applications, like machine components, automobiles, combustion engines, mechanical components like drive shafts, tanks ,brakes, pressure vessels and flywheels, thermal control and electronic packaging, railway coaches and aircraft structuresThere are a number of investigations have already been carried out on several type of natural fibres such hemp, flax, bamboo, jute, banana and coirRaghavendra et.al.[1] studies the physical and abrasive wear behaviour of glass bamboo composite .He find out that the wear increases with increasing in load and the maximum wear occurs at 15 N subhakar et.al [2] investigate the physical, mechanical, and thermal properties of jute and bamboo fibre reinforced epoxy resin and find out that Bamboo fibre reinforced epoxy had higher tensile strength ; while jute fibre reinforced epoxy composites had higher young's modulus.

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Experimental Investigation and Surface Roughness analysis on Hard Turning of AISI D2 Steel using Polycrystalline Cubic Boron Nitride (PCBN)

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Abstract

The performance of polycrystalline cubic boron nitride (PCBN) was studied to investigate surface roughness analysis at various machining parameters. The PCBN tools were used in tool steel AISI D2 steel with hardness of 64 HRC. Machining test was performed with dry cutting condition at different cutting speed, feed and depth of cut. In order to obtain desired surface quality by machining, proper machining parameter selection is very essential. This can be achieved by higher quality and productivity in metal cutting industry. The aim of the present work is to investigate effect of process parameter on surface finish and material removal rate (MRR) to obtain the optimal setting of the process parameters. It influences the cutting parameters during machining L_{27} experimental will run based on an orthogonal array method. During the experimental process parameters such as speed, feed and depth of cut are used to explore their effect on the surface roughness (R_a) of the work piece. Chip morphology study indicates different types of chips operating under different cutting conditions.

Keywords: Machining parameter; AISI D2 steel; Surface finish; Material removal rate; Chip morphology

1. Introduction

The hard turning is nothing but the process of single point cutting of part pieces that have hardness value over 45HRC. The approach of machining hardened steel depends on degree of hardness and its depth. Hard turning is best accomplished with the cutting inserts such as Cubic boron nitride (CBN), Poly crystalline cubic boron nitride, ceramics and carbide.

Since hard turning is single point cutting, it has significant benefits to produce counters and produce intricate shapes with the inherent motion of the machine tools. For much application CBN tooling will be dominant choice. However PCBN, ceramic and carbide also have roles with this process [1]. PCBN inserts offer benefits to holds better surface finish due to fine microstructure, excellent toughness during interrupted cutting, excellent hardness provides higher edge wear, chips take heat away from the part and tool. It offers many advantages, including that lower equipment cost, shorter setup time, high accuracy, lesser process steps, higher geometry flexibility and without cutting fluid when machining hardened steel.

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Comparison & Multiresponse optimisation of drilling characteristics of bovine bones with varying density

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Abstract

Drilling in human bone is an inevitable joining process during any fracture surgery. Excessive temperatures and durations during drilling process can result in the necrosis (death) of bone, a phenomenon termed osteonecrosis, or the impairment of osteogenic capability. This work aims to check the temperature and thrust force variation in drilling process with bones of varied densities. Bovine bone is used for experimental work as it is closest to human bone. Experiments have been performed under different conditions deploying the Taguchi design of experiments. The operation parameters such as speed, feed, and density of bone and material of drill bit have been considered during drilling operation and the output responses - temperature and the thrust force acting on the bone during drilling were measured. It was found that bone with lesser density dissipated the heat generated quickly and developed lesser thrust when compared to the high-density bone. Grey Relation Analysis (GRA) is used to optimize the thrust force and temperature in drilling of bone.

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Keywords: Bone Drilling; Taguchi technique; Multi-response; Thrust force; Temperature; Grey relation analysis (GRA); Optimization; Density

1. Introduction

Bone fracture is a regular feature of everyday life. Bone fracture treatment involves restoring the fractured bones to its initial position and immobilizing them until the repair, reconstruction occurs [1]. Drilling of bone is one of the most rudimentary operations which is mostly used in bone fracture treatment to make holes for screw insertion to fixate the fractured parts. Previously, authors have studied the process of bone drilling and its effect on fracture healing [1–6], yet the problem of heat affected zone, micro level crack formation and surface finish of the drilled hole remains unsolved. Heat affected zone and the micro cracks results in damage to the bone cells which can result in their death or may extend the process of healing whereas the improper surface finish affects the proper alignment of the screws with the bone surrounding the drill site and can lead to the misalignment of the fixation.

Augustin et al [5] elaborates on the process of drilling of bone and reports that various elements of the cutting tip behave differently as the cutting progresses. The cutting lip of the drill bit creates plastic deformation across its shearing plane.

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Implementation of Effective Fuel Saving Methodology for Turbines using Air Drag in Vehicles

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Abstract

The hike of fuel price is causing an immediate threat to the economic wealth of the world. The fuels will sooner become obsolete and it is imperative to search for new technologies to save and optimize the utilization of the fuel. Innovative approaches that can be readily implemented will prove beneficial in contributing to the sustainable solution. Fuel consumption in the automobiles linearly increase with the increase in the number of fuel utilizing vehicles on road. Hence, decreasing the fuel consumed by each vehicle on road will eventually result in substantial sustaining of fuel availability. This paper focuses on decreasing the consumption of fuel by an automobile at its higher speeds. Turbines which forms the ultimate part in producing conventional energy is innovatively used in automobiles to rotate the crankshaft of the engine by utilizing the air drag against the vehicle. Vehicles (two- wheelers or four wheelers) experiences infinite amount of air drag while travelling at higher speeds. This air drag is fed to turbines and is being converted into useful form of energy. Feasibility of this system is experimented and torque along with power output is calculated and proved to be practically possible solution.

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Keywords: *innovative approaches; sustainable solution; turbines; air drag; feasibility*

1. Main text

The costs of petrol and diesel are increasing day by day due to the shortage of supply and oil companies have started to shoot out the prices. India is forecast to become the world's fourth largest oil consumer by 2025 [1].And hence the current situation needs an alternative to reduce the fuel consumption rates. The trend is now moving towards full and efficient use of available conventional energy source such as solar energy, wind energy, hydro-electric energy, etc. In order to contribute to the current trend of saving fuel, new innovative approaches have to be undertaken. The

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Some Studies on Tribological Behavior of Friction Welded Hybrid Metal Matrix NanoComposites

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Abstract

In this research work, a systematic study was made on the tribological behavior of friction welded dual Nanoparticulates reinforced aluminum alloy. The Nano Metal Matrix Composites with the reinforcements of SiCNP as 10% and Al2O3 as 5% was fabricated using the stir casting technique. Then the MMNCs were joined using a solid state friction welding process in order to achieve high strength in the weldment. Then the dry sliding wear behavior of the FW composites were examined using a pin-on-disc wear tester and to compare it with the parent metal. The wear resistance of the friction welded composites were found to be higher than the MMNCs which is attained due to the increase in hardness of the joints. Then the worn surface morphology was carried out using advanced characterization techniques to understand its nature.

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Keywords: Nanoparticles; Stir casting; Friction welding; Worn surface morphology; Characterization.

1. Introduction

The usage of aluminum alloy and its products are increasing day by day due to its availability and high performance which revolutionized the industrial sectors being the most used metal overcoming the cast iron and its products. The important aspect in the aluminum alloys are its high strength to weight ratio which attracts researchers to indulge in aluminum rather than focusing on others but with the increasing demand in the market, the slight improvement is needed in achieving good combination of strength, stiffness, toughness and density [1-3]. To overcome these shortcomings and to meet the ever increasing demand of modern day technology, composites are most promising materials of recent interest. It has many features and has been attaining the rapid growth in many sectors especially in automotive and aerospace sectors due to its light weight and high strength [4].

The production of such composites are very challenging since during pouring, air envelopes may form between particles, which can alter the interface properties between particles and the melt, retarding the wettability between them. The stir casting technique proved to be a promising technique for fabricating the composites because homogeneity in particulate distribution would be achieved due to the continuous stirring action occurred during the process [5-6]. The MMNCs are widely adopted and are used in each and every sectors but they are not utilized completely because the joining of composites are very difficult which alters the grain structures and leads to uneven settlement between the matrix and the reinforcement because of high heat generated during the joining process [7].

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ICAMMAS17

Developing an Empirical Relationship to Predict Maximum Strength on Friction Stir Welded (Mg+ CNT) Nanocomposites.

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Abstract

Now-a-days, most of the investigating research works are focused on developing the material that can substitute the metal that are excellent building materials because of their high toughness, high strength, high melting temperature and chemical reactivity and for this reason, metal is preferred for constructional applications. So far, in this research work a magnesium based new Nanocomposite (MgAZ91D+CNT) were produced by the emerging stir casting method. And also the produced Nanocomposite has been welded by the Friction Stir Welding (FSW) process in order to understand its strength of the joints. Finally, the empirical relationship was developed to predict the maximum strength of the FSW joints of produced Nanocomposite using Design of Expert.

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Keywords: Mg AZ91D grade Magnesium alloy; Carbon Nano Tubes; TIG Welding; Microstructure.

1. Introduction

The need for lightweight, high strength materials has been recognized since the invention of the airplane. As the strength and stiffness of a material increases, the dimensions, and consequently, the mass, of the material required for a certain load bearing application is reduced. This leads to several advantages in the case of aircraft and automobiles such as increase in payload and improvement of the fuel efficiency. With global oil resources on a decline, increase in the fuel efficiency of engines has become highly desirable. The inadequacy of metals and alloys in providing both strength and stiffness to a structure has led to the development of metal matrix composites (MMCs), whereupon the strength and ductility is provided by the metal matrix and the strength and/or stiffness is provided by the reinforcement that is either a ceramic or high stiffness metal based particulate or fiber.

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ICAMMAS17

A novel approach for Joining Armor Grade AA7075 Metal Matrix Nano Composites using Various Welding Processes

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Abstract

In this research work, the dual reinforcement of SiC (10%) and Al2O3 (5%) Nanoparticulates were added with the AA7075 aluminum alloy for fabricating the Hybrid Metal Matrix NanoComposite (HMMNC) rods with the help of advanced stir casting technique. The produced composite rods were joined using fusion and solid state welding processes with an aim to understand the suitable welding process that contributes to better performance on the joints with reduced defects. Finally, the integrity of the joints were evaluated using advanced characterization techniques.

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Keywords: AA7075 – T651 aluminum alloy; Metal Matrix Nano Composites; Fusion welding; Solid state welding; Characterization.

1. Introduction

The composites are offering excellent contribution in defense, automotive and aeronautical industries which offers enhancement in properties due to addition of reinforcing ceramics in which the Nano composites are exceptional due to their better bonding between the matrix and reinforcement which forms uniform and compact grain boundaries [1-2]. Stir casting was found to be the most promising and emerging route for fabricating metal matrix composites because the mechanical stirrer action would ensure the hard ceramics to be uniformly distributed throughout the surface upon adding. Also, the composites fabricated through stir casting technique are possessing unique qualities which is the reason for its superior properties compared to other casting processes [3-5]. Though the composites are extensively used in every sectors, yet it has not been fully utilized in the field of joining which is a major concern.

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ICAMMAS17

Sensitivity Analysis of Friction Stir Welded Aluminum Based High Strength Metal Matrix Composite Joints

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Abstract

The metal matrix composite materials are a class of materials which are finding applications in automobile, aeronautical and defense sectors. Friction Stir Welding (FSW) is an emerging solid state welding process which is capable to weld a wide variety of metals. In this research work, an attempt was made to identify the sensitivity of tensile strength for the dominating parameters such as Rotation speed (N), Transverse speed (V) and Downward force (F) respectively during the welding process. Also the nature of the joint efficiency was evaluated using OM, SEM at different zones of the weldment.

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Keywords: AA6061 Aluminum alloy; MMC; Friction Stir Welding; Sensitivity.

1. Introduction

Friction Stir Welding (FSW) became a widely researched topic around the globe since its invention by The Welding Institute, UK during 1991 [1-2]. FSW is categorized under solid state metal joining processes. It has the benefit of producing less defective joints which were otherwise not possible by conventional fusion welding techniques. Extensive research activities on FSW around the globe resulted in this technique to become able to join wide verities of metals, alloys and composite materials. The capability of FSW to join aluminium alloys and also composite materials containing aluminium alloys is a major milestone in the history of FSW [3]. Aluminium alloys and its composites are used for many industrial and scientific applications such as automobile wheels, space vehicles, aero structures and building materials [4].

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ICAMMAS17

Enhancing the Fatigue Properties of Friction Welded AISI 1020 Grade Steel Joints using Post Weld Heat Treatment Process in Optimized Condition

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Abstract

Fatigue life is the most important criteria in each and every areas subjected to loading. The prediction of fatigue life is essential in the field of engineering sciences and it only defines the quality and life time of the materials subjected to loading. Therefore, the ultimate aim of this research work article is to predict the fatigue life of friction welded AISI 1020 grade low carbon steel joints before and after Post Weld Heat Treatment (PWHT) process for which the welding parameters have been optimized by Response Surface Methodology (RSM) as per ANOVA design matrix in order to obtain the maximum strength in the joints. The different size of the grains encountered due to the variation of temperature, pressure and solidification at various zones during the process before and after the post weld heat treatment in As-welded and post welded conditions were analyzed using an optical microscope. The microstructural features and the fracture surfaces of friction welded AISI 1020 grade steel joint using optimized parameters with parent metal microstructure are compared and analyzed.

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Keywords: AISI 1020 grade steel; Friction welding; Post weld heat treatment; Fatigue.

1. Introduction

Carbon steels are alloys of iron and carbon, with carbon as the major strengthening agent. They are used in mass production products such as automobiles and appliances but they also play a major role in machine design for base plates, housings, chutes, structural members and countless machine components. But in fusion welding process there had been lots of defects like porosity, incomplete fusion, undercut and cracking occurs. Also cracking is the most serious defect and in steel it is almost invariably caused by hydrogen.

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ICAMMAS17

Assay of Machining attributes in Drilling of Natural Hybrid Fiber Reinforced Polymer Composite

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Abstract

In the accelerated competitive manufacturing world, the vital objectives of the manufacturer are to generate high quality products at least cost and in fewer time. The utilization of composite materials is mounting at a fast rate, because these materials have many constituents and each has its own unique characteristics like environment friendliness and light weight, with high precise properties. The above requirements are inculcated by incorporating the natural fibers namely kenaf, sisal and aloe vera fibers as reinforcing material in the polymer resin matrix in hybrid manner. The drilling of composite materials is intricate when compared to metals, because the tool has to go by the matrix and reinforcement alternately, which have dissimilar properties. The aspiration of this work is to highlight the drilling characteristics of four different types of fiber plates namely polyvinyl chloride reinforced hybrid composite, polyvinyl chloride reinforced hybrid with boron carbide compound, vinyl ester reinforced hybrid composite and vinyl ester reinforced hybrid with boron carbide composite by varying the cutting speed and feed rate.The drilling process is carried out on a radial drilling machine using HSS drill.The fabricated composites are subjected to drilling in order to identify the extent of delamination. The delamination in drilling is higher for the poly vinyl chloride polymer when compared to vinyl ester polymer, showing that vinyl ester is better suited as resin for the hybrid (kenaf, sisal, aloe vera) fibers. The study of thrust force, torque, and temperature developed during drilling reveals that HSS is better suited to drill vinyl ester reinforced with hybrid fiber at lower speed.

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Keywords: Hybrid composites, Thrust force, Torque, Delamination

1. Introduction:

The material that has more than one constituent within it to combine different physical or chemical properties of those individual components is known to be a composite material. Their properties like high strength to weight ratio in comparision with conventional metals make it preferable to be used parts where weight reduction is required.This makes them to be used in in the aerospace, defence and automotive industries, due to their higher specific strength, stiffness and fatigue characteristics.

The employment of natural fiber in reinforced composites is in rapid growth, owing to their intrinsic properties of light weight, easy availability, and environment friendliness.Because of low density, less cost, non-abrasiveness and high modulus, Natural fibers are implemented in many application compared to synthetic fibers. Composite components are joined by mechanical fasteners; and accurate, precise high quality holes need to be drilled to ensure proper and durable assemblies. The drilling in composite materials may cause de lamination, fiber-pull out, edge chipping, uncut fibers, and others. It causes poor assemblage and tolerance, reduces the structural

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ICAMMAS17

Comparative analysis of cashew and canola oil biodiesel with homogeneous catalyst by transesterification method

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Abstract

This research work deals with cashew and canola non-edible oil biodiesel with an aim to identify the maximum yield and physiochemical properties at minimum cost by newly formulated segment process of transesterification method. The diluted sodium hydroxide (NaOH) were used as a catalyst because of its enhancing nature on yielding the biodiesel from oil. The predominating factor such as catalyst, molar ratio, temperature, agitation speed and reaction time are consider as a process parameter to yield the maximum biodiesel with optimum physiochemical properties. The canola oil has been yielded 85% of biodiesel and also it is 30% higher than the cashew oil biodiesel. The optimized parameter obtained to yield the canola oil biodiesel which is transesterification temperature at 700C, time at 120 mins and agitation speed up to 550 rpm. © 2016 Elsevier Ltd. All rights reserved.
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Keywords: Cashew nut oil and canola oil Bio-diesel, methanol, NaOH, molar ratio.

1. Introduction

Biodiesel is the alternate fuel, its try to replace the fossil fuels like diesel, petrol. The need of biodiesel is to reduce the usage of fossil fuels, because this fossil fuels emits toxic gases such as carbon monoxide (CO), Nitres oxide (NOX), sulfur dioxide (SO2) and Carbon dioxide (CO2) which will create the pollution and affect the human cycle environment.

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ICAMMAS17

Empirical Modeling of Roughness Parameters in Drilling Composites- A Response Surface Approach

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Abstract

Particle composite panels are alternative to traditional wood because of their superior advantages in furniture industry. The present study describes the development of mathematical models to predict the surface roughness in drilling particleboard composite using forstner carbide drill bits. Plain Particleboard panel of IS 3087 grade was selected as work material to conduct experiment. Experiments were planned as per Taguchi L_{12} orthogonal array. Experiments were conducted under different drilling input parameters of spindle speed, feed rate and drill diameter. A mathematical model on surface roughness has been developed in terms of input parameters. Residual plots were constructed to analyze the variation between the experimental values and predicted values. Analysis of Variance (ANOVA) was employed to find the effect of various drilling parameters on surface roughness. It showed a high coefficient of determination (R^2) value, which ensures perfect fit of the second order regression model with experimental data.

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Keywords: Analysis of variance (ANOVA); contour plots; drilling; Forstner drills; particleboard; Regression equation; Surface Roughness.

1. INTRODUCTION

The demand and need for wood composites from waste wood products has been increasing as timber resources in natural forests decline. Out of the many wood composites in use, particle board has found typical applications as flooring, wall and ceiling panels, office cabinets, furniture, counter tops and desk tops [1].

The particle panel is a product manufactured by pressurizing the particles of wood or other lignocellulose material with an adhesive. This has been widely used around the world for furniture manufacturing, house construction, including flooring [2]. More recently the need for the particleboard has continued to increase for house construction and furniture industries [3].

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ICAMMAS17

Investigation of Glass Fiber influence on Mechanical characteristics and resistance to Water absorption of Natural fiber reinforced polyester composites

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Abstract

Composites have a greater influence in recent development of materials with high strength to weight ratio. In the present scenario an effort is on to identify the different and specific properties which are to be possessed by the same material to attain the possibility of using it in various applications. The composite materials play a major role in achieving that requirement. Most of the natural fiber composite materials possess good mechanical properties but it is now becoming necessary that it should possess other properties as well like resistance to water absorption, fire proof, etc,. Here in this investigation an attempt has been made to study mechanical properties and the resistance to water absorption in Kenaf, Aloe-vera and Sisal Fibers reinforced by addition of Glass fiber.

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Keywords: Natural fiber reinforced composites, Polymer matrix, Mechanical properties

1.Introduction

A composite material is the combination of two or more materials that results in better properties than those of the individual components used alone. The constituents of a composite are commonly referred to as reinforcement and a matrix. The major advantages of composite materials are their high strength and stiffness, combined with low density allowing for a weight reduction in finished part. The strength and stiffness is contributed to a large extent by the reinforcing phase. [1-7]

Glass fiber, also called fiberglass, is made from extremely fine fiber of glass. Fiberglass is very light in weight, extremely strong robust material. Its bulk modulus and weight properties are also very favorable when compared to metals, and it can be easily formed using molding processes. [8-11]

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ICAMMAS17

Assessment and Analysis of Roundness Error in Drilling GFRP-Armour Steel Sandwich Composites

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Abstract

The use of composite metal stacks has been increasing and in this work, armour steel, sandwiched between two GFRP panels, is drilled with Tungsten Nitride coated drills and the roundness error in the top panel and the bottom panel are measured with the help of CMM. The effects of the input parameters on the roundness error are analyzed separately for the top and bottom panels. The values of roundness error are very less for the bottom GFRP panel and this is because of less vibration experienced by the drill due to the guided action of the middle metal panel.

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Key Words Drill Diameter;Spindle Speed; Delamination;Armour Steel;Design of Experiments

1. Inroduction

Composites have been finding new avenues of application in aerospace and automobile industries mainly due to their superior properties like good specific strength, low cost, light weight etc. Armour steel, finds an extensive application in defense industries especially in the manufacture of battle tanks, armoured vehicles and in the construction of underground shelters. In this present work armour, steel is sandwiched between two GFRP laminates. Normally these materials are joined by drilling of holes and fixing with screws. Drilling of composite material poses a serious problem and drilling it with armour steel necessitates special cutting conditions and parameters that will satisfy the requirements of drilling of both the dissimilar materials. Many researchers have done lengthy work in drilling composites [1,2] but very few have done work on drilling metal-composites stacks [3,4].

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ICAMMAS 17

Study on Drilling of Woven Sisal and Aloevera Natural Fibre Polymer Composite

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Abstract

Natural fibre reinforced polymer composites are the materials formed by a matrix and a reinforcement of natural fibre. Natural fibre reinforced polymer composites are light in weight, economical, low density, high specific strength, modulus relative no abrasiveness, ease of fibre surface modifications wide availability and are available in variety of forms. They have low densities, comparable material properties, and high moulding flexibility and are environmental friendly. By modifying either the resin system or the natural fibre, natural fibre composites can be designed for different applications ranging from products of commodity to aerospace applications. In this work composite laminate was prepared with natural fibre such as sisal and aloevera with epoxy resin using hand layup technique. The present investigation is an attempt to study the factors that influence the delamination of drilled sisal and aloevera natural fibre reinforced composites using (ϕ 6mm, ϕ 8mm, ϕ 10mm) carbide tip drill bit. Surface roughness test and delamination is carried out on drilled natural fibre composites.

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Keywords: Sisal, aloevera, drilling, delamination and surface roughness.

1. Introduction

Fibre reinforced composites are being used widely today, owing their use to superior mechanical properties like high strength to weight ratio, high stiffness to weight ratio and design flexibility. Increased use of composites has meant there is demand for joining of some of the parts together. Adhesive bonding is the method used most often for joining most composites. On the other hand, mechanical joints can be assembled and disassembled as many times as wanted. Numerous methods have been used, but conventional drilling still remains the un-avoidable process for making holes in composite laminates.

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ICAMMAS17

Role of Calcium Carbonate($CaCO_3$) in improving wear resistance of Polypropylene(PP) components used in automobiles

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Abstract:

Compounds of Polypropylene (PP) will continue to play as an important materials for automotive applications because of its good mechanical properties including mold ability combined with excellent appearance, colorability ,environmental suitability and high performance at low cost. PP compounds are used in automotive interior parts, instrumental panels, door panels, pillars, Loading platform for light pick-up trucks, battery boxes, indoor carpets. These parts easily porn to wear because of its frequent usage. In this work calcium carbonate($CaCO_3$) has been blended with PP in different proportions using twin screw extruder machine and tested it in Pin-on-Disc machine for varying load, speed and sliding distance to study its wear characteristics. The wear phenomenon has been investigated and discussed based on wear loss of the material and microstructure of worn surfaces.

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Keywords: Polypropylene (PP); Calcium Carbonate ($CaCO_3$) ;Twin screw extruder; Pin-on-Disc; Wear loss; microstructure.

1.Introduction

Automobile industry requires materials having high fluidity and thin-wall molding is demand nowadays to reduce the weight of the vehicle . In response to that demand, the use of polymeric materials is constantly increasing and this trend is expected to continue because of its low density,greater freedom in design,lower production costs compared to ferrous materials and most importantly increased possibility of compounding with additives . Such enhancements can be done in PP. Because of these enhancements, the engineering plastics which finds its usage in the automobile currently be replaced by PP compounds. As a result of this improvement , PP-based material automotive applications has continued to increase.

PP is used in loading platform of a light pick-up truck, for the manufacture of the protection for the bottom floor in the car, for internal lining and coating of electric cables in the vehicle because of its good absorbent of impacts and vibrations.[1]

Fuel tank in automobiles of irregular shape using polymeric materials (PP, PE) can be achieved by extrusion blow molding process and the same is the complicated process made up of ferrous materials.[2]

polybutylene-terephthalate (PBT) and polyester (PES) composites possesses good resistance to temperature (up to 240° C), abrasion resistance and low absorption of humidity; makes perfect choice for manufacture of automobile bumpers, radiator grilles, door-handles.[3]

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Optimizing the Plasma Arc Welding Process Parameters to Attain the Minimum Corrosion Rate in the AISI 409M grade Ferritic Stainless Steel Autogenous Joints

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Abstract

The combination with good mechanical properties and manufacturing characteristics, makes stainless steel an indispensable tool for the designer. Stainless steels become susceptible to localized intergranular corrosion when chromium carbides form at the grain boundaries during high temperature exposure. This depletion of chromium at the grain boundaries is termed 'sensitization', because the alloys become more sensitive to localized attack in corrosive environments. Stainless steels like AISI 409M grade, which are having low chromium content (approximately 11%), are susceptible to localized corrosion. The susceptibility of these alloys are strongly affected by welding processes and filler metals, which change the microstructure of the alloy in order to have optimum mechanical properties. Hence, the present investigation has been carried out to understand the effect of Plasma Arc Welding (PAW) process on pitting corrosion behavior of AISI 409M grade stainless steel joints. Also, the PAW process parameter such as welding speed, voltage, heat input were optimized with help of Response Surface Methodology (RSM) to attain the maximum tensile strength and minimum corrosion rate in the welded joints.

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Keywords: PAW; AISI 409M SS; Pitting Corrosion; Optimization; Tensile strength.

1. Introduction

The stainless steels are sensitive to small metallurgical variables and their applications put significant demands on the mechanical and corrosion behavior of the weldments. The AISI 409M is one of the typically utilized ferritic stainless steel alloy which has a titanium addition for its usage in automotive exhaust system, quenching racks, tanks for agricultural sprays and cases of transformer.

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Nano Indendation Hardness Testing Of PP-CNT Composites

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Abstract

Hardness is an important mechanical property which determines the applicability of polymer composites. Carbon Nano Tubes (CNT) invented by Iijima by arc-discharge technique. It possess some unique properties like Young's modulus the values varies from 0.42 to 4.15 TPa,tensile strength of 1 TPa, density varies between 1.3 -3 g/cm^3 comparatively lower than commercial carbon fibers. CNTs have thermal stability up to 2800°C in vacuum. CNT present in Polypropylene (PP) has good impact on the hardness properties of the composites. Montmorillonite (MMT), a layered silicate clay, has been the focus of extended research for the preparation of polymer nanocomposites.Nano indentation hardness testing had been used to measure the hardness of the PP-CNT, PP-MMT system.

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Keywords: Polypropylene(PP); Carbon nano tube(CNT);Montmorillonite (MMT); hardness,Nano indendation.

1. Introduction

The discovery of nanotubes paved the path for numerous researches in their co-related composites [1].Carbon nanotubes (CNT) are sheets of grphite hollow cylinders and it is used as the most promising modifiers of the conventional polymers. This causes the material matrix system to increase its multifunctional properties. Carbon nanotube has been well recognized as one of the ultra-strong materials in the World [2]. It can be embedded into any type of light weight and soft materials as reinforcements to form strong and light nanocomposites because of its extremely small size. Dispersibility of the multi-walled carbon nanotubes the key in enhancing the mecanical properties of the composites [3]. Grimmer and Dharan [4] discovered the cyclic delamination crack propagation rates significantly minimized by the little fraction addition of CNTs, with an related increase in both critical and subcritical inter-laminar fracture toughness, because of shift in the fracture behavior of CNTs. Ashok Gandhi et al [5, 6] has proved that inclusion of nano materials increases the wear resistance of the whole system. Wear and hardness are interrelated. To have a wear resistant material then it should posses better hardenability. Its observed that the good functionality of these materials were affected by poor dispensability of CNTs in most of solvents and low stability of

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Delamination Analysis in Drilling of Carbon Fiber Reinforced Polypropylene (CFR-PP) Composite Materials

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Abstract

Carbon Fiber Reinforced Polymeric (CFRP) composite materials are widely used in the fabrication of major structural parts in aerospace engineering application owing to their specific stiffness and high strength to weight ratio. The drilling process is often used machining operation in order to assemble the parts made by Fiber Reinforced Polymeric (FRP) composite materials. In this work the effect of drilling process variables such as spindle speed and drill feed rate on the drilling induced delamination at exit during drilling of Carbon Fiber Reinforced Polypropylene (CFR-PP) thermoplastic composite is studied in detail. For this study, CFR-PP laminates are fabricated using hot compression molding machine with film stacking technique. The fabricated laminates are tested for physical and various mechanical properties as per the relevant ASTM standards. To analyze the machining performances, the drilling experiments are conducted on a CNC Vertical Machining Center (VMC) using three type of twist drill made with high speed steel (HSS), tipped carbide (TC) and solid carbide (SC) of 6mm diameter. The main objective of this work is to analyze the influence of spindle speed and drill feed rate with respect to drilling induced delamination of drilled hole in CFR-PP composite materials. The empirical relation between machining variables and process responses are developed to predict the process outcome. The observations indicted that the developed regression model is highly suitable to predict the process responses during drilling of CFR-PP composite material. The developed mathematical model may be helpful to reduce the delamination damage which is the most significant undesirable failure during the drilling of CFR-PP material. The influence of machining parameters and their interactions are examined. The significance role of tool materials on the machining characteristic is also discussed in detail.

Keywords: Film stacking; compression moulding; thermoplastics; polypropylene; carbon fiber; delamination;

1. Introduction

The applications of FRP composites are finding in various fields of engineering like automotive, aerospace, machine elements, chemical industry and many other areas. Machining of FRP composite material differs with conventional machining due to their non-homogeneous and anisotropic property. Drilling is the most commonly used machining process for assembly of the components used in main structure. The induced force along the direction of drill axis during the drilling process is called thrust force. The thrust force induced delamination is the

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Effect of Carbon Nano Tubes (CNT) on Hardness of Polypropylene Matrix

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Abstract Hardness is an important mechanical property which determines the applicability of polymer composites. Carbon Nanotubes (CNTs) invented by Iijima by arc-discharge technique. It possesses some unique properties like Young's modulus, the values varies from 0.42 to 4.15 TPa, tensile strength of 1 TPa, density varies between 1.3 and 3 g/cm^3 which is comparatively lower than commercial carbon fibers. This makes CNT as a potential reinforcement with metal and polymers for enhancement of properties. This work describes about preparation of PP-CNT composites with different ratios. Hardness of the composites were measured using Nanoindentation method and found that hardness of the PP-CNT system increases significantly with the increase of CNT proportion in the PP matrix.

Keywords Hardness · Corbon Nano Tubes (CNT) · Poly Propylene (PP) Nanoindentation

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Influence of Primary B_4C Particles and Secondary Mica Particles on the Wear Performance of Al6061/B_4C/Mica Hybrid Composites

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Abstract
The present investigation is carried out on the wear properties of particle-reinforced Al6061/B_4C/Mica hybrid composites in comparison with Al6061/B_4C composites and Al6061 aluminium-based alloy. The dry sliding wear test is used to evaluate the wear rate and coefficient of friction for the specimen. The pin-on-disc wear tester is used at a load of 10 N, 20 N and 30 N. The specimens are prepared by stir cast method. B_4C particles of 70 µm and mica particles of 3–10 µm are used for the experimentation. The worn surfaces of the specimen are studied by using scanning electron microscope. Further, the surface profile is studied by using atomic force microscope images. The analysis shows that, Al6061/B_4C/Mica hybrid composites cause a reduction of wear rate up to 36.23%, a coefficient of friction up to 11.73%, average surface roughness (R_a) up to 46.57% in comparison with Al6061/B_4C composites.

Keywords Metal–matrix composite · B_4C particles · Mica particles · Sliding wear · Wear testing · Surface analysis · AFM

1 Introduction

Aluminium is one of the important matrix materials found suitable in many engineering applications like automotive, aerospace, marine engineering and construction due to its low density, castability and formability. Veeresh Kumar et al. [1] have observed that Al6061 is an excellent series because of its high corrosion resistance and moderate strength.

Wear resistance has a highly inevitable behaviour for components subjected to friction. Hence, many authors have investigated wear and friction behaviour on Aluminium Matrix Composites (AMC) reinforced with Al_2O_3, SiC, B_4C, CNT, TiB_2, Fly ash, Sb_2S_3 (Stibnite), cemented carbide, granite dust, Mica, kaolinite, rice husk ash and Gr, TiO_2, etc. [1–10]. Among these, Al_2O_3, SiC and B_4C are predominant abrasive-reinforced composites. Recently, many researchers have found that Boron Carbide (B_4C) possesses many appreciable characteristics like high hardness (next to diamond and boron nitride), high elastic modulus, low density and better chemical stability. Alizadeh et al. [2] have indicated that, addition of B_4C particles in the composite increases its resistance to wear and the presence of CNT causes delamination in the composite. Yuan et al. [3] have reported that, wear and mechanical properties are improved in Al/AlB_2 composites in comparison with the base metal. Elango et al. [10] have exposed that, Boron Carbide (B_4C) is suitable to be applied to materials subjected to wear and neutron absorption. Dou et al. [11] have observed that, the increase of the load and wear time increases the wear loss on Al/B_4C composites at varying load, sliding time, slide speed and heat treatment parameters. Lashgari et al. [12] have conducted experiments on Al/B_4C composites with a varying load of 20 N, 40 N and 60 N and they have observed that, increase of the load increases the wear. A marginal benefit is recorded for the addition of strontium in the composites.

Recently, many researchers have shown an interest in exploring incremental tribological benefits in reinforcing with the secondary materials. Kaushik and Rao [13] found that hybrid metal matrix composite (HMMC) yields better wear characteristics on reinforcing softer and harder abrasives on the soft matrix material. Graphite is one of the leading secondary reinforcements used in the composites.

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Article Detail

Design and Fabrication of Intelligent Gas Stove for Indian Women Safety

Author: G.SHANMUGASUNDAR , R.YOKESH, S.YUVARANJITH, R.BARATH, S.BALASUBRAMANIAN

Abstract: The Primary aim of the stove is to minimize the ill effects and accidents in every kitchen. This project is economical to produce & assemble, which may be readily available. This Fabrication system can be used in school and college canteens, homes, and hospitals. Our work consists of MQ2 gas Sensor, Arduino board, DC gear motor along with gas stove. Gas monitoring sensor detects the leakage of the percentage of the gas and properly sends signal / Feed back to the attached high accuracy Arduino / electronics board. The Arduino board is programmed to actuate the DC motor which runs the gas knob off so we have to monitor that leakage of the gas is to be prevented and gas accidents are reduced. It also adds ease to cooking zone which helps to reduce concentration on cooking zone. Features to avoid milk spilling, cooker whistle counting and timer are added to enhance the ease of cooking. It makes every activity related to stove with more ease and highly safe. These modes are activated with the help of temperature sensor and limit-switches. This paper deals about the Design and Fabrication of Intelligent Gas Stove for Indian women safety.

Keyword: Gas Leak, Whistle Count, Milk Spilling, Timer, Arduino.

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DESIGN, FABRICATION AND ANALYSIS OF PERSONAL VACUUM ASSISTED CLIMBER

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Abstract—There are various instances where a human as to climb the walls of a high-rise building. Some of them are inspection of high pipes and wall, fire rescue operations, painting and repairs. Unlike the traditional method of using grappling hooks used for wall climbing, this device uses the principle of vacuum to scale the walls. The major motive of this project is to make the manufacturing and usage of this device simple. The suction is produced using the vacuum motor setup and a release valve mechanism is used to help the climber take successive steps. The suction force produced by suction pads is designed by considering both the external conditions and the loads of working equipment. In this research work we have performed a basic experiment on the vacuum suction force of suction pads attached to a vertical wall under various load conditions

Keywords—suction pad, vacuum pump

1. INTRODUCTION

It has been a dream for man to scale heights. In order to make this dream come true, mankind as invented equipment such as Rope, Carabiners, Quick draws, Harnesses, Ascenders, Sling etc.., But still this equipment may not be handy for day to day usage in domestic and industrial purposes. These could only be used if there is a strong support at the elevated destination and also needs immense training to master the usage of this equipment. This makes the activity of climbing walls a problem to those who lack the effective training.Vacuum assisted wall climber will assist climbing vertical surfaces against gravity. It is equipment which uses its vacuum pumps to produce a grip against the wall surface. The assembly is enclosed in a backpack, which helps us to climb heights over the flat surface. So we came up with the idea of vacuum assisted wall climber, which consist of two suction pads and household vacuum pump. To have an air tight seal we used rubber material so that lip of the suction pad creates a friction against the wall surface. The larger the suction pad more weight it can hold. This could also be used as a lifting device to carry the things which are heavy with ease. But the object which we are lifting needs to have flat surface and it should be within the suction limit. If the air inside the cup is removed thus creating a perfect vacuum seal inside the cup whose pressure is very much lesser than atmospheric pressure. The method of using concept of vacuum to climb the walls is technique that has been developed in recent years. It is mainly designed to meet the stated requirements.

2. APPLICATIONS

A. Military Applications

Military applications could include fighting environments where climbing over large obstructions was necessary. Stealthy operations might also be used for Covert Operations.

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ARCHIVES

Design and Fabrication of Solar Powered Multi-Purpose Agricultural Vehicle with IOT Control

G. Shanmugasundar, G. Fenneth Moses, S. Jayachandran, V.D. Rathnavel Subramanian and R. Rajagopalan

Abstract

Agriculture allows to satisfy the primary needs of human and its civilization by giving shelter, food, recreation, clothing and in pharmaceutical industry. Therefore, the most significant organization in the world is agriculture. It is an efficient occupation in which the freebies of nature viz - land, air, rainwater, light, temperature, etc. are co-joint into a single group quintessential for human beings. Animals which is also an important productive unit next to agriculture feast on these primary units and yield products like milk, eggs, silk, wool and meat. The aim of this project is to develop a machine to carry out the agricultural procedures with the least human effort.

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Friction factor, Load and Displacement Studies of AA6063 in forward Extrusion process with Equal Channel Angular Pressing (ECAP) Preprocess

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Abstract

Friction between the die and work piece plays a major role in metal forming process. The Effect of Friction factor, Load and Displacement were studied and analyzed in forward extrusion of AA6063. The Effect of grain size on friction factor during forward extrusion process were also studied and compared. Friction factor values vary much in high area reduction when compared with minimum area reduction . In this work AA6063 Specimens were extruded for a reduction ratio of 4:2. Specimens are also processed through Equal Channel Angular pressing (ECAP) process before extrusion and results are compared without ECAP Processing. Specimens are heated in a muffle furnace with 350°C. Friction factor between the die and work piece was calculated. Extruded specimen, microstructure was also compared with and without ECAP preprocessing.

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Keywords: Load; Friction factor; ECAP; Displacement; ANSYS.

1. Introduction

Extrusion is the process by which a block of material is reduced in cross section by forcing it to flow through a die orifice under pressure. In general extrusion is used to produce cylindrical bars or hollow tubes, but shapes of irregular cross section may be produced from the more readily extrudable metals like aluminum, lead, tin etc., because of the large forces involved, most metals are extruded under hot conditions where the deformation resistance of the metal is low. However cold extrusion is possible for many metals and has become an important commercial process.

Aluminum Alloys AA6xxx series are commonly used for automobile and engineering applications. Some examples of products include Frames, rails, mullions, heat sink (electronic devices). Moreover aluminum alloys are used for aerospace and aircraft applications because of its light weight. It is necessary to study the friction factor and deformation characteristics for determining the extrusion force and also to reduce the power required for the machine tool. Reduction of friction factor leads to the following advantages in extrusion process.

- Reduction of tool and die wear at the tool and die interface.
-Reduction of extrusion force.

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Effects of Fly Ash, Calcium Carbonate Fillers on Mechanical, Moisture Absorption Properties in Poly Vinyl Chloride Resin

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Abstract

In recent years the demand and applications of synthetic resin (PVC) has got increased manifold. This study is aimed at the enhancing the properties of PVC by adding fillers like fly ash and calcium carbonate with it. There after the synthesized composite has been tested for moisture absorption property, compression property, hardness and hygrothermal ageing. The moisture content test is conducted as per ASTM D570 standard, where the specimen under study has been heat treated and cooled in desiccators. Then the weight of the specimen is measured and thereby calculating the moisture absorption characteristic of the material. The test setup for compression a follows the ASTM D790 standards in which the load with standing property is conferred by means of UTM (Universal Testing Machine). Hardenability of specimen is evaluated (as per ASTM D2240 standards) by shore D hardness test in durometer scales . The hygrothermal test procedure is similar to that of moisture content test where the ability of the specimen to transfer heat is measured . The results from the test indicate that the PVC resin with 33.05 percent fly ash is the most suitable for practical applications.

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Keywords: Fly Ash ; ASTM Standard ; PVC resin ; Calcium Carbonate

1. Introduction

Ferry L[1] studied the hygrothermal ageing of glass fibre reinforced polyethylene terephtalene(PET) composites and found that due to interfacial debonding that induces osmotic pressure in area , there is water uptake for long ageing times. The study also showed chemical degradation step of composites occurs immediately and it follows random chain mechanism. Daniel Saida [2] conducted a study on the influence of hygrothermal ageing on damage mechanisms of flax fibre reinforced epoxy composite and found that hygrothermal ageing influenced mechanical properties and damage behavior .The tensile strength and young's modulus decreased with water absorption. Results showed that the hygrothermal ageing mainly damaged the matrix. Robert L[3] investigated on the water immersion effect on swelling and compression properties of PVC foam and balsa wood which are core materials in sandwich structures for weight critical applications. The three core materials were subjected to water immersion test in both tap water as well as sea water and their resistance to change in property were determined .The result showed that Eco-core is a good PVC foam in resisting swelling, water absorption and changes in compression. Sireerat Charuchinda [4] prepared a PVC film filled with microcrystalline cellulose from cotton fabric waste and studied their biodegradability and mechanical property. The results from tests like XRD , TC shows that the MCC has a fibrous structure with average particle size of 40 μm that is blend with PVC in amount of 5-30 parts per hundreds of resin and rolled tensile

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Review of Friction Stir Processing of Aluminium Alloys

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Abstract

An advancement to the principles of friction stir welding is the friction stir processing, a technique for modifying the surface, which involves the modification of the local microstructure by refining the microstructure and through localized plastic deformation of the specimen material. The tool that is involved in the process consists of a rotating tool which has a shoulder and pin inserted into the single piece of material. The area which needs to be examined with this process is traversed by this tool in a desired direction. When the shoulder of the tool and the workpiece comes into contact with each other, with the tool traversing at a particular travelling speed and an optimal rotational speed, friction is developed between the two surfaces. This in turn increases the heat of the material to a limit where the material undergoes plastic deformation. Hence when such an exposure occurs localized plastic deformation and the thermal property increase leads to a drastic change in the local microstructure. Various properties have been examined when the material undergoes friction stir processing which involves the production of nanograin, the surface hardness increases followed by the the fatigue strength, wear property and tensile strength of the material. This review paper focuses mainly on the change in microstructure and mechanical properties of Aluminium alloys and their composites and the effect of FSP process through the study of the current trend and the development of FSP to various parameters.

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Keywords: Friction stir processing; Microstructure; Parameters; Aluminium alloys;

1. Introduction

Friction stir processing was created to enhance the change in surface according to the welding technique in strong state. A rotating tool which is non- consumable is used. The material is softened by the rubbing action which produces adequate heat and also gives sufficient load. Due to the stirring activity, the tool pin is inserted into the material therefore delivering refined microstructure. This paper primarily focuses on the various process parameters and the tools used in the friction stir processing or friction stir welding of the various grades of aluminium alloys.

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ELEMENTAL ANALYSIS OF BRAKE PAD USING NATURAL FIBRES

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Abstract:
Brakes have been advanced in the recent years through many developments. Previously all these years brake pads were made of asbestos fiber which are very harmful in many ways. When vehicles apply brake, the asbestos gets wear down and releases asbestos dust into the ambience and surrounding. This asbestos dust also gets entrapped inside the brake housing which is also a vital problem to be considered. Hence when there is requirement to open the brake housing, the asbestos dust is released into the air and the workers may accidentally inhale it without consciousness. It also posed a risk during manufacturing in industries as the workers are exposed to asbestos risk when they knowingly or unknowingly come into contact with asbestos. Thus a new development is introduced with certain natural fibers such as jute, KENAF and aloe vera along with additives such as epoxy resin and hardener. All these fibers are used to make brake pad material which posses certain properties and the results of various analysis done have been obtained to make a good use for manufacturing brake pads in the upcoming future.

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Keywords: Brake Pad, Asbestos Fiber, Asbestos Dust, Asbestos Risk, Natural Fibers, Additives

1. Introduction

1.1 Composite Materials

A composite is formed by the combination of two materials. One material is in the form of particles, fibers or sheets called the reinforcing phase and the other is called the matrix phase onto which the reinforced phase is embedded. All these combinations of the matrix phase and the reinforced phase can be made into a polymer, metal or ceramic. Generally fibers are the main load carrying members in the composites which have a particle phase which is more stiffer and stronger in relation to continuous matrix phase.

The fiber composites are classified to their types accordingly as natural fibers and synthetic fibers. The natural fibers are considered for many applications due to their features of bio- degradability, cheap, renewable and partial recyclability. The natural fibers are used as an alternative to glass, manmade fibers due to their well defined properties and are more environmental friendly where they are used for many application such as building industries, transportation etc. They are usually obtained from various mineral sources, animals as well as plants. They have been used in the automotive industry to make the parts more environment sustainable.

Synthetic fibers are another form of fibers which is an improved result of the plant fibers as well as the animal fibers. These came into existence when fibers were manufactured using polymers and plastics formed into threads through various methods. The matrix material is classified for the composites into three types namely metal matrix composites(MMC), Cermaic matric composites (CMC) and Polymer matrix composites(PMC). The metal matrix composites have properties and featuressuch as higher strength, stiffness and fracture toughness. They can also be able to withstand high temperatures better than polymer composites in a corrosive environment. These are primarily used in aircraft application and the most commonly used type of matrix metals are aluminium, magnesium and titanium. Ceramic fibers on the other hand offer greater toughness and stiffness than metal matrix composites. The polymer matrix composites have lesser strength and stiffness in comparison to ceramics and metals. But these can be overridden through reinforcing the polymers with other metals. The manufacturing of polymer matrix composites are simpler when compared to others.

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ICAMMAS17

Optimization of Process Parameters in TIG Welded Joints of AISI 304L -Austenitic Stainless Steel using Taguchi's Experimental Design Method

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Abstract

Tungsten inert gas (TIG) welding is a fusion welding process having side range of applications in current industry. The TIG welding process parameters plays a very significant role in estimating the quality of a welded joint. So appropriate selection of welding process parameters is very much necessary to attain weld joint with increased tensile strength value. In the work, experiments were carried out on Austenitic Stainless Steel (AISI 304L) using Tungsten inert gas (TIG) welding process. In this study Butt welded joints have been made by using three levels of current, gas flow rate and nozzle to work piece distance. The quality of the weld has been estimated in terms of ultimate tensile strength of the welded specimens L9 orthogonal array of Taguchi`s experimental design method was utilized for optimization of welding current, gas flow rate and nozzle to work piece distance on welded joints.

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Keywords: AISI 304L Austenitic stainless steel , Tungsten inert gas (TIG) welding , Taguchi`s experimental design method , ANOVA.

1. Introduction

1.1. AISI 304L Austenitic stainless steel

Austenitic stainless steels have been invented in the beginning of the 20th century. They were been developed in Germany, who now characterize more than 3/4 of the total production of Stainless Steel in world. These austenitic stainless steels are widely used in almost all types of important in industries. Stainless Steel are used in typical areas such as piping systems, heat exchangers, tanks and process/Pressure vessels for the food, chemical, pharmaceutical, pulp and paper and other process industries [1,2] . The most important characteristics of AISI 304L corrosion resistance, good weldability, formability, toughness, ductility and strength, which is an austenitic Chromium-Nickel stainless steel. The process of TIG welding (also called the gas tungsten arc welding (GTAW)) being used in austenitic stainless steel is one of the most important area where an extensive number of researches have been carried out, in order to control the process of welding in a precise manner to improve the acceptance and quality of weld in an efficient way.

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ICAMMAS17

Mechanical behaviour of Natural and Glass fiber reinforced with polymer matrix composite

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Abstract

Natural fibres are renewable resources in many developing countries of the world. The interests in natural fibre-reinforced composite materials are rapidly growing due to their industrial applications and fundamental research. Such composites are termed as green Composites, by using sisal. Banana, bamboo, coir, pineapple leaf fibre, etc. Research revealed that the behavior of hybrid composites appears to be simply a weighted sum of the individual components in which there is a more favorable balance between the advantages and disadvantages inherent in any composite material. It is generally accepted that the properties of hybrid composite are controlled by factors such as nature of matrix; nature, length and relative composition of the reinforcements; fibre–matrix interface; and hybrid design.

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Keywords - Composite Materials, Natural Fiber, Glass fibre, Orientations, Mechanical properties, ASTM Standards.

1.Introduction

Generally fibre reinforced plastics are classified as glass fibre reinforced and carbon fibre reinforced plastics. When it comes to matrix, the composite materials are further classified as, Long fibre thermoplastics and Short fibre thermoplastics. There are certain high performance polymers known as shape memory polymer composites. These types of composites exhibit different characteristics based on temperature fluctuations. At low temperatures they show good stiffness and hardness where as when treated at higher temperatures they show a special property of regaining its shape before treatment. The different types of natural fibers are shown in fig 1. Vijaya Ramnath et al fabricated Abaca-Jute fiber reinforced Epoxy composites and evaluated its mechanical properties. The fabricated was done by hand layup technique. The percentage elongation of the individual fiber during the tensile testing is low when compared to that of the hybrid fiber indicating that the hybrid composite withstands more strain before failure in tensile testing than the individual fiber composite. The Abaca fiber and Jute fiber having the superior mechanical properties and it can be used in the future to get excellent results[1].

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ICAMMAS17

Experimental evaluation on Mechanical Properties of Natural Fiber Polymer Composites with Human Hair

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Abstract

In this experimental work, Bamboo fiber, Sisal fiber, Hemp fiber and is used as the reinforcing material in the composite and Epoxy resin with a suitable hardener is used as the matrix. The composite material is fabricated by hand layup technique. The fabricated composite material is tested for its mechanical properties such as Tensile Strength, Flexural Strength and Impact Strength. The composite specimens for the above mentioned test are prepared as per the ASTM standards.

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Keywords - Composite Materials, Natural Fiber, hair (men and women), Mechanical properties, ASTM Standards.

1. Introduction

The composite materials are used in widespread application in defense industries, automobile industries, aerospace and marine. Since composite materials are having low fabrication cost, good mechanical properties been researches on the use of natural fibres as reinforcements in composites for various applications over the conventional materials. The majority of the research has been directed towards sisal, jute, hemp and pineapple. Composite is a sum of matrix and reinforcement matrix, is a thermo set property and includes vinyl ester, epoxy and polyester. It is an eco-friendly fibers as bio-degradability, economical, easy processing makes natural fiber a popular reinforcing material among the researchers as well as engineers working in the field of composites.

COMPOSITE = MATRIX + REINFORCEMENT

Those advanced composites are used in many industries like aerospace, automotive, energy, important sports/recreation and just about everywhere low weight and other special properties are needed. They are rapidly becoming a way of achieving high structural performance at a low cost. They are found in most of the cars we drive, in all busses and trains, boats, and recreation and sports equipment such as skis or canoes we use on the weekends. As the natural fiber is easily available and having greater mechanical properties more research work are going on it. The polymer fiber composite has better properties than the other composite material it is widely used in large number of applications.

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ICAMMAS17

Review of Friction Stir Processing of Magnesium Alloys

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Abstract

The paper is entitled to see the factors affecting the magnesium alloy during friction stir processing(FSP).The factors included in this are affect of tool material, tool rotational speed, tool profiles effect on material during Submerged friction stir processing(SFSP),design of tool. The factors such as tool material, rotational speed and design of tool have been carried out with different materials, different speeds and different design

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Keywords: Friction stir processing; Microstructure; Parameters; Magnesium alloys;

1. Introduction

Friction stir processing is the process of carrying out intense plastic deformation for changing the properties of the material. By other means changing the confined characteristics of the material. It can be performed on various metals and metal matrix composites. FSP is preferred because the fine grain structure can be achieved without changing the thickness of the sheet[1].The FSP process consist of non consumable rotating tool with shoulder and pin in order to provide a plasticised region. Some of the materials on FSP are carried out are Aluminium, Magnesium it's related alloys etc. Magnesium Alloys are preferred in this review. Preference of magnesium is due to their light weight material, they are fancied in auto industries because they minimize fuel consumption and enrich the performance of the automobile. FSP removes welding defects such as cracks, porosity, evaporative loss are eliminated. Solidification problems are eliminated [2].No fillers material is used so problems related to metallurgy are eliminated. Weld quality depends on the shoulder pin design. Geometrical configuration of the tool is major link in process development [3].The plasticised material is obstructed from the weld region by the shoulder. FSP is highly energy saving and promotes green environment [4]. Preparation of fine grain material can be done by combining FSP with rapid cooling. It can be achieved by joining Al 6061 in submerged condition.FSP is a intense plastic thermo mechanical process[5].Grain refinement helps to boost the strength and ductility of magnesium alloys [6].

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ICAMMAS17

Study of Damage Mechanism on OMT Nanoclay Polymer Hybrid Sandwich Laminates

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Abstract

In this paper, the effect of modified (OMt) nanoclay polyester resin on low velocity impact damage area and damage tolerance capability of untreated woven jute and glass fabric hybrid sandwich laminates have been investigated experimentally. The Hybrid Sandwich Laminates are prepared by hand lay-up manufacturing technique (HL) for investigation with a total of 10 layers. For comparison of the composite with hybrid composite, jute fiber reinforced composite laminate is also fabricated. Low velocity impact and Compression After Impact (CAI) tests are carried out on all the fabricated laminates to evaluate damage area and damage tolerance capability respectively. X-ray Diffraction (XRD) results have been obtained from the samples, where the nanoclay has indicated that intergallery spacing of the layered clay increases with matrix. The results of the study show that the damage tolerance capability of the nano polyester hybrid sandwich has been greatly increased and the damage area is decreased at 4% of nanoclay loading.

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Keywords: Nanocomposites**;** sandwich composite**;** Damage tolerance;

1. Introduction

In recent years, there has been a keen interest in hybridization of natural fibers with synthetic fibers as reinforcement in composite materials. These hybrid composite materials provide high specific stiffness, strength and lightweight which make them as an attractive material for secondary load bearing applications [1]. The properties of composites are significantly related to the properties of composite constituents, i.e., fiber, matrix and the interphase between fibre &matrix [2]. The utilization of nanoclay as fillers in polymer composites has attracted considerable attention of researchers due to the improved static, dynamic, thermal, flame retardant and gas barrier properties of the resulting composites. Since natural fibres offer significant cost advantages and benefits associated with processing when compared to the synthetic fibres such as glass, nylon, carbon, etc, during the last few years, a series of work has been done to replace the conventional synthetic fibre with natural fibre composites [3,4]. It has been already proved that, the hybridation of glass fiber with jute fiber in polymer matrix leads to an enhancement in the static properties of resulting jute–glass hybrid composites [5]. Sabeel Ahmed et al [6] have explored the effects of hybridization of glass fiber on low velocity impact behavior and also the damage tolerance capability of woven jute fabric composite.

The results of the study indicate that, the jute laminates have better impact energy along with absorption capacity than the jute–glass hybrid laminates; however their damage tolerance capability is less than jute–glass hybrid laminates. Incorporation of nano particles (clays, carbon nanotubes, etc.) in the matrix system for fiber reinforced composites has been recently studied by several groups [7,8] to improve the static and the dynamic properties.

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ICAMMAS17

Enhancement of Heat Transfer in Double Pipe Heat Exchanger

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Abstract:
The point of this present work is to improve warm execution attributes in a warmth exchanger tube by contemplating: (i) curved tapes in various courses of action; (ii) Cu-nanoparticles with various fixations as the working liquid. The tube embedded the turned tapes indicated prevalent warm execution consider when contrasted with plain tube due with persistent different whirling stream and multi-longitudinal vortices stream along the test tube. The higher number of curved tape embeds prompted an upgrade of warm execution that come about because of expanding contact surface territory, living arrangement time, whirl power and liquid blending with multi-longitudinal vortices stream. Additionally, game plan of contorted tapes in counter current was unrivaled vitality sparing gadgets for the commonsense utilize, especially at low Reynolds number. This was particularly the case for fourfold counter tapes in the cross bearings where warm exchange upgrade with generally low contact misfortune punishment was merited. . Utilizing water with Cu-nanoparticle as a working liquid yielded a higher warm execution than utilizing unadulterated water. It is watched that the most elevated general warmth exchange coefficient is accomplished by Cu nanofluids, which is 1705.686 W/m2K in 3% nanoparticle fixation at 5000 and 4000 Reynolds number for coolant and air individually contrasted with 992.649 W/m2K for the basefluid.

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Keywords: thermal performance, twisted tapes, Cu-nanoparticles, Reynolds number, base fluid.

Introduction

A warmth exchanger is a gadget used to exchange warm between a strong protest and a liquid, or between at least two liquids. The liquids might be isolated by a strong divider to counteract blending or they might be in direct contact. They are generally utilized as a part of space warming, refrigeration, ventilating, control stations, compound plants, petrochemical plants, oil refineries, petroleum gas handling, and sewage treatment.
The exemplary case of a warmth exchanger is found in an interior burning motor in which a circling liquid known as motor coolant moves through radiator loops and wind currents past the curls, which cools the coolant and warms the approaching air. Another illustration is the warmth sink, which is a latent warmth exchanger that exchanges the warmth produced by an electronic or a mechanical gadget to a liquid medium, frequently air or a fluid coolant.

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ICAMMAS17

Mechanical Characterization of Natural Fiber Polymer Composites

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Abstract

In this experimental work, Bamboo fiber, Sisal fiber, Hemp fiber and Sugar tree fiber is used as the reinforcing material in the composite and Epoxy resin with a suitable resin is used as the matrix. The composite material is fabricated by hand layup technique. The fabricated composite material is tested for its mechanical properties such as Tensile Strength, Flexural Strength and Impact Strength. The composite specimens for the above mentioned test are prepared as per the ASTM standards.

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Keywords - Composite Materials, Natural Fiber, Bamboo fiber, Sisal fiber, Hemp fiber, Sugar tree fiber, Mechanical properties, ASTM Standards.

1. Introduction

Composite materials are materials in which two or more different materials are combined together. Composite is defined as the sum of matrix and reinforcement matrix, is a thermo set property and includes vinyl ester, epoxy and polyester. Reinforcement is the fiber like glass, aramid, carbon and graphite. Aerospace industry and Automobile Industry are the major users of composite materials. This is due to the fact that composite materials are light in weight and also possess mechanical properties which are in par with the properties of the conventionally used materials. Many researchers have begun to show interest in the field of natural fiber composite. Features such as bio-degradability, economical, easy processing makes natural fiber a popular reinforcing material among the researchers as well as engineers working in the field of composites.

Though there are several merits in favor of natural fibers, an equal amount of limitation do exist. These limitations should be overcome to explore the full potential of natural fiber composite. At first proper fiber surface treatment should be developed and implemented at industrial scale. Secondly, the use of mats should be investigated and the hybridization of mats with different textile further improved by analyzing the effects of different layup and manufacturing techniques. Finally, the use of advanced textile based on twisted yarn should be developed further by optimizing the yarn manufacturing and realizing 3D architectures which are still missing from the market. In comparison with the mechanical properties of Jute-Epoxy composite and Jute-Polyester composites

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ICAMMAS17

Experimental Analysis of Vapour Absorption Generator integrated with Thermal Energy Storage system

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Abstract:
A vapour absorption Air-conditioning system can run replacing the compressor by a pump, absorber and a generator. The generator can be operated by the low thermal energy like solar, exhaust heat of IC engines etc. But all the period this heat energy will not be available. In this present research the generator part alone considered for experiment. A new model of generator heater is designed and fabricated. The heat transfer capacity and the thermal energy charging and discharging were calculated for analysis. The suitable capacity of generator is integrated with Phase change material is designed to operate a vapour absorption system in the capacity of 3.5 KW. The generator design is modified for Phase change material containment. The average temperature of the heat energy available will be around 60°C to 80°C. In this temperature range suitable Phase change material is selected for thermal energy storage tank. The experiment is conducted on this storage tank for thermal energy charging and discharging by varying the material composition.

Keywords: Generator, Charging and Discharging, Storage tank, Phase Change Materials,etc

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Introduction

Day by day the demand in power consumption, we all are responsible to find the alternate source of power. The one of the major power consumption is refrigeration and air conditioning. In order to reduce the power consumption on refrigeration and air conditioning, one of the best choices is vapour absorption refrigeration system. To run the vapour absorption system the generator maximum input temperature has to be 70° C to 90° C, it depends upon the capacity and stages of generator. The sources of thermal energy available are waste heat recovery systems like IC engine exhaust, low thermal energy like solar system etc. even though the coefficient of performance is low compared to vapour compressor system; the power consumption is very less to all [1].

The only disadvantage is the waste heat thermal energy we are depending is the intermittent type of energy. We cannot achieve it by continuously. To rectify this problem the phase change materials can be added as latent heat thermal energy storage system. If the generator and the latent heat thermal energy storage tank are connected separately means, the design will be too complicated [2]. So a suitable design of generator integrated with latent heat storage system is designed.The experiment will be conducted for the generator setup.

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ICAMMAS17

Structural Optimization of an Five Degrees of Freedom (T-3R-T) Robot Manipultor Using Finite Element Analysis

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Abstract

5-DOF (Five degrees of freedom) palletizing robot is widely used in India, which is playing a more and more important role in all manufacturing and automation industry. The important selection parameter of five degrees of freedom robot arm for welding application includes Reach, strength, stiffness, robot weight, which mainly depends on the structural optimization design of desired robot. So it is of importance to study on the structural optimization design by means of conventional finite element analysis (FEA) using ANSYS. In this paper, the framework of structural optimization design is proposed. Secondly, taking welding robot as research object, its structure is described and the finite element (FE) model of the robot is developed for the finite element analysis. The results show that structural optimization design can reduce the total mass of robot manipulator by using the finite element analysis.

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Keywords: Topology optimization, FEA , Design procedures of robot arm, Static analysis, T-3R-T configuration.

1. Introduction

Industrial robots are the most widely manufactured and utilized type of robots, whose design process if improved would lead to a further development in robotic industries as well as other industries were robots are been used would be benefited. And hence, Efforts are been put to develop a design proving the effectiveness and reliability, for which studies of various field is required. The design of a robot should be in such a way that the robot framework made should be simulated to ensure the performance of the robot with the help of various tools that are been available in the Engineering software, which are been used for dynamic simulation, optimization control, structural analysis [1,2].

The main goal of this work is to investigate the static stability of the robot arm with modified topology design of robot arm from different material usage, with a view to obtain an optimized as well as a better robot design. The time consumption for the process of design can also be optimized by using Meta modelling. In this method the finite element analysis with the tools have proved to be a good work with the optimization of the design process. A holistic framework for design of robots with several degrees of freedom is introduced at the end.

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Playing Games in Computers without Physical Interaction Using Electroencephalography for Differently abled

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Abstract. Mind Controlled gaming for the Differently Abled aims to open up the arena of gaming entertainment to those that has special needs. The project is modelled in such a way that it facilitates playing games without the need for physical interaction with the game itself such as operating a keyboard. The project uses the capability of the human brain to facilitate this kind of physical interaction less gaming. It uses the principle of Electroencephalography, an electrophysiological observing technique to record electrical movement of the brain. We utilize noninvasive situation of electrodes along the scalp. EEG estimates voltage variances coming about because of ionic current inside the neurons of the brain which are then mapped to certain activities that can be performed within the games.

INTRODUCTION

Electroencephalography is a method for recording and deciphering the electrical action of the brain [1]. The nerve cells of the brain create electrical motivations that vary musically in particular examples. In 1929 German researcher Hans Berger published the results of the first study to employ an electroencephalograph, an instrument that measures and records these brain-wave designs. The account created by such an instrument is called an electroencephalogram, generally abridged EEG.

To record the electrical action of the brain, 8 to 16 sets of electrodes are connected to the scalp. Each match of electrodes transmits signals to one of a few account channels of the electroencephalograph. This signals consists of the distinction in the voltage between the match. The cadenced change of this potential contrast is appeared as pinnacles and troughs on a line graph by the account channel.

The EEG of a typical grown-up in a completely cognizant however loosened up state is comprised of normally repeating wavering waves known as alpha waves. At the point when an individual is energized or startled, the alpha waves are supplanted by low-voltage quick unpredictable waves. Amid rest, the brain waves turn out to be amazingly moderate. Such is likewise the situation when an individual is in profound extreme lethargies. Other strange conditions are related with specific EEG designs. For examples, unpredictable moderate waves known as delta waves emerge from the region of a limited territory of brain damage.

Electroencephalography gives a methods for concentrate how the brain functions and of following associations between one a player in the focal sensory system and another [1]. In any case, its viability as an exploration instrument is restricted, in light of the fact that it records just a little example of electrical movement from the outside of the brain. A considerable lot of the more perplexing functions of the brain, for example, those that underlie feelings and thought, can't be connected near EEG patterns. Moreover, the EEG is of no utilization in diagnosing mental sickness. Electroencephalography has demonstrated increasingly helpful as an indicative guide in instances of genuine head injuries, brain tumors, cerebral infections, sleep disorders, epilepsy, and various degenerative diseases of the sensory system.

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Predicting the Severity of Blood Vessel Tissue Damage in Retinal Images Using Support Vector Machine Classifier

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Abstract. In recent years many of the people are suffering from diabetics which may result damaging the human eye sights by damaging the blood vessels of the retinal by form exudates around the optic disc. In this paper, we intend to build retinal exudates from fundus image to predict the severity of diabetics resulting in blood vessels tissue damages. In order to analysis the blood vessels damage and diabetic severity initially we use appropriate image pre-processing techniques to remove any noise from the retinal funds image, to remove the noise in this paper we use wavelet transform and first order Gaussian derivative and matched filter to segment the fundus image by rotating the original image by certain angle. The filtered data is stored in the matched filter bank, then by applying k-NN clustering technique to identify minimum value in each filter bank and marking such minimum value center of k- nearest neighbor value. Further, Support vector machine a supervised learning algorithm is applied to the identified k-nearest neighbor values thereby predicting the severity of blood vessel tissue damage from the fundus image.

INTRODUCTION

With the recent advancement in the technology there are many computer aided diagnosis systems are available to analysis the diabetic retinopathy one such diagnosis system is the Computer-aided diagnosis (CADx) used to analysis the retinal fundus image. Such system is used by ophthalmologists to identify various retinal diseases caused by increase in sugar level in the body such as diabetics. The ophthalmologist can analysis the fundus image by extracting blood vessels, the optic disc, and macula. Fig .1 shows the retinal fundus image showing various diseases such as diabetic retinopathy, glaucoma, micro aneurysms and hypertension. Such disease may cause blind vision if unnoticed.

Generally, non-invasive tool is used by ophthalmologist to analysis the retinal fundus imaging to analysis various diabetic retinopathy diseases as shown in Fig. 1. In order to analysis the diseases proper image pre-processing technique must be applied to the retinal fundus image to extract the curved blood vessels so as to identity the any exudates are projected near the retinal fundus image. Such pre-processing may involve various filtering techniques such as median, mean and Gaussian filters. Further, the extract of blood vessels is analyzed based on the curves of the blood vessels and its histogram values.

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Smart Scrutinizing System to Detect Trespassers and Alarm Ascendancy

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Abstract

Nowadays, where everyone needs to protect their valuables safe and secure, bank is the place that indicates higher security level for common people. So the locker room in the banking industry needs to be monitored continuously. Thus our smart scrutinizing system is specially designed to detect the illicit entrance of the intruders in the locker room of the bank that mostly happens during robberies. The major drawback of present system is that the CCTV cameras in the bank locker room are needed to be continuously monitored by a human being to find the illicit intruder which is a very difficult task. The video that are recorded using the webcam which consumes large amount of storage space and are also used only as the evidence to find the robbers after the robberies, though it cannot prevent thievery. To trounce this problem, we have come up with a new idea of smart scrutinizing system. Our system is mainly builded to ensure safety of the bank locker rooms in an better way by recognizing and monitoring illicit action in the bank locker room. In our system, webcam can continuously capture a frames for references instead of taking videos. It captures the frame and compares it with foreground frames using absolute differential method .As soon as any motion was found, system can instinctively activate the alarm to notify the alert the bank authorities. The system will communicate the image data continuously to the Data Processing Officers (DPO) and it send the alert short message service (SMS) to the user using Firebase Cloud Messaging(FSM) technique. So the user will feel more delighted and secure and be able to respond earlier when illicit entry is detected in locker room of the Banking Sectors. Using this system, user is able to recognize and capture the intruder red-handed.

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Keywords: *Cauchy Distributive Function, Absolute Differential Method, Firebase Cloud Messaging.*

I. INTRODUCTION

In day to day life, bank refers to the place which requires a high level of security and we do banking transactions daily nowadays. For example, to secure jewellery, documents or cash, we use bank locker rooms, which has become an important part in our day to day life. So these banking sectors should provide high level of security. As we know that variety of branches are opened daily and they need high security. So there required a more number of camera surveillance system. At present we would have seen that all the branches are under the control of CCTV cameras, alarm, emergency buttons, etc., In this CCTV cameras are used to observe any unauthorized activity. In general it has to be monitored by the person continuously which is a very difficult task, mainly in nights. The alarm or emergency button needs to be pressed personally, which requires a lot of man power. The main drawback is manual monitoring, storage required is more and high consumption of power. To address all these problems, we arise with an automated smart surveillance system. The main goal of our system is to monitor the intruders mainly in more secured place. The intruders are detected using the method Cauchy Distribution and Absolute Differential Estimation. The incoming video frame is compared with the foreground frame using Absolute Differential Estimation to identify whether any

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A HYBRID INTRUSION DETECTION SYSTEM FOR MOBILE ADHOC NETWORKS USING FBID PROTOCOL

D. RAJALAKSHMI *AND K. MEENA †

Abstract. A Security in a mobile ad hoc networks is more vulnerable and susceptible to the environment, because in this network no centralized environment for monitoring individual nodes activity during communication. The intruders are hacked the networks either locally and globally. Now a day's mobile ad hoc network is an emerging area of research due to its unique characteristics. It's more vulnerable to detect malicious activities, and error prone in nature due to their dynamic topology configuration. Based on their difficulties of intrusion detection system, in this paper proposed a novel approach for mobile ad hoc network is Fuzzy Based Intrusion Detection (FBID) protocol, to identify, analyze and detect a malicious node in different circumstances. This protocol it improves the efficiency of the system and does not degrade the system performance in real time. This FBID system is more efficient and the performance is compared with AODV, Fuzzy Cognitive Mapping with the following performance metrics: Throughput, Packet Delivery Ratio, Packets Dropped, Routing overhead, Propagation delay and shortest path for delivering packets from one node to another node. The System is robust. It produces the crisp output to the benefit of end users. It provides an integrated solution capable of detecting the majority of security attacks occurring in MANETs.

Key words: Security, Intrusion detection, AODV, MANET, Fuzzy, Cognitive Map

AMS subject classifications. 68M15

1. Introduction.

A Mobile adhoc network is a complex wireless network, it consist of collection of mobile nodes, which forms a spontaneous network without the physical infrastructure, it allows individual, group of members and organizational members work together and communicate without the stable infrastructure [1]. Limitation of mobile adhoc networks are bandwidth and energy consumption.

A mobile adhoc network is shown in cf. Fig.1.1. It's an infrastructure less network because the mobile nodes in the network dynamically change the paths with other nodes and transmit the data packets provisionally. In a MANET, nodes within the region or specified boundary means, it communicates with other nodes directly, otherwise it needs to rely on some other nodes to relay the messages from source to destination. The major security goals that need to be addressed in order to maintain a reliable and secure ad-hoc network environment. There are confidentiality, availability, non-repudiation, authentication and integrity. The security attacks in MANET can be roughly classified in two types: 1) Active Attacks and 2) Passive Attacks.

Hosts may misbehave or try to compromise security at all layers of the protocol stack. In Transport layer to provide secure end-to-end communication [2]. For that need to know keys to be used for secure communication, then it anonymity the communication. In Network layer, the misbehaving hosts may create the hazards; in terms of it disrupt the route discovery and maintenance. Due to that hazard, Delay, drop, corrupt and misroute the packets. It degrades the networking performance. In MAC layer, the misbehaving nodes may not cooperate to each other. Because disobey the protocol specifications for selfish gains.

Mobile Ad hoc networks are collections of mobile nodes that may enter and leave the network dynamically. No centralized controller and infrastructure. A major issue in Mobile ad-hoc network is security. This also aims of the work in MANET. To detection of malicious nodes forms a very essential one of the part an approach to security [3]. The main objective of this work is to detect the intrusions through Fuzzy logic that prevents the network from denying the active session or extract the confidential information that is being shared. The

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Comparative Analysis of Mechanical Properties in Aluminium Based Metal Matrix Composite

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Abstract

Composites are focused on introducing a product made up of lightweight material which could replace conventional ferrous and non-ferrous alloys. Aluminium is one of the most commonly used metals for the production of metal matrix composites. Aluminium-based metal matrix composites are sought over other matrix-based composites in the field of aerospace, automotive and marine application due to its valuable mechanical properties. The usage of Aluminium lowers the density, coefficient of thermal expansion, Improves the corrosion and wear resistance as compared to the conventional counterparts. Al-Zr system is used to form a thermally stable strengthening phase in high-temperature aluminium-based casting alloys. These alloys have good strength at elevated temperatures. Zirconium strengthens the alloy by a precipitation hardening mechanism and chromium further enhances the strength of the alloy. Different specimens are fabricated with varying the composition of Zirconium to achieve optimum performance of the alloy for the required application. A comparison of properties between the different alloys is performed by various testing methods and analysing the results with mathematical values of the standard component.

Keywords; *Metal matrix composites, thermal expansion, Al-Zr, precipitation hardening.*

I. INTRODUCTION

A composite is made up of two or more different materials which are unique in physically and as well as chemically. The formed composite will have superior physical and chemical properties when compared to that of the parent component. As a solution to modern material requirements composites are more preferred over traditional monolithic components. There are many ways to form a composite, the individual constituent's materials combine to form a composite. The matrix materials are the base materials, the reinforcement are the materials which lie between the matrix materials. The matrix so formed is termed as Metal Matrix Composites. The metal matrix composites are preferred for performing research and new products are developed throughout the globe which has a diversified area of application. The composite so formed will have high strength, energy absorbing capacity, and good wear resistance compared to reinforced alloys. The recent trends in MMCs is the particle reinforced type of composites The composite where aluminium is used as the matrix material and reinforces with other suitable materials for enhancing the property of aluminium. Aluminium is preferred for its properties like availability, low cost, castability and its property to combine with other materials to form a composite. Aluminium based MMCs which are reinforced with particulate matter have superior properties than

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Detection of flood disaster system based on IoT, big data and convolutional deep neural network

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Abstract

Natural disasters could be defined as a blend of natural risks and vulnerabilities. Each year, natural as well as human-instigated disasters, bring about infrastructural damages, distresses, revenue losses, injuries in addition to huge death roll. Researchers around the globe are trying to find a unique solution to gather, store and analyse Big Data (BD) in order to predict results related to flood based prediction system. This paper has proposed the ideas and methods for the detection of flood disaster based on IoT, BD, and convolutional deep neural network (CDNN) to overcome such difficulties. First, the input data is taken from the flood BD. Next, the repeated data are reduced by using HDFS map-reduce (). After removal of

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Classification of Gene Expression Data with Optimized Feature Selection

T.Ragunthar, S.Selvakumar

Abstract*—There are different types of fatal diseases that could possibly outspread to various parts of the body. It thus becomes obligatory to predict the existence of such anomalies, in order to prune the extent of their spread. Examining the characteristics of genes provides a deep intuition about the disease classification, as they play a vital role in influencing how an organism appears, behaves and survives in an environment. The detection of the abnormal genes could be efficiently modelled using statistical methods and machine learning approaches. Gene expression data derived from a microarray could act as an aid for this statistical computation. Microarray being a recent leap in molecular biology, provides a scope for hybridization of DNA samples that can be interpreted as values based on the gene expression level that the genome possesses. We propose an idea to select a subset of features from the huge number of samples retrieved from the gene expression profiles using Boruta feature selection algorithm. A comparative study with various supervised classification algorithms is made to categorize this subset to a normal and deviant gene. This serves to discover the most appropriate algorithm to classify the gene expression data. Hence assorting the abnormal genes in future could be accelerated with ease.

KEYWORDS- Boruta algorithm, DNA samples, Feature selection, Gene expression data, Kernel, Machine learning, Microarray, Random forest, SVM.

I. INTRODUCTION

A. Gene Expression Data And Microarray Technology

Diseases are caused because of division of cells or uncontrolled growth due to cellular changes. In order to form new cells usually cells receive information to die. On the other hand, the cancer cells would lack the component which would instruct them to stop dividing and instead die. As a result, they can form tumors, impairing the immune system. Genetic factors can contribute to various deadly diseases, as it is a person's genetic code that instructs if a cell has to divide or expire. Every cell in our body consists of same no. of genes as well as similar type of genes.

It is the gene expression of each cell that distinguishes between normal and affected cells. Based on the environment, the gene expression varies. To check the gene expression the two-phenomenon involved are i) Produce microarray ii) Measure transcriptome. There are many technologies such as microarray, illumine bead array, nylon membrane, serial analysis of gene expression (SAGE), high-densities oligonucleotide arrays etc. used to express the level of genes.

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The varying gene expression can be efficiently analyzed using microarray where all the genes of a particular organism are placed in different grooves on a slide. Microarrays are group of DNA spots on a solid surface, like glass or silicon in which hybridization of DNA samples can be made ordered arrangement of samples done using base pairing rules wherein matching familiar and unfamiliar DNA samples is followed, forms the microarray. Each microarray consists of thousands of pores known as probes. The two key terms for microarray synthesis are the blocking agent and the mask. The blocking agent prevents the binding of a nucleotide with some other nucleotide. This blocking agent can be removed using a laser. Masking leaves behind gapes in the microarray spots while the rest of places are masked and never be bind. On observing the colour of each probes in microarray using analyzer, the attributes of gene expression data are determined. Biological interpretation of gene expression data can be made using heatmaps. The heatmap can be combined with clustering techniques for grouping similar genes. Identifying similarly regulated genes can thus become easier.

B. Classification Of Genome Profiles Using Statistical Methods

The gene expression data usually has got very high dimensionality due to which biologists find it difficult to handle them [1]. Hence classification of such microarray data can be cumbersome. Also, there might be noisy data present in the gene expression dataset along with some irrelevant features. Statistical approaches could be an optimal solution to this problem[2]. In recent years, there have many statistical approaches with various level of complexity to analyze genotype data and detect variations in gene. In order to avoid the manual computation difficulties and errors that are likely to occur in such huge datasets it is advisable to automate the statistical computation. Such an approach can be obtained with the help of machine learning. This method would make the system learn through experience and later make the predictions based on the learning.

Machine learning is mainly classified into three algorithms namely supervised, reinforcement and unsupervised learning. Supervised learning is helpful in predicting the target resultant variable based on the input independent variables. Unsupervised learning does not have such target variable instead they form clusters to group similar data together. Past experience is used to predict the future based on trial and error approach in reinforcement learning. Firstly, before handling the gene expression dataset for classification or clustering it is mandatory to reduce the dimensionality. There might be many irrelevant attributes present in the dataset along with noise and disturbances. Thus, pre-processing becomes mandatory.

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An optimization algorithm-based resource allocation for cooperative cognitive radio networks

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Abstract

In cooperative cognitive radio networks (CCRNs), resource allocation can be viewed as a multi-objective optimization issue in terms of channel capacity as well as, among numerous others, the transmitted power, and the QoS limitations. Many researchers have been undertaken to overcome individual problems, not multi-objective problems. In this paper, we investigate multi-objective problems, such as energy consumption, queuing problems, priority levels of traffic classes, fairness, throughput, and user quality requirements. We propose a hybrid optimization algorithm for CCRNs (HCCRN), which enhances the resource allocation. The first contribution of this paper is to propose the load balance enhanced particle swarm optimization algorithm for energy-efficient cluster formation, which overcomes queuing problems. In the second contribution, we consider multiple factors as the input of a multi-factor differential evolution optimization algorithm for prioritizing the traffic levels. The third contribution is that the fair routing path is computed by a modified gravitational search algorithm that enhances resource allocation throughput. For testing purpose, the proposed HCCRN algorithm applied to IEEE 802.11 WLANs. Simulation results show that the users achieve required resources via the proposed HCCRN, thus providing energy efficiency, fairness, throughput, and QoS.

Keywords Multi-objective problems · Hybrid optimization algorithm · Cooperative cognitive radio networks (CCRNs) · Modified particle swarm optimization · Multi-input differential evolution optimization algorithm · Modified gravitational search algorithm

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SPECIAL ISSUE PAPER

WILEY

An efficient scheme for secure feature location using data fusion and data mining in internet of things environment

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Summary

Feature location (FL) is performed to find the relationships between domain concepts and other software artifacts. One major problem in maintaining a software system is to understand how many functional features exist in a system and how these features are implemented. Also, poor security is the prime problem in the FL system. However, the existing recent FL techniques use a textual and dynamic approach, which is not found to be secure, keeping in view the changes in the description of security attacks. To overcome this drawback, this work proposed a novel secure approach for FL utilizing data fusion as well as data mining for the internet of things environment. Firstly, the repeated test cases (TC) are eradicated as of the labeled TC. Next, important attributes are selected using the artificial flora optimization algorithm from the removed labeled TC. Then, association rule mining is performed to ascertain closed attributes. Subsequently, encrypt the closed attributes utilizing Caesar Cipher-Rivest, Shamirs, as well as Adelman algorithm. After that, the score value of the closed attributes counts was found utilizing entropy calculation. Finally, the score value is given as input to the normalized-K-Means (N-[K-Means]) algorithm, where the score value is normalized utilizing min-max normalization and then grouped utilizing K-Means algorithm (KMA). It proffers better results for FL in the source code. The proposed N-(K-Means) performance is found better in comparison to the KMA and latent semantic indexing methods. The proposed system proffered better FL results in comparison to the other prevailing methods.

KEYWORDS

artificial flora optimization, latent semantic indexing, normalized K-means, Caesar Cipher-Rivest; Data mining, association rule mining

1 | INTRODUCTION

In software systems, a feature represents functionality that is defined by requirements. Software maintenance as well as evolution includes giving new features to programs, enhancing existing functionalities, and eradicating bugs that are analogous to eradicate unnecessary functionalities.[1] For instance, location in source code (SC), it is associated with other fields of research, like, fault localization, traceability link recovery between software artifacts, etc. The request for maintenance is commenced by the person (user) with the help of a software interface which has many features associated. All the features in the domain are utilized in line with the knowledge of the user where it is seen as an operational outcome

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A Security Model for Web-Based Fuzzy-Logic Direct Torque Control of Induction Motor Drive

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ABSTRACT

A web-based fuzzy-logic direct torque control of induction motor (IM) simulation program in a distributed client/server architecture and its implementation steps are discussed in this paper. The client program is a web page developed in java software, which accesses remotely simulated IM dynamics program by executing it in the server through the internet. The proposed IM simulation program offers a convenient remotely accessible which can work on any computer platform and simulation environment, implemented in a distributed client/server architecture, for a standalone motor simulation programs. This architecture has two major parts: graphical user interface (GUI) program in the client side and simulation engine in the server side. In the client side, the GUI program is developed in java software typically run in any computer platforms in client, allowing us to access the simulation program in the server using any browser and to send the data's to the server, and to retrieve/exhibit the outputs from the server using different sets of parameters and configurations.

KEYWORDS

Client–server systems; Graphical user interfaces; Rijndael algorithm; Security model; Simulator; Torque control

1. INTRODUCTION

The direct torque control (DTC) method offers a very fast, accurate, reliable speed control and torque responses of an induction motor (IM) drive by calculating the motor's magnetic flux and the torque by using the voltage and current sensors [1]. The DTC method operates in the stationary reference frame and acts directly on the inverter switches to produce the necessary stator voltages. Hysteresis controllers are used to constrain the electrical torque and stator flux magnitude within certain bounds. The presence of ripples is the major problem in a DTC-based motor drive in the motor-developed torque and stator flux. However, there are two key techniques to reduce the torque ripples, one is multilevel inverter and the second is the Space vector modulation. The multilevel inverter will provide more precise control of motor torque and flux though the complexity and cost of the controller increase comparably. Fuzzy logic based DTC of IM is based on the non-linear approach, an attractive choice which can accommodate the parameter variations of the induction machine. In the fuzzy logic controller, an accurate mathematical model of IM is not required as in the case of classical controllers in achieving the desired dynamic response. The simulation engine (MATLAB/SIMULINK) is in the server computer and the graphical user interface is in the client computer which sends a code to run the simulation program and to access the output from the server. The work is towards the development of a security model for sending the code between the client/server machine securely using Symmetric-key algorithms, vulnerable to plaintext attack and to avoid insecure communication between the client/server and to return the result as static data with the image tag. Figure 1 shows the web-based distributed DTC-IM dynamics simulation setup was developed in java software in the client side and MATLAB/SIMULINK for simulation in the server side.

A java applet is a java class which runs on the client's Java Virtual Machine (JVM) via a browser plug-in. A java servlet runs on the server-side in a servlet container, like apache server and the client receives the results in the form of plain HTML. To simulate IM dynamics with simulation parameters, the client sends input parameters to the web server through the internet and receive the simulation output data after finishing the simulation, to the client computer and it can be visualized graphically. For this control, the client runs a java applet and sends the data to a webserver that runs the MATLAB simulation program. In addition to this, the server computer has more sophisticated software programs as listed below:

(1) Executable FL-DTC-IM simulation program
(2) Data transfer handler
(3) Database
(4) DTC- IM dynamics model

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A Modified Static Gain
SEPIC Converter Renewable Applications

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Abstract. A high static gain venture up dc– dc converters dependent on the adjusted SEPIC Converter is introduced in this paper. The proposed topologies present low conversion voltage and high effectiveness for low info voltage and high Output voltage applications. The arrangements with attractive coupling and without attractive coupling are introduced and examined. The attractive coupling permits the expansion of the static gain keeping up a decreased switch voltage. The hypothetical examination and trial results demonstrate that the structure is reasonable for high static gain applications as an inexhaustible power sources with low dc output voltage. The test models were produced with an info voltage equivalent to 15 V and a Output control equivalent to 100 W. The effectiveness at ostensible power became with the model without attractive coupling was equivalent to 91.9% with a Output voltage of 150 V and with attractive coupling working with a Output voltage equivalent to 300 V, presents proficiency equivalent to 92.2%. In private applications, most research is centered around the module-coordinated converters where the vitality created by a single PV module. A portion of the fundamental points of interest of this PV stage structure are the measured quality, permitting a simple increment of the introduced power, the individual MPPT and decrease of the halfway shading and board confusing impacts, accordingly enhancing the vitality reaping capacity.

INTRODUCTION

Power hardware is the field of electrical building identified with the utilization of semiconductor gadgets to change over power from the shape accessible from a source to that required by a heap. The heap might be AC or DC, single-stage or three-stage, and could conceivably require segregation from the power source. The power source can be a DC source or an AC source (single-stage or three-stage with line recurrence of 50 or 60 Hz), an electric battery, a sun oriented board, an electric generator or a business control supply.DC-DC converters are electronic gadgets utilized at whatever point we need to change DC electrical power proficiently starting with one voltage level then onto the next. They are required in light of the fact that dissimilar to AC, DC can't just be ventured up or down utilizing a transformer. From numerous points of view, a DC-DC converter is what could be compared to a transformer. DC-DC converters changes over unregulated DC input voltage into directed DC Output voltage. In a DC-DC converter, a transistor or MOSFET works as an electronic switch: either totally on or totally off. Power consumed by a perfect switch ought to be zero. By and by, misfortunes will happen in a genuine change because of exchanging and conduction misfortunes. Proficiency of a DC-DC converter is very high contrasted with a direct controller. A few sorts of DC-DC converters are: buck converter, support converter, buck-help converter and single finished essential inductance (SEPIC) converter.

Another exploration incline in the private age structure is to utilize the PV parallel-associated arrangement instead of the arrangement associated design to fulfill the wellbeing prerequisites and to make full utilization of the PV produced control. The most effective method to accomplish high-advance up, ease, and high-productivity dc/dc change is the significant thought because of the low PV Output voltage with the parallel-associated structure. The confinements of the ordinary lift converters in these applications [1] .This survey centers around inverter innovations for interfacing photovoltaic (PV) modules to a solitary stage lattice. The inverters are ordered into four groupings [2] .An appropriate for air conditioning module applications. So as to analyze the most possible arrangements of the inspected topologies, a benchmark is set. This benchmark depends on a normal air conditioning module application thinking about the necessities for the sun oriented boards and the grid.[3] .An sepic single

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Design of a Simplified 7 Level Inverter

Mohd Abdul Kareem, Maheswari.E, Pavani Parachuri, Durgam Srinivas

Abstract— In this paper a multi-stage inverter new configuration to growth the quantity of tiers switching voltage the usage of less studied. The proposed inverter includes H-bridge cells in conjunction with an active rectifier and switches. Using PWM modulation technique and collective enter dc supply capacitor series. The validity of the inverter is projected completed using MATLAB software program simulation tools and additionally the applicable theoretical evaluation executed. Capacitor voltage imbalance conquer by way of presenting a modified switching method.

Keywords Multi-stage, voltage unbalance, THD.

I. INTRODUCTION

General study of a multilevel converter is to utilize the electricity semiconductor switches are connected to the low dc voltage source to compensate for the voltage waveform stair case close. High first-rate output voltage, reduced voltage stress at the switching device power and higher performance. More currently, this dc-ac kind of multilevel acquired wonderful attention from business use electric home equipment that lead look at thought inverter. Secondary converter concept is to supply the identical output voltage of sinusoidal kinds. Output voltage degree of great this is green, which defines the deformation of harmonics (THD) and coffee-voltage exchange with respective times of strain and measurement minutes from the clear out output.

H-bridge cellular, which has lots of variety of switches and freelance ++ enter dc voltage supply. In one exceeds the one in every of the solutions to scale back the amount of parts in CHB is to apply asymmetric dc voltage supply [8], [9]. After a dc voltage is scaled in 3 watts, it'll maximize the amount volt output stage. However, they'll boom the direct contemporary voltage supply is casual to come up with the output voltage stage is better. The disadvantage to finish the electrical converter tool structure using energy flows brought in [10]. It also uses a aggregate of normal volt supply to make the shape of the output voltage. Mostadvantageous action inside the future is that it simplest employs one dc voltage supply. However, the electrical device flows create huge structures as a result of the operation at very low frequencies. To alleviate these drawbacks, the exploitation of four power converter shape watt balanced deliver changed into delivered in [11]. This device is usually tailored and evolved from the CHB. In [12], packed gadget U-available cellular. However, increasetransfer losses when growing any voltage degree for passing a cutting-edge of 3 rotating switching element in an man or woman stage.Moreover, massive ripple volts produced across the capacitor, however the capacitor 5000 uF ranked. The device uses a two-way switch with a capacitor collection connected. Mathematically, they are able to produce a variety of greater than the output voltage stage of more than a hundred twenty five stages with fewer additives.However, every capacitor mutual want dc-dc converter to gain a dc voltage supply. It has the characteristics of accurate; thus, it is simple to extend the excessive voltage degree.

II. PROPOSED LEVEL SEVEN SIMPLE PWM INVERTER

Picture. 1 shows the real circuit configuration 7- Pulse Width Modulation stage converter. Having a single dc voltage source, that is divided into three capacitors connected in series. Imagine all of the additives are best. Each capacitor voltage is VDC / three. Then, we will acquire a seven-degree output voltage waveform, 2VDC / three, VDC / 3, 0, -Vdc / 3, -2Vdc / three, and -Vdc. Switch in cells H-bridge (S1 to S4) are working to determine the polarity of the out-put volt with a most voltage level, ie Vdc (or -Vdc). Other voltages evolved with the aid of S5, S6, and S7.

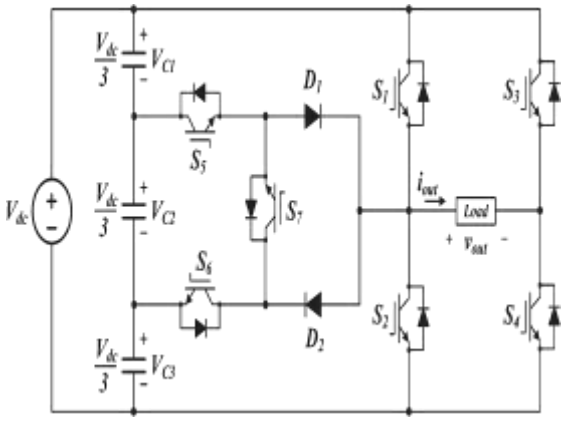

Fig. 1. Circuit configuration of the proposed seven-level PWM inverter.

A. Modes Of Operation

Level Vdc:

An electron path when the output voltage i

Vdc. 3 capacitors coupled in series give energy to the load.It discharges from S1 to *S*4. For inductive load, current direction is reversed, it is from DS1 to DS4, energises capacitor stack.

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Design of 31-level Asymmetric Inverter with Optimal Number of Switches

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Abstract— In this paper, 31-level asymmetric inverter is designed using optimal number of switches which produces higher output voltage levels with low harmonic distortion. The voltage sources used in this multilevel inverter is asymmetric in nature to generate output voltage with reduced distortion. By using six asymmetric voltage sources and 10 switches, 31-level inverter is simulated and the results of the inverter topology are studied in view of reduced harmonic components.

Keywords— Asymmetric structure, reduction in switch count, Voltage sources and Total harmonic reduction.

I. INTRODUCTION

DC-AC control transformation is famous in each part of electrical design because of the more degrees of opportunity in controlling all parameters such as voltage, current and frequency. Such DC-AC converters are having an important role in variable frequency drive systems, uninterruptible power supply, HVDC frameworks, sustainable power source (sun oriented, wind and energy component), FACTS and some more. The inverters were invented by Toshiba and Samuel Grels Barnes in 1997. Inverters are power electronic circuits which are capable of converting DC voltages to AC voltages. Inverters do not generate any power; they rather utilize the power given by DC sources. The output waveforms are generally sine wave, square wave or quasi square wave [1].

Presently, multilevel inverters are getting to be prominent in view of their various applications in high-power and high voltage applications. If there should be an occurrence of multilevel inverters, the favored yield voltage is delivered by suitable blend of a few low voltage dc sources associated at the supply side. Multilevel inverters offers various points of interest, for example, improved yield voltage, lower pressure voltage over the switches, lower electromagnetic impedance, more power handling capacity. Multilevel inverters utilize controlled semi-conductor switches in the inverter to choose at least one of various dc voltage sources to make a staircase output voltage waveform. Condenser and sustainable power sources can be utilized as the different dc voltage sources [2].

Cascaded multilevel inverters have pulled in more consideration mostly in light of straightforward structure and effectively of reaching out to more number of voltage levels. Symmetric inverter with same abundance of voltage source and asymmetric inverters with various amplitudes of dc sources are the two distinct designs of this sort. While utilizing asymmetric design, yield voltage with more advances will diminish the harmonic distortion [3].

In light of the advantages [4]-[6], MLI pulls in many research academic and industry for advancement. The recent topologies of multilevel inverters find application in grid-connected photovoltaic system, smart grid operation, high-frequency AC micro grids, enhanced drive train operation and adjustable speed drives [7] – [14].

This paper is informed with the accompanying areas; in section II the topology of 31 level MLI with its structure is explained also elaborates the switching of MLI. The simulation circuit and results are discussed in section III. Conclusion is given in section IV.

II. 31 LEVEL MULTILEVEL INVERTER

The multilevel inverter topology [15] shown in the fig.1 consists of 6 DC voltage sources and 10 power electronic switches. The voltage sources are selected as variable in nature to obtain maximum number of voltage levels at the output with minimum number of circuit components. This decreases the circuit intricacy and expense of the inverter. A framework is obtained to find the amplitude of voltage sources.

In the fig 1, Switches S_X, S_Y, T_1, T_2, T_3 and T_4 are unidirectional, where the conduction of this switches are in one direction. Switches S_1, S_2, S_3 and S_4 are bidirectional where the conduction of this switches are in both the direction.

The selection of variable DC sources plays a vital role. Lower values of variable DC voltage sources are used in designing the circuit.

A. Design Aspects

A framework is given to define the value for V_{dx} (x = 1 to 6) and obtained as follows,

$$V_{d1} = V_{dc} \quad (1)$$

The voltage sources V_{d2} and V_{d3} selected same as V_{d1} ie.,

$$V_{d1} = V_{d2} = V_{d3} = V_{\mathrm{dc}} \quad (2)$$

The voltage sources V_{d4}, V_{d5} and V_{d6} are calculated as follows,

$$V_{d4} = (ni) * V_{dc} \quad (3)$$

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Novel Control Scheme for Z-Source Inverter based Wind Energy Conversion Systems

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Abstract

Z-source inverter (ZSI) based wind energy conversion systemprovides both the DC link voltage boost and DC-AC inversion in single stage with added features. Traditional maximum power point tracking (MPPT) control algorithm generates the required shoot-through interval to output maximum power to the Z-network. At this instant, the voltage across Z-source capacitor is equal to the MPP voltage of DC link voltage. The capacitor voltage cannot be further increased if it is demanded by the load. This paper presents an improved MPPT control algorithm along with modified MPPT algorithm to achieve both the MPPT as well as capacitor voltage control at the same time. Development and implementation of the proposed algorithm has been carried out by MATLAB/Simulink software and the results are provided.

Keywords:

Z-source inverter (ZSI);Wind Energy conversion system (WECS); pulse width modulation (PWM); maximum power point tracking (MPPT); capacitor voltage control (CVC)

I.Introduction

With India's electricity demand increasing exponentially every year, demand for the renewable energy sources are also increases drastically. Wind, a free and clean energy sources is increasingly competitive with other energy sources in India in the coastal and southern states of India.In one of the southern states of India, Tamilnadu, the installed capacity of windmill is 8,344 MW, which is 35% of the total installed capacity in that state. Whereas the total installed capacity of windmill in India is 28,214 MW, which is around 8.5% of totalinstalled capacity. but the available potential is double the time of installed capacity now and, due to the lack of proper technology all the potentials are not properly tapped. The wind energy conversion system (1) is in general costly and is a vital way of electricity generation only if it can produce the maximum possible output for all weather conditions.

Two level converters were used to boost the DC link voltage to the desired level and convert DC into AC for controlling the AC loads. The number of switching components, total volume of the system and overall cost of the system are increased while adapting the two-stage converter based WECS. Z-source inverter (ZSI) has been proposed to overcome the disadvantages of the traditional inverters with unique impedance network [1]. A ZSIbased shown in Figure 1 created a center of attention for researchers since it offers DC boost and DC-AC inversion in one single stage. Due to its unique features and advantages, it is much suitable for various applications which are much sensitive for supply voltage sags/fluctuations [2-5].

Operating principle of ZSI based and their advantages over the traditional two stage converters have been discussed in [9]. Simple power feedback method is used to achieve MPPT in [9]. The same study has been extended for grid connected WE system in [10]. A simple control method for two-stage utility grid-connected is proposed in [10]. This approach enables maximum power point tracking (MPPT) control with post-stage inverter current information, which significantly simplifies the controller and the sensor. A power conversion circuit for a

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Analysis Of Various Pwm Schemes For The Design Of Asymmetric Single Phase 31 Level Cascaded Mli

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Abstract

Multilevel inverter is most fashionable due to bargain switching losses, low costs, minimum harmonic distortion and high voltage capacity while compared with conventional PWM converters. A latest family of multilevel inverters that are emerged with less number of isolated DC input sources is asymmetric multilevel inverter. This work comprises of design and analysis of various PWM modulation schemes available for thirty one level asymmetric multilevel inverters. The relative case study is offered to authenticate the tested modulation scheme through harmonic spectrum analysis, total harmonic distortion (THD), and distortion factor (DF). The chosen single phase ternary DC source based multilevel inverter is demonstrated via MATLAB simulation. Finally the experimental result shows that APOD PWM offers relatively distortion-less AC output. It is also realized that the COPWM strategy output waveforms as it delivers fundamental rms AC output voltage with high magnitude.

Keywords*—Single phase multilevel inverter, Multi carriers, Sixty Degree PWM, Twenty seven levels, Cascaded multilevel inverter, and Distortion Factor.*

I. INTRODUCTION

Renewable energy sources are noticed as a fast developing power generation system because of the availability in wide range. Electricity generation by PV systems causes no environmental pollution, no material depletion and has no rotating or moving parts[1,2]. The output characteristics of PV system depend on the ambient temperature and the solar irradiance. Moreover, the PV system output provides single operating point, when the irradiance is uniform and the generated power is high [3-5]. Also the output power is affected by shading due to clouds, buildings, birds, plants and dusts. Hence the conversion efficiency and reliability are decreased [6-9]. So as to boosts the conversion efficiency, various tracking techniques are developed to extract maximum power from the solar panels. Few of the most popular methods are P&O incremental conductance and hill climbing method [10-13].

The simple, low cost and easy implementation of the conventional methods made them suitable for practical applications. But during power tracking process, there is a delay in reaching extract tracking direction. Therefore PV voltage and current are measured after a single sampling time using these methods. Also the change in atmospheric parameters will produce incorrect tracking direction before the tracking path is reached [14]. Artificial intelligence (AI) methods and optimization algorithms are developed to overcome the drawbacks of conventional methods. AI technique uses FLC and ANN individually or as a hybrid method [15]. The exact operating point is obtained by these techniques without exact mathematical model. These techniques work depending on the system behavior and the PV characteristics. The operating point in the complete operating region is stable using these techniques [16]. The PV panel power characteristics are affected under partially shaded operating condition. In order to optimize the global maxima evolutionary algorithms like P&0, INC, HC are used. The tracking efficiency is reduced considerably due to the use of random variables in these algorithms. The uncertainty of solution is increased and hence the desired operating point cannot be reached. The power converter control variables such as voltage, current and duty cycle performance

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DIRECT AC/DC POWER CONVERTER USING AUXILIARY CIRCUITS

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Abstract

The Direct AC to DC power converter is proposed for energy harvesting from low voltage supply. The conventional power converters uses diode bridge rectifiers and they are inefficient in operating at high switching frequency. The modified power converter avoids the use of bridge rectifier and directly converts ac input to the required dc output. The operation of the converter is based on Discontinuous conduction mode which increases the efficiency. The auxiliary circuit is added with the proposed converter to store the charges. The advantages of the converter are ripples are minimized, maintain the unity power factor and can effectively reduce the energy storage capacitance.

1. INTRODUCTION:

AC/DC Converter serves as rectifiers. They convert AC to DC in a number of industrial, domestic, agricultural and other applications [1, 2]. Rectifiers are used as standalone units feeding single and multiple DC loads and as input stages of AC systems because of their virtually unlimited power and controllability [3, 4]. Our objective is to develop the power converter working in high switching frequency with minimum switching losses. The conventional power converter uses the diode bridge rectifier and results more switching losses operating at high switching frequency [5-7]. For example the output of micro-generator is in milli watts. The power converter process the low voltage supply is two stages: Firstly the low voltage supply may not feasible for rectification. Secondly the large forward voltage drop occurs at diodes causes high voltage losses. The output voltage may not feasible to work on any equipment [8-10]. This paper concentrates to process of low voltage supply conversion. The proposed converter maintains the unity power factor, thus the losses are minimized.

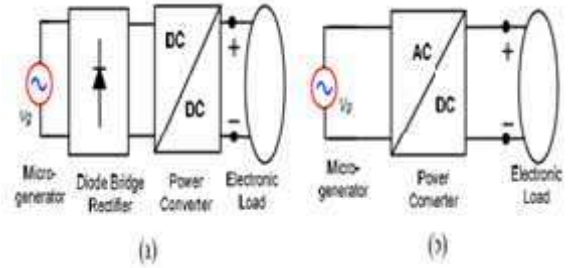

Figure 1 (a) block diagram of conventional two-stage power conversion considering diode-bridge rectifier (b) direct ac-dc power conversion

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PERFORMANCE ANALYSIS OF PV BASED DC-AC CONVERTER FOR DIELECTRIC HEATING

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ABSTRACT: This paper proposes a new PV based DC/AC converter for a dielectric application which consists of a solar panel, SEPIC DC/DC converter, resonant inverter and a dielectric application such as dielectric heating. The output of the solar panel is low voltage hence SEPIC DC/DC converter is used to boost the voltage which is later fed to the resonant inverter to converter the DC/AC and the converted AC voltage is utilized for dielectric heating. This system is used for high power applications and provides a better performance in terms of rise, time settling. The comparison between open loop with and closed loop system along with and without disturbance is presented in this paper.

KEYWORDS: Dielectric heating, PV source, resonant inverter and SEPIC converter.

I. INTRODUCTION

Solar energy is considered has one of the most effective and promising source of energy due to its infinite power and availability. Even though fossil fuels as been the primary source of energy, their availability is limited on earth. Also, they deplete the environment. When it comes to cleanliness and safety solar energy is always the right choice. Now-a-days, most of the applications use AC power. Hence power conversion interface has become a basic need as solar panel that generates DC power output. Here, the generated solar power is utilized for the dielectric heating which is a high frequency load. Over the years many power circuits were proposed for these PV based configurations. Jinn chang wu et al[1] proposed a solar generation system which consists of solar cell array, DC-DC boost converter, transformer to split the boosted dc voltage which is then fed to capacitor section where the voltage is converted to three level voltage. This voltage is applied to full inverter circuit where it is converted to seven level. Soft switching is not available in this system hence the switching losses is more also this system not suitable for high frequency applications. Surya Kumari et al [2] proposed a PV energy conversion system with MPPT to track the maximum power point in which total harmonic distortion is measured. Samer Alsadi et al[3] proposed a MPPT simulation for PV based system using perturb and observe under different climatic conditions to verify the accuracy. It is observed that the maximum power point varies slightly with respect to the climatic condition which reduces the performance of the system. Shen et al[4] proposed grid connected power converter with negative grounding of PV generation system without transformer. More number of electronic switches is used and hence switching losses are high. Lekshmy Rajan et al[5] proposed a PV based system with cuk and PWM inverter using MPPT algorithm. This system also consists of high switching losses and has low efficiency.

Sowmya Smitha Raj et al[6] proposed a MPPT based zeta converter fed from PV cell array with a PWM inverter. The number of cycles used in PWM inverter to control the voltage is more so the performance of the system is affected. Mastramauro et al[7] proposed a PV system with power quality conditioner functionality with maximum power point tracking to control the phase of the PV inverter voltage. This system cannot be used for high power applications. Kumaresh et al[8] proposed a literature review on solar MPPT system which clearly explains the importance of MPPT in solar based system. Esram et al. [9] proposed incremental conductance method based MPPT technique to get the maximum power poin at all conditions. Jitty Abraham et al [10] proposed a pwm modulated and power factor correction of zeta converter for open loop and closed loop. It is to be noted that the performance of open loop system is poor compared to closed to system. Christo shijith et al[11] proposed speed control and power factor correction of BLDC motor using zeta converter. Swati et al.

Implementation of Twenty seven level and Fifty one level Inverter using constant voltage sources

B. Ganesh, N. Murugan, M. Nallaswamy, K. Rajkumar, L. Vijayaraja, S. Ganesh Kumar and M. Rivera

Abstract—**A inverter to produce more output voltage levels using constant voltage sources fed to a resistive-inductive load is presented. Cascaded multilevel inverter structure is modeled and studied for various levels of voltages by implementing proper turn on and turn off states. Simulation for fifty one level inverter design structure is carried out using MATrix LABoratory and percentage of harmonic content in the load voltage is examined. Further, real time development of twenty seven level cascaded inverter structures is implemented and the results are obtained using digital storage oscilloscope. A 15V, 500mA transformers are used to step down the voltage from 230V to 15V and further rectifiers are used to convert AC to DC voltage and used as source for multilevel inverter structure and field programmable gated array.**

Keywords — **Inverter structure, Field Programmable Gated Array (FPGA), Voltage sources and Harmonic content.**

I. Introduction

A power inverter, or inverter, is an electrical power converter that changes direct current (DC) into alternating current (AC). Solid-state inverters have no moving parts and are used in a wide range of applications, from small switching power supplies in computers, to large utility high applications that transport bulk power [3] – [6]. Inverters are commonly used to supply AC power from DC sources such as solar panels or batteries. But in normal inverters the THD is much higher.

Electrostatic capacitor, energy bank and sustainable power generators are utilized as the various dc voltage sources. The easy commutation of the power switches make addition of multiple DC sources possible to achieve high voltage at the output. A multilevel converter has a few focal points over a traditional converter that utilizations pulse width modulation (PWM) with high time period. The attractive features of a multilevel converter can be summarized as follows.

- Stair-step plot condition: Staggered converters not exclusively can create the yield voltages with low bending, yet in addition can decrease the dv/dt values; accordingly electromagnetic similarity (EMC) issues can be diminished.
- Common-mode voltage: Multilevel converters produce smaller CM voltage; therefore, the stress in the bearings of a motor connected to a multilevel motor drive can be reduced. Furthermore, CM voltage can be eliminated by using advanced modulation strategies.
- Input current: Multilevel converters can draw input current with low distortion.

The idea of staggered inverters was first presented in late 19's. The term staggered started with the three-level inverter. In this way, a few staggered inverter topologies have been created [1] - [2]. Up to now, several topologies of multi-level inverter system have been proposed. Recently, several multilevel DC-AC converter designs were introduced [7] – [9].

The constraints of staggered arrangements over the two-level inverter design are, the expansion in the quantity of design parameters required and the circuit multifaceted nature, which requires complex control conspires that include its expense and diminishes the dependability of the converter. This may lead the general framework to be progressively intricate. Consequently, for the experimentation, lessening the quantity of switches and driver circuits plays a vital role. Design of constant source inverter is investigated in this paper.

This study is categorized with the various areas; in area II the design structure of nine level inverter with various output states are explained. Design work of fifty one level inverter structure is discussed in area III. Real time development of twenty-seven level inverter with the results is elaborated in area IV. Summarized the paper in area V.

II. Nine Level Inverter Structure

In this chapter the design explanation of cascaded multilevel inverter is presented. Various states of operations for nine level design structures shown in fig. 1 are discussed.

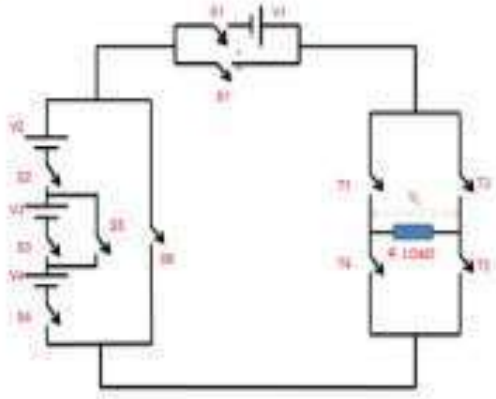

Fig. 1. Nine level inverter structure [10].

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Fire Detection using Artificial Intelligence for Fire-Fighting Robots

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***Abstract*— Fire-fighting robots are used in indoor environments to detect fires and extinguish them. Sensors such as flame sensors are currently used to detect fire in fire-fighting robots. The disadvantage of using sensors is that fire beyond a threshold distance cannot be detected. Using artificial intelligence techniques, fire can be detected in a wider range. *Haar Cascade Classifier* is a machine-learning algorithm that was initially used for object detection. The results obtained using *Haar Cascade Classifier* were not very accurate, especially when multiple fires had to be detected. Transfer learning from a pretrained YOLOv3 model was then used to train the model for fire detection to improve accuracy. The benefits and drawbacks of using deep learning for object detection over machine learning are highlighted. The algorithm used to obtain the target location the robot must move to use bounding box coordinates is also discussed in this paper.**

Keywords*— *Fire detection, Machine Learning, Deep Learning, Location finding

I. INTRODUCTION

Fire accidents cost lives and damage property. Having an autonomous fire-fighting robot that can detect fire and extinguish it will be extremely helpful in such situations. Most of the fire-fighting robots constructed in the past used sensors such as flame sensors [1] to detect fire. Fire-fighting robots also had ultrasonic sensors to detect obstacles in its path. The time taken for the pulse emitted by the sensor to travel from the object back to the sensor was used to determine the distance of the obstacle from the robot [1]. This distance was compared to a threshold value. If the distance was less than the threshold value, the robot turned in the direction of the least obstacle path and continued to move forward towards the fire.

IoT has been included in these robots [2] to communicate to the authorities about the incident. A water-based extinguisher is used for ordinary combustible material such as paper or wood and a carbon-dioxide based extinguisher is used for fires in flammable liquids such as petrol. Fire-fighting robots have been designed to have both types of extinguishers so that an appropriate type of extinguisher can be used [2][5].

Whether the sensors detect fire or not depends upon the distance between the sensor and the fire. Sensors cannot detect fire when it is beyond a certain threshold distance. Using artificial intelligence techniques, fire can be detected at a wider range which is the motivation behind exploring object detection using machine learning and deep learning techniques for fire detection. Object detection is used to find whether the object of interest is present, the location of the object, the number of objects of interest detected and the relative size of the objects.

Haar Cascade Classifier is a machine learning algorithm proposed by Paul Viola and Michael Jones that can be used to detect objects from images, video and camera feed [4]. *Haar Cascade Classifiers* have three important stages- *Integral image*, *AdaBoost* and Cascading Classifiers. The classifier is initially trained with a lot of positive and negative images. Haar features such as the two-rectangular, three-rectangular and four-rectangular features are identified for the particular object to be detected. The use of *Integral image* makes fast feature evaluation of these features possible. *AdaBoost* is then used to select the most important features from a large number of features extracted since all of the features are not useful. The use of *integral image* and *AdaBoost* ensures that the *Haar Cascade Classifier* works efficiently.

The Cascade Classifier has several stages. Different stages of the classifier are responsible for detecting different features. A strong classifier is formed combining the results of the weak classifiers. A window is slid over the image to identify positive regions containing the object using the features of the object it has been trained to recognize previously. If that particular region fails a stage, the window slides to the next region of the image and this region is no longer considered. In this manner, the *Haar Cascade Classifier* can be used to detect objects.

Deep learning-based algorithms can also be used for image classification to detect objects. *Convolutional Neural Network (CNN)* is a type of deep learning neural network [5]. Filters or kernels are applied to an input image. The purpose of each filter is to determine a particular characteristic such as the shape of eyes, ears etc.

The sliding kernel matrix is convoluted with each input matrix obtained from the image to produce an output kernel map. Several filters are used to obtain all the important features which are essential for classification. Different feature maps obtained due to the different convolution operations are combined to obtain the output. It is essential to add padding or zeros around the original matrix image accordingly to ensure that the size of the output feature map is the same as the size of the input image.

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In *CNN*, a large number of regions are needed to find whether the object is present. This is because the object may have different spatial locations within the image. This increases the computational time. *R-CNN*, *Fast R-CNN*, *Faster R-CNN* and *You Look Only Once (YOLO)* were subsequently developed to reduce the testing time. *YOLO* [6] is the fastest algorithm compared to the other algorithms and is hence widely used for real-time detection. Although *YOLO* is fast, it isn't accurate as *Faster R-CNN*. The *YOLO* algorithm was developed in subsequent years to improve its accuracy. The latest development, *YOLOv3* shows substantial improvement in accuracy especially in small environment of fire detection affected the accuracy of measurements obtained.

Shen *et al* [9] had researched and performed deep learning for object detection. Deep learning was used rather than colour-based, motion-based or shape-based models alone as different flames may have different properties. Deep learning could be used to identify all these properties instead of a single property alone for fire detection. YOLO was used to perform flame detection. YOLO created an *n by n* grid where each grid was responsible for obtaining the probability and bounding box for the object that was present in it. The training procedure was divided into pre-training

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Military Support and Rescue Robot

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***Abstract*— In this era of a politically unstable world, there is a growing demand for the use of military robots to aid the soldiers to perform perilous missions. This paper focuses on the design and build of a semi-autonomous, unmanned robotic system used for various military and rescue operations. Dangerous tasks such as bomb disposal, enemy territory surveillance, search and rescue can be efficiently carried out by the *MSRR*, Military Support and Rescue Robot. This reduces the risk of losing the lives of both soldiers and civilians. With the help of live feed from the wireless camera and data analysis of environmental composition by various sensors, of the area under surveillance, the soldiers can better prepare for their missions. Using Arduino and Zigbee technology, the above-mentioned tasks can be achieved. The different sensors and the robotic arm are connected to the Arduino mega which in turn is connected to the Zigbee. Data transmission and receiving are through Zigbee technology. This prototype design overcomes the weakness of the existing models and thus provides better support for military operations.**

Keywords*— *Military robot, Semi-Autonomous, Search and Rescue, Pick and Place Arm, Arduino, Zigbee.

I. INTRODUCTION

In today's technologically proficient world, technology plays an important role in drastically changing warfare tactics. More than advancement in weaponry, the advancement in technology gives a country superiority and the capability to counter an enemy attack in the most effective manner. Nowadays, robots are used in places which are dangerous for humans and thus, carry out the missions more effectively and obediently than human soldiers.

The military support and Rescue robot help to locate survivors in hazardous conditions unfavorable to human rescue teams. This reduces casualties and helps plan the rescue more effectively by using the data provided. The utilization of military robots for this very purpose is used by many countries around the world. The robots are robust, daring, obedient and have no fear of death. These robots may not be humanoids and need not carry lethal weapons, they are just machines instilled with advanced technology to aid the military.

The many advantages of military robots are driving all militaries around the world to opt for the use of robotic technology. *MarketsandMarkets* conducted an analysis which concludes that the military robot industry is expected to reach USD 30.83 billion by 2022, at a CAGR of 12.92% from 2017 to 2022 [1].

Military robots can be affected due to hardware and software malfunctions. Even though the military robots are built for adverse conditions the robotic system might face challenges due to adverse climate, software malfunction, components breakdown and much more. These types of robots are either fully human controlled, semi-autonomous or fully autonomous. Autonomous robots face more challenge under moral grounds for use in the military. A fully autonomous robot is considered as a killing machine under many country laws. The use of automated machines has a lot of restrictions due to the lack of human feelings and emotions. Hence, it is preferable to use semi-automated robots for certain safety precautions [2].

The *MSRR*, Military Support and Rescue Robot can be used for many different applications in the military. Among which a few are discussed in this paper, such as Intelligence, Surveillance and Reconnaissance (ISR), Search and Rescue, Mine Clearance and Bomb Disposal.

(i) Intelligence, Surveillance and Reconnaissance

This is the most important task bestowed upon military robots. The robots used for surveillance and reconnaissance are usually small and invisible to the enemy. The robot takes pictures, records conversations and sends videos back to the ground stations from areas that are difficult to access for the soldiers.

(ii) Search and Rescue Robots

Another important role that is carried out by military robots is search and rescue. There are a lot of restrictions for a human to enter a rescue area after a calamity. Robots can rescue victims from radioactive, biological and chemical environments. Robots don't have limitations like humans and hence can help in reducing the response time by saving maximum lives. Usually these robots are controlled by humans at base, but sometimes can work autonomously.

(iii) Explosive Ordnance Disposal (EOD)

Millions of lives of soldiers are lost while diffusing a bomb or disposing a mine, to avoid which, robots are used instead of humans to diffuse these explosives. The robots can be controlled from base or can be programmed to identify an explosive. This feature instilled in military robots has reduced the loss of lives of soldiers and civilians to a great extent [3].

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MSRR is a semi-autonomous, unmanned ground vehicle developed with the most important features required for use in the military. The robot is instilled with a wireless camera used for reconnaissance and surveillance missions, a pick and place arm used for explosive disposal and a sensory circuit for data collection of the environmental gas composition of the area under inspection. The data collected by the sensory circuit and wireless camera are transmitted to the PC, Personal Computer at the base. The controls for the motion of the entire robot as well as the pick and place arm are given by the GUI, Graphical User Interphase on the PC. Arduino and Zigbee technology are used for data receiving and transmission.

This paper has been organized into sections. Section 2

The robot can only identify a human being but cannot help them without a rescue worker.

Nirout and *Zhang* [6] used a USAR abbreviate application to perform a very important task of exploring the uncluttered area and going to the aid of people. This model uses deep reinforcement machine learning that allows the robot to autonomously explore the unknown cluttered environment. The robot uses frontier-based exploration along with the memory of the places visited before and is known to cover more area at a given time than robots working only based on random exploration technique. The objective of this model is to maximize the information gained to allow the robot to find trapped victims as quickly as possible. The testing of the robot

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SOLAR ENERGY BASED LAPTOP CHARGER USING QUADRATIC BOOST CONVERTER

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Abstract

A quadratic boost converter is designed to get the Laptop charger rating 63.5W in this research. This converter is energized with solar energy as the input source. The output of the solar has been given to the quadratic boost converter (QBC). The energy from the quadratic boost converter is stored in the battery. When the laptop is going to be charged, the energy from the battery is stepped down using the Buck converter. The voltage regulation of the converter is obtained using inner current control loop and outer voltage control loop method. The simulation results are presented for the quadratic boost converter.

Key words: *Quadratic Boost Converter (QBC), Two loop control method, Buck converter, Battery.*

I. INTRODUCTION

In recent year's different types of dc to dc converter topologies are designed which plays a major role in different applications with renewable energy as the source. In this system, the DC-DC converter topology of high gain is implemented with low output characteristics. In PV array and fuel cells the dc output voltage should be maintained as per the desired output voltage. But voltage stress can be increased through the transient period of the switches. The converter used in Photovoltaic arrays and grid applications are chosen based on the Zero voltage crossing with high output voltage with wide variation in low input voltage. The wide variation in duty cycle ratio can be limited by choosing the different values of passive components. Hence the QBC provides the high voltage output with low voltage stress and more efficiency [1-2]. QBC operates with high gain conversion ratio compared to normal boost converter. The single stage converter is better choice than two stage converters in most of the renewable energy applications. The QBC has more switching components with equal switching stress by the way of boost converter. But the QBC gives high output voltage than the normal boost converter on same duty ratio [3-5]. This increased gain makes this converter to be more suitable to be a part of the power system which integrates Photovoltaic systems and wind energy systems and in micro grid applications. To reduce the high voltage stress and to enhance the voltage gain, normal inductors are replaced by coupled inductor, in QBC. To improve the total power efficiency, passive clamping circuits are used to scale back the high voltage stresses caused by leakage inductance of the coupled inductor [6-8]. Hence, in this paper QBC is selected to get the desired voltage rating of the Laptop charger with solar as input energy. The output voltage produced from the QBC is stored in the 60W battery. The buck converter are used to step down the voltage based on the Laptop voltage rating as 19.5V.

This research work is organized in six section as follows: Section 1 reviews the advantages of QBC, the operation of the converter is discussed in Section 2. In section 3 gives the design of the QBC converter, section 4 reviews' the simulation results of open loop and closed loop circuit. The hardware results are offered in section 5 and conclusion is presented in section 6.

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Investigations on On-Board Charger with Simultaneous Charging of Low Voltage Battery for Electrical Vehicles

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***Abstract*:**

In this research, electrical vehicles (xEVs) are incorporated with on-board battery charger (OBC) and a low voltage dc/dc converter (LDC) for charging the low voltage (LV) battery. The OBC-LDC power unit (OLPU) step-down the number and size of the circuit components and increases the overall power density. Besides, in the unified OLPU, internal wiring of the xEVs is improved by sharing common apparatus of the two portions, to rule out the price of high-voltage cables. The unified OLPU fulfils the performance of standard on-board battery charger and LDCs for charging the batteries (both propulsion and LV), in three operating modes. In addition, this work describes the characteristics and design considerations for the integrated circuit structure along with possible solutions for the complications in the circuit. The simulation results of the electrical vehicle charger with the proposed power unit are presented.

Keywords **:** *High frequency transformer (HFTR), charging mode, electric vehicle (xEVs), on-board charger (OBC), dc/dc converter.*

I. INTRODUCTION

In recent years, eco-friendly vehicles with significant potential to meet the market demand of reducing fossil-fuel consumption, co_2 emissions are electric vehicles (xEVs) and plug-in hybrid electric vehicles (PHEVs). These EVs are driven by an electric motor, instead of an internal combustion engine (ICE), and the batteries supplies power to the motor to run. EVs are installed with an on-board charger and a rechargeable battery pack. The rechargeable batteries are charged through the ac power outlet and the charger is installed in the EVs, it should have long-life, light-weight and small in size. The battery charger performance is assessed by the power conversion efficiency and power quality. The on- board charger has to attain a high-power density and thus to achieve the high-efficiency power conversion. Since the battery charger is mounted on the EV itself, the charger should be small in size, light in weight, and long in lifespan. EVs are recognized as zero emissions vehicles (ZEVs) and are eco-friendly than LPG powered or ICE-driven vehicles. EVs are far more energy efficient than gasoline engines, since there is very fewer moving part and silent operation. The batteries have to be charged frequently by plugging into the mains. Eco-friendly vehicles such as, electric vehicles (xEVs), battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs) are by large effectively developed. Several investigation on batteries, on-board chargers, dc/dc converters, motors, etc., on xEVs aspired to improve the electric vehicle technologies. For the performance improvement of the on-board chargers and LDC, the component of xEVs which are focused are the batteries. The on-board battery charger use ac grid as source, to charge the High Voltage (propulsion) battery, over a wide range of ac/dc transformation. At present, almost all xEVs transfer energy between the ac source and the battery by the principle of induction, the converters are accomplished by the isolated topology. Henceforth, LDCs with isolated transformers use propulsion battery /supply power to charge the LV battery through the electronic devices in electric vehicle.

A single-phase OBC for PHEV functioning in different operating modes [1] [2], PHEV using ac power for battery charging [3], Reactive power compensation in Vehicle to grid (V2G) [4], using the PEV propulsion machine and its traction converter [5] are studied. An onboard charger for PHEV with cascade structure of a high-frequency resonant converter for charge control [6], dual cascaded control strategy [7] for the two-stage three-phase integrated onboard charger. A modified PWM-LLC with reduced magnetic component size [8], A three-phase onboard charger of a PHEV with power factor correction and battery voltage/current regulation integrated with PMSM [9] and a phase-shift

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Energy Efficient Light Monitoring and Control Architecture Using Embedded System

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Abstract--- In this paper, we propose an energy efficient RF-based outdoor light monitoring and control system that can monitor and handle outdoor lights more efficiently as compared to the conventional systems. The proposed system uses the RF-based wireless devices which allow more efficient lamps management. The designed system uses sensors to control and guarantee the optimal system parameters. To realize effectiveness of the proposed system, the prototype has been installed inside the University, where the experimental results proved that the proposed system saves around 70.8% energy for the outdoor street environment because of using sensors, LED lamps, and RF based communication network. To implement wireless control system of lights, several comparable architectures have been applied for outdoor lighting. In the design of the intelligent lighting system by considering the system cost as the main factor beside the energy saving. In, the author tries to reduce the number of sensors on each lighting nodes, but this reduction will result in less accuracy of the system due to more packet loss and hence will result in performance degradation. Furthermore, the authors in and designed the energy efficient lighting controls system by utilizing the WIMAX and GPRS as backbone technology, respectively, to communicate with the control center. One of the drawbacks of utilizing WIMAX and GPRS is the utilization of licensed spectrum, which will result in interference with the existing WIMAX and GPRS users. Hence, the lighting system will also require efficient interference avoiding algorithms to cope with interference, but this is not suitable for the lighting systems. These systems also have no capability to change the light intensity according to the users' requirement because they statically control the energy consumption and do not consider the user requirements in the sense of light intensity and the user's presence while dimming or turning off the lamps. In order to fill this research hole, we design the energy efficient RF TRANSRECEIVER-based outdoor light monitoring and control system. In addition to all these things ,an additional led is given as backup light, which will be used during main led light failure or when the operating temperature of main led exceeds the optimum range.

Index Terms--- WSN (Wireless sensor Network), MSD (Mass Storage Device), HID (Human Interface Device), LDR (Light Depended Resistor).

I. INTRODUCTION

Energy efficiency is one of the key factor while designing indoor or outdoor lighting systems. The street lights consume almost 30-40% of the entire city power consumption. Thus, control system able to efficiently manage the lighting is absolutely advisable. For this aim, because of its design based on the old lighting standards and inefficient instruments and devices, the traditional lighting systems are not suitable resulting in energy losses, frequent replacement of devices. Moreover these traditional systems suffer from the lack of pervasive and effective communications, monitoring, automation, and fault diagnostics problems.

To address these challenges, many technologies has been utilized in the literature to save energy such as: the utilization of the light emitting diode (LED) instead of metal halide (MH) lamps. But the systems based on these technologies need further improvement to increase the energy efficiency.

To further reduce the energy consumptions and to simplify the wiring structure, numerous lighting control systems have been proposed to solve that problem such as: occupancy sensing approach, light level tuning, and power line communication (PLC). Despite of reducing the wiring structure in PLC based designs presented in, occasional drops may occur in PLC networks operating on low voltage power lines.

These drops are caused by noise and attenuation, and can last from a few minutes to few tens of minutes. Due to carrier signal attenuation, there may be high latency or communication failure in PLC based design. On the contrary, deploying communication infrastructure based on wireless sensor networks (WSNs), such as low power ZigBee or RF, eliminates wiring overheads and save lots of energy.

To implement wireless control system of lights, several comparable architectures have been applied for outdoor lighting. In the design of the intelligent lighting system by considering the system cost as the main factor beside the energy saving. In this, the author tries to reduce the number of sensors on each lighting nodes, but this reduction will result in less accuracy of the system due to more packet loss and hence will result in performance degradation. Furthermore, the authors in and designed the energy efficient lighting control system by utilizing the WIMAX and GPRS as a backbone technologies, respectively, to communicate with the control center. One of the drawback of utilizing WIMAX and GPRS is the utilization of licensed spectrum, which will result in interference with the existing WIMAX and GPRS users. Hence, the lighting system will also require efficient interference avoiding algorithms to cope with interference, but this is not suitable for the lighting systems.

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PV Powered Standardised Irrigation System Using Soil Moisture Sensor

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***Abstract*— This system proposes a solar powered soil irrigation system and it reduce the wastage of watering during wet weather condition. Water scarcity is more and more increasing in day to day life. This system creates a revolution in modern agriculture to deterrent the barriers in agriculturist. A photovoltaic power generation system become more popular in today's world. Also its enormous growth has not left agriculture. During fair weather condition the soil moisture sensor senses the moisture content in soil and determines whether it is acceptable rate or not. Depending upon the moisture content the motor feed crops. A continuous power generation from the PV panel energise the battery during day-time. If it fails, the action is completely performed by distributed power supply.**

Keywords— Photo-Voltaic(PV); Motor; Irrigation system.

I. INTRODUCTION

Essentiality of water is an emerging problem in agriculture. There are lot of ways suggested by central and state government toovercome the necessity of water. But there is no improvement in it. Because,the weather condition and human behavioural activities may demolish the water level. After the analysis of water scarcity, they framed an irrigation system to impart and regulate the level of water pumping to the agricultural land.Few decades ago irrigation becoming more popular due to its level of using water is to be low. At the same time it fulfils the need. Plants and other organisms absorb nutrients via root nodes. It needs water to dissolve nutrients and minerals before they reach the node. For every stage the water is more essential. After understanding the requirement of water the irrigation system more popular. Irrigation system is ancient. Even though no other system can replace irrigation system.

Lot of techniques in day to day life takes irrigation system into another step. The manmade process is completely turned over into machine made process.According to the survey,embedded system rules the reforms of agriculture and it works independently.It cannot study how to supply water to the crop and field. Action of the system found moisture level before supplying water. Thus soil moisture sensor examines the moisture and nature of soil.

We introduce a PV powered soil moisture sensor to know the water level in underground.To drain water during morning and evening. This system operates on the amount of power generated from PV system. In day-time a battery stores the power and it act as a main source to the entire system. If it fails the AC supply from complete the action. During morning the sensor senses the level of water in underground and feed the garden or crop.At evening it drops water. A relay regulates the function. Without man functioning this will continue even fora year.

The Real Time Clock (RTC) maintains a day (or) a month (or) year information. So, the process is continuously performed without any change in it. A microcontroller based system design has been well known among people. In modern agriculture everybody choose to reduce the work and earn more. Advancement in every field makes the entire process within a hand. The same strategy is also followed in this solar powered soil moisture sensor to draw water.

There are plenty of advantages in this system. Some of them are listed below:

- Less expense
- Eco-friendly power generation
- Unusual power flow to the motor is limited
- Presence of RTC could not allowcollapsing the day-by-day process.

II. METHODOLOGY

A technique resolvedand proposed is revealed in figure 1. The ac source and dc source are seperated by a relay. Arduino is the key to perform storage function and relay function. PV panel produce adequate amount of power needed to function both Arduino and motor. An DC-DC converter boost the voltage before it reaches the pump. The sensor predict the weather condition.

It send an signal to intikate the water level. Ater the completion of this process, the system decides whether the water pumpiung is essential or not for a paticular period. If it needs water then the relay connection supplies power to the motor. In such condition it starts to pump. If there is an excess of moisture in the soil is noted; then the motor would not function.

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Improved Speed Control of BLDC Motor using Luo converter By Sliding Mode Control

R. Dhanasekar, S. Ganesh Kumar and M. Rivera

***Abstract*-The classical buck converter for BLDC motor applications do not meet the load requirement containing more ripples on the output voltage and parasitic effects. In order to overcome this effect, the additional filter elements are added in the Luo-converter to eliminate the output ripples and effectively enhance the output voltage level. The output stage of the Luo converter is comprised of an inductor and capacitor so it naturally acts as filter. The output stage stores and delivers energy to the load and smoothens the output voltage to produce a constant output voltage. The Luo Converter acts as both buck and boost converter by varying the duty cycle. Thus this Luo Converter is used for the proposed BLDC Motor Drive. The Sliding Mode Controller is used to make the speed of the System constant in a small amount of time.**

***Keywords*— Brushless DC Motor, Luo Converter, Motor Speed, Sliding Mode Control.**

I. INTRODUCTION

BLDC motor is a synchronous motor that synchronizes the rotor magnetic field with stator magnetic field which develops the mechanical torque. The stator windings are separated 120^0 degree electrical [1]. Also due to its construction the BLDC motor does not have brushes nor electromechanical commutator therefore its commutation is electronic and its operation is more complex. One of the main challenges in this field of drives was to achieve a perfect control for speed regulation even under the disturbances and parameter variations [2-4].

One of the prominent methods for the control design is the SMC (Sliding Mode Control) approach. Sliding mode controller is suitable for a specific class of nonlinear systems. This is applied in the presence of modeling inaccuracies, parameter variation and disturbances, provided that the upper bounds of their absolute values are known. Modeling inaccuracies may come from certain uncertainty about the plant (e.g. unknown plant parameters), or from the choice of a simplified representation of the system dynamic. Sliding mode controller design provides a systematic approach to the problem of maintaining stability and satisfactory performance in presence of modeling imperfections.

This paper consists of five sections including introduction. Section II discusses about the existing system, Section III discusses about the proposed system, Section IV discusses the simulation results and Section V discusses the Hardware results.

II. EXISTING SYSTEM

In general, BLDCM fed PID controller with Luo converter experiences ripples at the output of converter. Therefore, it is essential to eliminate the ripples in the output side to enhance the efficiency of the system. Limiting ripples in current restricts lead to well enhanced voltage output. This consequently necessitates a Sliding Mode Controller (SMC), for enhancing the output voltage at the output of converter. A conventional BLDCM drive with PID controller scheme will require a constant DC supply based VSI with Pulse Width Modulated (PWM) scheme for speed control. The high frequency switching in VSI will lead to large switching losses. The existing system has also high conduction losses due to oscillations while the speed of the BLDCM is dependent on the DC voltage measured across the front-end of the inverter, a variable speed operation can be employed by adjusting the DC link voltage of inverter with fundamental frequency switching. The Luo converter with SMC has additional elements comprised of an inductor and capacitor so it naturally acts as filter**.** In [5] the control of dc motor trajectory tracking is attained by Luo converter currents and voltages. The BLDCM fed with Luo converters designed under front-end BL configuration is utilized for a wide range of applications. The BLDC fed conventional PID has huge no of ripples, harmonic currents and parasitic effect when compared to the BLDC fed SMC controller [6-7]. The existing system has more chattering effect than BLDC fed SMC. The existing system has also a problem of maintaining stability and satisfactory performance in presence of modeling imperfections.

III. PROPOSED SLIDING MODE CONTROL OF LUO CONVERTER FED BLDC MOTOR

The proposed system consists of an AC source, filter, Luo converter, three-phase Inverter, BLDC motor, saw tooth generator, PWM generator, sliding mode controller,

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Power Quality Research On Three-Phase Pfc Rectifier (Minnesota Rectifier)

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Abstract—The Minnesota rectifier is a well established topology, however, no serious attempts have been made to explicitly investigate the improvement in power quality by the use of this rectifier. This paper discusses the harmonic reduction in the line currents of a three-phase diode bridge rectifier by third harmonic current injection technique. The improved performance of the current injection technique is validated by comparing the simulation results of a rectifier unit with and without current injection technique.

Keywords—THD, third harmonic, zig-zag transformer, ZCS Quasi-Resonant Converter.

I. INTRODUCTION

Power electronics component plays a vital role to energy conversion with improved efficiency and improved operating characteristics. Most of the converter systems are affected by the non linear characteristics. Harmonic distortion caused by these nonlinear loads leads to degradation in the power quality. IEEE 519-1992 [1] and the IEC-555 are the recommended standards for the limitation of harmonic currents at ac side to meet the power quality standards. To achieve those standards, it is essential to obtain the nearly sinusoidal current with low distortion and desired power factor at the ac mains to meet the high power quality standards.

Use of six-switch PWM rectifier [2] reduces the harmonics, but the problems of PWM technique are EMI and switching losses. In comparison to this approach, dc link current is modified by 3rd harmonic injected current component , fed through the rectifier input side requires only two controllable switches on the dc link side as shown in the Fig. 1. Zero-current switching or zero-voltage switching [3]-[8] of these switches overcomes the problems of PWM technique. Zig-zag transformer can be used as a third harmonic current injector [7] or a simple LC circuit [8]. Apart from the current injection network, the presence of source inductance is the added advantage to obtain the sinusoidal line currents with lower value of harmonic [8].

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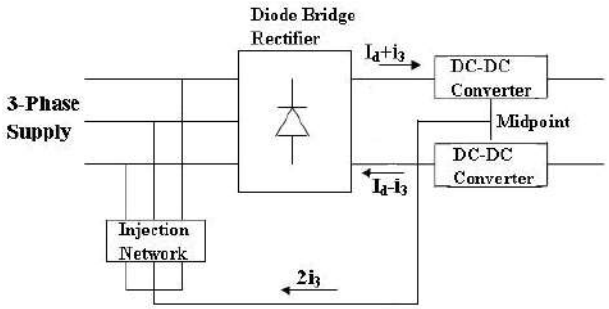

Fig. 1.Rectifier with Injection network

II. OPERATION OF THE RECTIFIER TOPOLOGY

A. Current injection device

Zig-zag transformer is used to give the 3rd harmonic current as a feedback to the utility interface from dc link interface to reduce harmonics. Three phase wye transformer is the basic model to obtain the zig-zag transformer. Three phase wye transformer has three windings with neutral point; each winding has cut in the middle so that it splits into two windings namely outer winding and inner winding in each leg. The outer winding of each leg are turned around and rejoined to the inner coil of adjacent leg. In the connection sequence, the outer coil of A phase is coupled to inner coil of B, outer coil of B is coupled to inner coil of phase C then outer coil of C is coupled to inner coil of phase A as shown in Fig. 2.

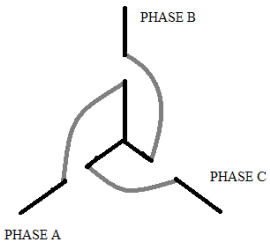

Fig.2. Zig-zag transformer connection.

In the minnesota rectifier topology, the main role of zig-zag transformer is to circulate 3rd harmonic current at supply side. Due to very high magnetizing impedance, it can be operated as open-circuited for both positive and negative sequence voltage components. If

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Nano Nickel Oxide/Vinyl Ester Composites with Improved Mechanical Strength

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Abstract: Nickel(II)oxide is a promising material which suits for many applications due to its speciality characters such as electrochromic, photocatalytic activity, semiconductor nature, etc. But use nickel oxide as filler in polymer composites is not well studied. In this work, nano nickel oxide filled vinyl ester matrix composites were fabricated by reinforcing various weight fractions of filler. The composites so prepared were characterized by mechanical strength analysis, Fourier Transform Infrared Spectroscopy and Scanning Electron Microscopic analysis. Outcome of the analysis showed that addition of nano NiO caused significant improvement in mechanical strength under tensile and bending stress and still further enhancement after the vinyl functionalization of nano nickel oxide.

Keywords: Nano composites, nickel oxide, vinyl ester, surface functionalization, tensile strength, flexural stength

I. INTRODUCTION

Presently, with the fast improvement of science and innovation, materials assume an essential part in the international economy and safety. New materials are the premise of new technologies, and materials science, vitality innovation and data science have turned into the three mainstays of present day science and innovation. As the human population is booming every year, a demand for materials of specialty characters is also arising and hence innovative development of material science and technology has become unavoidable in order to cater the needs of the rapidly growing population of the world. Polymer matrix composites are such kind of emerging materials which are being used in various fields of engineering like aerospace, mechanical, optical, electrical, etc. [1]. Thermosets and thermoplastics are the two main sorts of polymers used in polymer matrix composites. Thermosets have qualities such as a well-bonded three-dimensional molecular structure after curing [2] - [3]. They decompose instead of melting on heating. Merely changing the basic composition of the resin is enough to alter the conditions suitable for curing and determine its other characteristics [4]. Vinyl ester is an economically viable thermoset polymer possessing adorable chemical resistance, thermal stability and flame retardancy [5]. But polymers show poor abrasion resistance, low mechanical strength and stiffness compared to other structural materials, for example, metals and compounds and consequently their usage for structural applications has been limited to some degree [6]. To combat these issues, strategies such as process modification [7], reinforcement of functional fillers and fibres [8] – [9], optimal material selection are being followed by researchers. Nano sized fillers were found to be effective in improving the properties of polymer composites over macroscopic fillers. Nano clay [10], silica [11], metal oxides [12] – [14] are the major functional nano fillers of interest in particulate filled polymer composites. Further, their surface modification is an another way by which the end use properties of particulate filled composites are strengthened [15] – [17]. In this work, an attempt was made to use nano nickel oxide as filler, due to its unique characteristics [18] – [19], in vinyl ester matrix and the tensile and flexural properties of so prepared composites were studied.

II. MATERIALS AND METHODS

A. Materials

Vinyl ester dissolved in 30% v/v styrene monomer, methyl ethyl ketone peroxide (MEKP) catalyst and cobalt naphthenate additives were procured from Vasavibala resins private limited, Chennai, Tamil Nadu, India and used as such. Nano Nickel oxide (average particle size<50nm), coupling agent vinyltrimethoxysilane, were purchased from M/s. Sigma Aldrich India (Pvt) Ltd and.

B. Surface modification of Nano nickel oxide

Vinyltrimethoxysilane (VMS) of concentrations 1%, 2% and 3% v/v in ethanol were prepared and their pH was adjusted to 4.5 - 5.5 by adding dilute acetic acid. Surface modification of nano nickel oxide was carried out by stirring the nano powder with the silane solution for about 5 minutes and air dried at room temperature for 48 hours.

C. Casting of Composites

Nano nickel oxide of weight fractions ranging from 0.1 – 1.0% were mixed with vinyl ester resin, and fabricated by vertical open lay-up Resin Transfer Moulding using a glass mould with 3mm separator. The content of the mould was air cured for about 25 minutes at room temperature and post cured under microwave irradiation (2.4 GHz) at 240W for 30 minutes. The fabricated composite plates were cut by water jet cutting machine.

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Magnetohydrodynamic Viscous Fluid Flow Between Parallel Plates with Base Injection and Top Suction With an Angular Velocity

R. Delhi Babu, V. Yuvaraj, S. Hemanth Kumar

Abstract: In this article manages the issue of stable electrically lead laminar progression of a gooey incompressible liquid stream associating two parallel permeable plates of a divert in the event of a transverse attractive field through base infusion and top suction. Dependable vertical stream is made and controlled by a weight slope. Vertical speed is enduring everywhere in the field stream. It implies $v=v_w$=constant. Answer for little and huge Reynolds number is talk about and the diagram of speed profile for stream including parallel permeable plate with base infusion and top suction through a rakish speed Ω has been considered.

Keywords : About four key words or phrases in alphabetical order, separated by commas.
Keywords : Magnetohydrodynamic flow, fluid flow, parallel plates, angular velocity.

I. INTRODUCTION

The Fluid flow in between same kind of plates arranged in a manner which the hydrodynamic flow established by the Magneto hydrodynamic flow. The main usage of the concept in many fields in real time and also industrial like Magneto hydrodynamic flow, and they are MHD control generator, Aeronautics, Chemical synthesis, Dispersion of Metals, Electronics, Hydromagnetic dynamo action, MHD couples and bearings, MHD flow meters for liquid metals, MHD pumps.

Berman [1] examined the issue of adjusted laminar progression of an incompressible thick liquid from start to finish a permeable path with uniform rectangular cross portion, while the R-Reynolds number is wretched be considered in addition to an irritation arrangement expect ordinary divider speeds to be the equivalent was gotten. Sellars [2] broad the issue contemplated while the R-Reynolds number is raised. Later Yuan [3] suggested the few concepts of the infusion Reynolds numbers in two dimensional constraints with unflattering steam path along with their permeable dividers. Soundalgekar V. M [4] detailed the transfer of the MHD heat as a flow in their given non constant body temperature using the injection and suction as their major focused idea. Attia.H.A [5] [6] main concepts of the unsteady stream in the fixed plates as a parallel plates which has gooey liquid in the form of incompressible and exchange of warmth in the fixed plates. The normal and formed suction and the properties of blend are their major factor influenced. The consistency of their temperature in each subordinate are monitored whose fluids flows through their penetrable and parallel plates. The fluids flow in the shaky steam and dusty coordinating fluids. Ganesh [7] assured the measurement of the MHD fluid stream of viscous liquid. Ganesh [8] studies the MHD behaviour in the thick walls as plates in the parallel position which has fluid flow in porous plates with the concept of top suction and the entrenched. Krishnambal [9] highlighted the work of the stream in the fixed plates in parallel conditions and susceptible. Hafeez H. Y [10] gives the flow of the stream in the porous plates fixed in the bases, the flow studies by their MHD as bottom injection and suction at the top. Another highlight of MHD mentioned in Ganesh [11] which close concept of the parallel and porous plates. R. Delhi Babu [13] investigated the effects of steady magneto hydrodynamic flow in angular velocity which in poured in the plates fixed as a parallel plate. J. Charles Prem Anand [14] studied Magnetohydrodynamic effects on steady blood flow in a stenosis under angular velocity.

The new concept of the stream flow as incompressible liquid which in thick state liquid connecting two penetrable parallel plates inside seeing a transverse alluring field and angular velocity with base imbuement and best suction through precise speed.

II. PROCEDURE FOR PAPER SUBMISSION

Considering the proportionate permeable plates, the new methodology introduced in plates while the fluid flow as incompressible liquid in thick state, the laminar development improvised and the top suction at their dividers with the velocity of the sight of a crosswise attractive field of solidarity is mentioned as H_0. The dividers in the vertical position with the rakish speed Ω. The starting point is focused initially for the channel flow. The axis are mentioned as x and y for the tomahawks comparable and vertical position of their channel dividers. The determination of the long way channel is mentioned as L. The distance measured in the fixed plates is 2h.

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Magnetohydro Dynamic Steady Flow Between Two Parallel Porous Plates of a Viscous Fluid Under Angular Velocity with Inclined Magnetic Field

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Abstract: The Model is made as the Steady Magnetohydro dynamic streams with an exact speed between parallel penetrable plates are considered. The issue is seen methodically by using comparability change, whose game plan oversees growing fluid stream with a dashing velocity. The Major Applications of Magnetohydro dynamic (MHD) are the controller of generators, the system containing Cooling and thermal structures, improvement of polymer, Fuel industries etc. The objective of this paper is to look at the Steady Magnetohydro dynamic stream of thick fluid with a saucy speed between parallel porous plates when the fluid forced to their back position by the way of the dividers of each partition at a comparative rate. The issue is decreased to a third solicitation direct differential condition which depends upon a Suction Reynolds number R and M1 for which a right course of action is gotten.

Keywords : Magnetohydrodynamic flow, fluid flow, parallel plates, angular velocity.

I. INTRODUCTION

Magneto hydro elements are the examination of the association connecting alluring fields and motion fluids. The effect of MHD and Hall current on gooey streams has unprecedented vitality for real time Engineering and related fields. Accordingly, this concept presents the practice of Engineering concepts in early 1960's. In astrophysical fluid and geophysical components many comparable and relevance wide region alluring field are implemented in electrically driving concept and the surge of a fluid. MHD accept colossal employment in many domains for instance, sun-based material science, sun-controlled cycle and turning alluring stars.

Using rectangular channel, the weight inclined viscoelastic Maxwell fluid with issue of precarious stream Bagchi [1]. Attia and Kotb [2] the temperature dependent thickness between two parallel plates by the concept of MHD stream and Warmth trade.Attia [3] cleared the transient state issues in MHD. Ezzat, Othman and Helmy [4] Micropolar Magnetohydrodynamics highlighted in issues of breaking point the stream layers. Aboul-Hassan and Attia [5] concentrated on the progression of transverse appealing field between the penetrable plates at two levels progression of the main viscoelastic fluid. Nabil, Eldabe, Galal, Moatimid and HodaSm Ali [6] experimented the visco-adaptablefluid of Non-Newtonian MHD stream of animated plate by orous medium.Attia [7] determined the viscoelastic fluid of Precarious Hartmann Stream with the Corridor sway. S. Krishnambal and S.Ganesh [8] researched the Temperamental blends streams in-between two parallel and penetrable plates whose fluid considered as thick fluid.R. Delhi Babu and S. Ganesh [9] given the rakish speed and their impact in magnetohydrodynamic steam experiment in parallel penetrable plates. R. Delhi Babu and S. Ganesh [10] highlighted the angular velocity of the Magneto HF in unsteady manner in a platform of porous plates in parallel view.

II. MATHEMATICAL FORMULATION OF THE MODEL

The estimation of the Crossway attractive field into dividers in the vertical direction applying the steady laminar progression in a liquid as incompressible gooey in main interface platform of Permeable plates which are aligned as parallel plates. In the beginning the channels are analysed and verified by considering the two major axes named as parallel and inverse axis for the two divider channels for tomahawks simulation.

L named as the Channel length and the distance between the two plates in parallel conditions are given as 2h. The velocity segment in the x direction named as u and in the y direction the velocity is named as v, Ω is the rakish speed.

The equation of continuity is $\frac{\partial u}{\partial x} + \frac{\partial v}{\partial y} = 0$ (1)

Equations of momentum are

$$\rho \frac{\partial u}{\partial t} = -\frac{\partial p}{\partial x} + \mu \left(\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2}\right) + 2\Omega u - \sigma_e B_0^2 u \sin^2 \alpha - \frac{\mu u}{k} \quad (2)$$

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Difference cordial labeling and strongly multiplicative labeling for some extended duplicate graph

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Abstract. The aim of this paper is to prove that the extended duplicate graph of arrow graph and splitting graph of path admits difference cordial labeling and strongly multiplicative labelling.

Key words: Arrow graph, Splitting graph of path, Duplicate graph, Extended duplicate graph, Difference cordial labeling, Strongly multiplicative labeling.

1. Introduction

E.Sampthkumar [8,9] introduced the concept of splitting graph and duplicate graph..P.Vijaya kumar et. al., have proved that duplicate graph admits many labeling [12,13,14]. K.Thirusangu et. al., have introduced the concept of extended duplicate graph [11]. Selvam et. al., have proved many result in extended duplicate graph [1,2,3,5,6,10] .In [7] Ponraj, Shatish Narayanan and Kala introduced the notions of difference cordial labeling. The strongly multiplicative labeling was introduced by Beineke and Hegde [4].

2. Preliminaries

Definition 2.1 An arrow graph A_m^n with width 'n' and length 'm' is obtained by joining a vertex 'v' with superior vertices of $P_t \times P_m$ by ' t' new edges from one end. Clearly the total number of vertices is 2m+1 and the total number of edges is 3m.

Example: Arrow graph

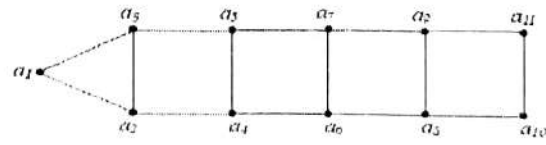

Figure 1 A^2_5

Definition 2.2 Let G (V,E) be a simple graph and the duplicate graph of G is DG (V_1, E_1) ,where the vertex set $V_1 = V \cup V'$ and $V \cap V' = \phi$ and $\varphi : V \to V'$ is bijective and the edge set E_1 of DG is defined as the edge a_ia_j is in E if and only if both a_ia_j' and $a_i'a_j$ are edges in E_1.

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Influence of Polyvinyl Palmitate Copolymer As Viscosity Index Improvers For Lube

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Abstract

Polyvinyl palmitates were synthesized by condensing Polyvinyl alcohol with palmitic acid in different ratios and characterized. Intrinsic viscosity and their Molecular weights were found using Mark-Houwnik equation. Viscosity index of diesel oil doped with the prepared polymers were determined and compared. From the results it was observed that there will be slight increase in the viscosity index of the diesel oil at different ratios of additives. From these results it was confirmed that these additives can be used as viscosity index improvers.

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Keywords: Viscosity Index, Diesel oil, Viscosity index improvers

Introduction

The development of modern engine and transmission technologies would be impossible without lubricant additive. From its conception in the early 1900s, the lubricant additive industry has worked in partnership with the oil and the automotive industries to enhance durability and performance of engine and drive line systems through lubricant design [1]. Additives are synthetic chemicals that can improve or add performances of lubricants. Some additives impart new and useful properties to the lubricant; some enhance their inherent properties, while some act to reduce the rate at which undesirable changes take place in the product during its service life. One of the important types of additive is Viscosity Index Improvers (VII) commonly known as viscosity modifier (VM) [2].

The viscosity index is an indicator of the change in viscosity as the temperature is changed. The higher the viscosity index (VI), the change in viscosity of an oil changes for a given temperature change will be less [3]. Viscosity index improvers are used to limit the rate of change of viscosity with temperature. These improvers have little effect on oil viscosity at low temperatures.

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Dielectric Properties of Natural Rubber Composites filled with Graphite

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Abstract

Natural rubber (NR) composites filled with graphite (G) at various loading level was prepared by two roll mixing mill. Curing characteristics and dielectric properties were investigated and compared with NR/carbon black (CB) composites. The minimum and maximum torque of NR/CB composites increases upto 40phr loading. The same trend was found in NR /G composites upto 30 phr. Scorch time and optimum cure time of NR/ G are relatively higher than NR/CB composites. Dielectric parameters such as dielectric constant and loss factor increases on increase in CB. Graphite composites show maximum dielectric constant up to 20 phr. The frequency dependant dielectric loss factor of NR/CB is shows that, they are more conductive than NR/G composites.

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Keywords: Natural rubber, Graphite ,Carbon black, dielectric properties, vulcanization characteristics;

1. Introduction

Graphite is one of the important allotropes of carbon and abundantly available in nature. Graphite has a layered structure called Graphene, held together by a weak Vander Waals force. The presence of π orbital over the entire Graphene sheet makes it a thermally and electrically good conductor. The thermal and electrical conductivity of graphite is about 209.34 $W \cdot m^{-1} \cdot K^{-1}$ and 2 $x10^{4} \Omega^{-1} cm^{-1}$ respectively [1,2].

Therefore graphite filler is used in the elastomer industry as a filler to enhance electrical and thermal conductivity. Several authors are extensively studied the curing, electrical and dielectric properties of graphite filled polymer composites [3,4,5]. The presence of weak van der Waals forces between the graphite layers is attributed to relatively poor reinforcing properties in polymer. Further to understand the reinforcing effect of filler and the interfacial interactions between rubber matrix and graphite filler, dielectric spectroscopy studies was carried out. In this present study, the effect of graphite on vulcanization and dielectric properties of natural rubber composites has been investigated and the results were compared with NR/CB composites.

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Action Research: a Supplementary Source for the English Langauge Teachers

Poornima Varalakshmi. K, Shanmugathai M

Abstract*— This paper tries to explore that, Action Research is a supplementary source for English Language Teachers to bring out better teaching outcome of the teachers and better learning outcomes of the students. In the current scenario, apart from the syllabus, English Language teachers expect a supplementary source to follow a new strategy in order to satisfy the expectations of the students inside the classroom. They face many challenges in the classroom and one of the important problems is to draw continuous involvement of the students as well as to create good understanding of the subject in the classroom. In this connection, Action Research helps the teachers to explore effective teaching strategy in the classroom. This Action Research is integrated with a new approach called MUSE (Manageable, Urgent, Significant and Engaging), that helps the teachers to plan effectively. Besides, it is an exploratory or activity based classroom research and so it encourages the students to learn effectively and understand clearly with more involvement in the classroom. This study suggests a need for the supplementary source and it also focuses on Action Research to aid the teachers.

Keywords: Supplementary, Action Research, Manageable, Engage, Integrate, Exploratory

I. INTRODUCTION

Nowadays, English Language Teachers play a predominant role to sharpen the skills of the students. The English Teacher plays a vital role in improving the proficiency in the students at higher level of education [4]. But, teachers face many challenges in the field of teaching. In particular, ELT teachers undergo lots of problems in connecting the students with their thoughts inside the classroom. One of the main reasons is the gap between the teachers and students expectations. So, it's a crucial time for the teachers to find a solution for their problems. The teacher is expected to meet the needs of the learners This can be done by adopting learning-centered, project-based and activity-oriented approach in the classroom [4]. In other words, the students also expect many activities based and technology based teaching in the classroom. Hence, there is a gap in between the teacher and students in the classroom itself. In order to fill this gap, Action Research acts as a supplementary source to create a network or link between the teachers and students with a view to enhance the teaching-learning process .

Action research is gaining grounds in the educational arena around the world [5]. Action Research or classroom –based research is steadily gaining popularity in the Indian context because it focuses on the teacher's real-life classroom issues and solving those through an enquiry-based approach [1]. So, it is the right time for the teachers to revive their teaching methodology with the support of Action Research, to meet the recent demands of the students. Fig 1 shows the entry points of Action Research.

Fig 1 Entry Points for Action Research [7]

Continuous Professional Development is very essential for all the teachers to enhance the teaching pedagogy inside the classroom. Besides, many teaching strategies are emerged in the field of teaching to guide the teachers. Action Research is one of the best strategies that facilitate the teachers with creative ideas in order to help the students to face the challenging world confidently. Classroom is a place of interaction and collaboration between learners and the teacher [6]. It is important to develop a package of teaching-learning materials for classroom use in order to engage children in active learning [2]. Students are always passive inside the classroom and so they fail to show interest in the English Subject. A teacher has to use a variety of teaching-learning materials in the classroom, especially to teach a second language like English, as it is challenging for him/ her to sustain learner motivation for one full academic year using a single textbook [2]. In this connection, Action Research acts as an added source to the teachers to bring out a better teaching-learning outcome. Meyer (2000) comments that action research's strength lies in its focus on generating solutions to practical problems and its ability to empower practitioners, by getting them to engage with research and the subsequent development or implementation activities [1]. The purpose of all research is to generate new knowledge. Action research generates a special kind of knowledge [13]. This is done through reflective cycles in the process of Action Research.

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Keeping up with the English Language in India

M. Shanmugathai, K. Poornima Varalakshmi

Abstract— Almost since the times of pre independence, the Indianness in English had started spreading diversified impact and unlimited changes deeply mingled with its cultural heritage which can be noticed predominantly in people belonging to all strata of society. Today, hybrid pattern of English stalks the land of India and helps to improve further more the popularity of already popular English. Indian English has a long journey and it has been steadily entertaining and educating by weaving and mixing innovative word power which goes strongly with the new age users who are familiar with multiculturalism, The reasons being technology, social media, the willingness to be techno-savvy and the touring populace. This paper throws light upon different aspects which ensure the fact that Indian English is here to stay for centuries ahead.

Keywords: Indian English, Diversified impact, Hybrid pattern, Multiculturalism, Technosavvy

I. INTRODUCTION

The Himalayan presence of English in India in the present century augurs well for unlimited foreseen & unforeseen changes that will happen in the near future. India's dalliance with English began when the East India Company arrived in India in 1608. Of course, it has become a marriage of two incompatible partners through the centuries of the Raj. But the fascination for English gathered extraordinary momentum after the British left the country. The growth of the language in India over the years is so steady. From the 18th century onwards, when it came to an important communication, it has to be in English. This has been happening due to two reasons one is the changes and trends in journalism and another is the job of advertising.

The search for a 'higher' language continues throughout the history of the Indian encounter with English starting with early 18th century and going on through various stages of education, administrative reforms and then reaching up to the elusive search for an elitist social status. To-day trying to forge a connection with English is an effort that can be seen at every level.

It is very difficult to answer the question like this: who are the primary users of English in major countries of today? The most natural and immediate response would be that these are upper class people, who belong to the leading strata of a society. It is true that in most of these countries, English Language has been taught from the preschool level. Often there is a strong feeling is in existence that if a student is good in language, particularly in a foreign tongue like English, the quality of his performance in different endeavours related to his studies seems to be good. Edgar W. Schneider (2011) says that there is an enormous liking / preference for English to learn all subjects related to one's education, precisely out of the instrumental motivation, because knowing better English always assures asserted status in society and lucrative job opportunities as well. So even the not so highly qualified individuals tend to practice English language skills for spontaneous communication not only to come up in life financially but also to attain different posts/positions by excelling in trade, tourism and politics.

As said earlier, when attempts are made to flourish in the usage of English, it is clearly observed that an amazing variety of semi fluent usage is noticed. Viniti Vaish (2008) describes the acquisition and use of English language in a lower middle class Government School in New Delhi, and she comments of English though members of it can listen, read and write. It is not the class that speaks Indian English. But this group handles the English language for personal objectives, similar skills like obtaining a license for driving a car to be a good earning driver.

An educated & techno-savvy youth, today, may find it difficult to understand the meaning of the sentence: the manager is a man of letters. In its true sense, the meaning is that the manager has sound English writing skills. But the perceived meaning is that the manager has the habit of producing letters for too many occasions. A great many Indian writers took the letter form to exhibit their writing skills. The first Indian book in English was epistolary, written by Dean Mohamed (1759-1851) who wrote letters about his travels and life. In the year 1934, Peter Davies Ltd published "Letters of an Indian Judge to an English Gentlewoman". The Judge Arvind Nehra was an Anglophile, and most of his letters were cloyingly sentimental about everything British. Further Nehru's letters though had no clear instances of Indian usages, it served to show Indian fascination for the epistolary form especially when it came to writing in English. Binoo K. John (2007) says that the Indian fascination for the writing of letters – good, bad, literary and indifferent - in English has had a wide ranging fall-out: the growth of Indian –English. Not everyone had the literary or descriptive powers of Nehru or Dean or other early Indian letter writers. Their ambitions were confined to seeing their letters printed in newspapers and suffixed with their pen names, as one can see.

Binoo K. John continues saying that Indianised English language will survive by all means defying all logic. Even the 'colour' will be changed due to different groups belonging to different states of India who use the language with their own flavour. A Keralite's English is different to a person from West Bengal and similarly different to that of a Mumbaikar, who of course proves that he is from the trade capital of the

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Strengthening and Retrofitting of RC Beams Using Fiber Reinforced Polymers

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Abstract

Reinforced Cement Concrete (RCC) Structures are bound to lose its strength while in service due to various causes. Rehabilitation restores the health and service life of the structures. Fiber Reinforced Polymer (FRP) composites overcome most of the limitations of conventionally practiced repair techniques.The Fiber Reinforced Polymer (FRP) application is a effective method to repair and strengthen structures that have become structurally weak over their life span. FRP repair systems provide an economically viable alternative to traditional repair systems and materials. Among the various fibers, Glass Fibers (GF) is widely used in FRP. Strengthening of RC structural elements using externally bonded GFRP composite is an effective method to increase the structural performance under both service and ultimate load conditions. Restoring or upgrading the strength of beams using GFRP sheet can result in increased strength and stiffness.

Keywords: Fiber reinforced polymer; cement concrete; increase structural performance

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1. Introduction

1.1 General

Reinforced Cement Concrete (RCC) is an extremely popular construction material. One major flaw of RCC is its susceptibility to environmental attack. This can severely decrease the strength and life of these structures.

The repair of structurally deteriorated RC structures becomes necessary since the structural element ceases to provide satisfactory strength and serviceability. The reasons may be due to changes in loading, changes in use, reinforcement corrosion or changes in configuration. Occurrence of natural calamities may also be one of the reasons requiring repair of existing structures.

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Node Collapse Discover In Mobile Wireless Networks: A Prospective Approach

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Abstract--- *Intense simulation of disconnected and disconnected systems shows that our schemes achieve high failure recognition rates, and sometimes false positive rates, and incur low communication costs. The current approach can result in a lot of network traffic, which is not compatible with the use of restricted sources in mobile wireless systems. Our method has the advantage of being relevant to connected and disconnected systems. When compared to other methods that use localized monitoring, our method has similar fault recognition rates, reduced communication load and a much lower false positive rate. In addition, our approach has the advantage of being suitable for connected and disconnected systems, while central monitoring is relevant only for connected systems. In the indoor environment where the GPS navigation system is not working, the node can use location techniques. Different site devices and methods have different amounts of error in site measurements. The probability of failure depends on the node itself with the atmosphere. Our approach generates only local traffic and is connected both online and offline. Many localization techniques are codified in the literature. Finally, we produce the highest failure recognition rate using our approach.*

Keywords--- NodeFailure Detection, Localized monitor, FPS, Network Traffic, failure node, disconnected network**.**

I NODE COLLAPSE DISCOVER IN MOBILE WIRELESS NETWORKS: A PROSPECTIVE APPROACH

One method that many people have followed in current studies relies on centralized observation. Each node must send periodic "heartbeat" messages to some central monitors, which are used for a possible shortage of node heartbeat messages as an indication of node failure. Detecting node failure is necessary to monitor the network. In this paper, we recommend the use of a unique probability approach that carefully combines local monitoring, site assessment and node collaboration to determine node failure in mobile wireless systems [1]. In particular, we recommend two planners. Detecting node failure in portable wireless systems is very difficult because the network structure can be very dynamic, the network is not always connected, and the sources are also restricted. In this paper, we take a probabilistic approach and suggest two-node error recognition schemes that systematically combine local observation, site estimation, and node collaboration. In contrast to the methods that use centralized monitoring, while our approach may have recognition rates slightly lower and false positive rates slightly higher.

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A Modern Methodology Enabling Smart Agricultural System

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Abstract-- Agriculture is the backbone of our country. However, in spite of all the development, Indians still follow the old methods. It is necessary for the farmers to have knowledge of the amounts of the macronutrients and micronutrients present in the soil. Lab testing method will not be able to visualize the soil nutrients for the live monitoring. This project is intended to provide the soil testing services at farmers door step by determining the amount of macronutrients present in the soil. Measurement of NPK contents of the soil is necessary to decide how much extra contents of these nutrients are to be added in the soil to increase crop fertility. This will improve the quality of the soil which in turn yields a good quality crop. To fulfill increasing demand of growing population over the years there is a need of increase in food production. To increase crop yield, fertilizers containing predominantly N, P and K are essential. Improper use of fertilizers in turn results in poor quality of fruits and vegetables, lagging in colour, size, taste and even quantity. Over-application of fertilizers has caused low fertilizer usage efficiency, resulting in low agricultural product quality, serious environmental pollution, etc. Quantity of NPK is dependent on crop type and on plant growth status. How much quantity of fertilizer to be used is further dependent on present contents of NPK in the soil. The project is implemented using a technology called WUSN which is used to detect the amount of NPK present in the soil and an automatic soil fertilizer dispensing robot is used to dispense only the required amount of fertilizers in the soil based on the data obtained by the sensors.

Keywords—Nitrogen-Phosphorous-Potassium(NPK), Wireless Underground Sensor Network(WUSN).

1. Introduction

To fulfill the increasing demands of growing population over the years there is a need of increase in food production. To increase crop yield fertilizers containing predominantly nitrogen(N), phosphorous(P) and potassium(K) are essential. Improper use fertilizers in turn results into poor quality in fruits, vegetable lagging in color, size, test and even quantity. The three elements promote plant growth in three ways .

- N- Nitrogen : promotes the growth of leaves and vegetation.
- P- phosphorous : promotes root and shoot growth
- K- potassium : promotes flowering, fruiting and general hardiness

Quantity of NPK is dependent on crop type and on plant growth status. The fertilizers are present in the ratio of 18-51-20 by weight : 18% elemental(N), 22% elemental(P), 16% elemental(K).

The existing systems deals with the actual detection of NPK values of the soil using multimode plastic fiber optic sensor and other technologies like FPGA, Colour Sensors, IOT, etc.,

The present study deals with the detection of NPK values of the soil using content detection sensor. Along with this the soil moisture sensor, humidity sensor and water level sensors are used to monitor the soil parameters.

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Lifetime Estimation of WSN with Enhanced Pairwise Directional Geographic Routing

G.Saravanan, R.Lakshmi Devi

Abstract: ***This research work proposes an enhanced pair-wise directional geographic routing (EPWDGR) technique using the directional antenna and compares it with the conventional pair-wise directional geographic routing (PWDGR) method that uses the Omni-directional antenna. PWDGR has two key limitations - minimum network lifetime and its use of static nodes. The EPWDGR technique aims to overcome these pitfalls by incorporating a directional antenna patch that requires lesser power, thereby increasing the network lifetime. The validations have been performed through simulations that use a random waypoint mobility model which is more practical. Varying performance metrics have been used for the estimation of network lifetime. The EPWDGR also solves the energy bottleneck problem at the nodes near the sink.***

Keywords : Wireless sensor nodes, Network lifetime, Directional geographic routing, Enhanced Pairwise directional Geographic routing (EPWDGR), Pairwise directional Geographic routing (PWDGR), Random waypoint model

I. INTRODUCTION

A Wireless Sensor Network is a pack of a specifically designed device with a transmission infrastructure for tracking and to read the conditions at different places. In this experimental work, an enhanced routing technique is compared with PWDGR by evaluating the performance metrics. Here, routing refers to geographic routing (also called geo routing or position-based routing), which is a directing technique that depends on information received from various geo-locations.

This method is mainly suggested for unwired networks and depends on the basic idea that the header node sends a piece of information to the specific geographical location of the endpoint instead of considering its physical address in the network. The problem that is discussed in both protocols is to develop a way to prolong the network lifetime with minimal delay. The conventional PWDGR uses three nodes for efficient routing, namely, Cooperative node, three-hop node, and the source node. PWDGR has been simulated in a static network but simulation validation for EPWDGR is done using a mobile network with a random waypoint mobility model.

II. LITERATURE SURVEY

The energy-medium multi-directional path which is based on relative arrangement of paths is analyzed in the research paper titled, PWDG routing depends on Wireless Sensor Network. GPSR is the leading greedy path algorithm, which it relies on the various geo points, and it propagates the information to the adjacent nodes which are nearest to the base station. In addition to GPSR, there is also a path depends on a gradient by choosing the adjacent node with a decreased angle as the next node [1].

In another paper on Multipath Balancing and Expanding for Wireless Multimedia Sensor Networks, Chen et al. suggested DGR understand the utilization - specific count of node-disjoint routing directions to extend the total bandwidth for the quality of service provided in Wireless Multimedia Sensor Nodes (WMSN). DGR is a procedure framed specifically for visual sensor networks and can significantly boost the running behavior in terms of lifetime and delay [2].

The algorithm explained in the paper Energy-oriented multiple-way finding in wireless sensor networks has primarily been forced by the AOMDV for finding node-disjoint or desired link-disjoint routes. By updating the initial-hop to the RREQ header, and bookkeeping of the initial-hops of the immediate arrivals of RREQs, nodes that accepts false RREQs by various adjacent nodes can quickly find whether the paths are node-disjoint. Every node retains an energy value calculation for each of its path entries. This value finds the possibility that a packet is directed through a specific path [3]. the frame structure, the nodes can form close to send the information within the groups. Then, the extraction of information by hop by hop method and multiple-trip route-finding methods are combined to the implied MIMO method to mutually provide power efficiency, reliability and assured point to point Quality of Service. The alternate usage of noncontinuous routes, GRAB uses a route interleaving method to obtain high reliability. The routing based on a geographical structure can be stateless because the second hop is chosen in such a way that, the geolocation of the endpoint, which is saved in the packet header [4].

Directed Diffusion is an inquiry-based multiple-path routing algorithm, in which the aggregating node starts the path detection work. The collector node floods the specific data through the network. These specific messages consist of information for the task which will be operated by the sensors. At the time of specific data flooding, all the agent nodes save the interest data which are arrived from the adjacent nodes for future use. As the interest data is extracted by the nodes, the receiver node produces an angle towards the node from which the information has been received. At this stage, multiple routes can be located between every source and collector node pair. After this process, when the header node finds the process matched with the available data in the interest table, it sends the information through all the constructed angular points. Depends on the functionality of the data reception over each path, the aggregating node chooses the way, i.e. the path with minimum delay.

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Ultrasonic Sensor Based Haptic Feedback Navigational System for Deaf - Blind People

G. Saravanan, K. Devibalan

Abstract*: *Deaf-Blindness is a rare collective disorder that affects nearly 3.5 million people in today's world. The improvement restricts the usage of two senses and by large impacts a person's navigational capability. A variety of aid devices are used to tackle such a disability. But one common drawback that setback them is their inability to address the collective disorder. The proposed project aims at overcoming the aforementioned drawback with the help of ultrasonic sensors and haptic feedback in the form of vibrations. These sensors and feedback mechanisms are to be controlled by a microcontroller in an Arduino. Further, a rechargeable battery shall be used to accommodate the power requirements which emphasizes on energy efficiency. The project commits to limit space constraints by proposing a compact handle design and maximizes its cost efficiency such that it is affordable for everyone equally.

Keywords* : *Deaf-blindness, SONAR, path guidance

I. INTRODUCTION

Deaf-Blindness is rare disorder that affects a significantly small percentage of our population. It is very rare that a person is born with this disability, but the chances that a person develops deafness or blindness in course of life is highly plausible. When that happens, if the person is already blind or deaf then he ends up with deaf-blindness. Navigational assistance has been a revolutionary technological innovation since its inception. The primary aim of such aid is to provide a seamless method of path guidance based on effective understanding of the environment. In its raw form the end user expects this form of assistance to provide him with the knowledge of objects in the environment in the predefined path to his destination. This brings us to the requirement of developing an efficient solution that enables a disabled person to use navigational assistance without any hassle. The proposed product focuses on providing a novel navigational assistance mechanism in an indoor environment that uses the concept of Sound Navigation and Ranging (SONAR) and haptic feedback**.** SONAR is implemented using ultrasonic transducers and haptic feedbacks in the form of vibrations are provided.

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II. LITERATURE SURVEY

Assistance devices conventionally use a signal or indication of some sort to inform the user about any obstruction in their path. In the vast number of technical articles, papers and experiments that have been studied, it was found that there is no concrete system that aims at providing assistance that is independent of auditory feedbacks. In the conducted survey a detailed account on the existing systems, their drawbacks would be elucidated along with discussion on research carried out in this domain. The most widely used aid device is the Guide Stick or the White Cane which is primarily hand held and extends till the surface of floor. Despite its universal popularity, the major disadvantage is its restricted usage capability. The stick does not inform the user about objects above the knee level. Also it requires the user to continuously tap around that might wear out the user over a period of time. The other alternative guiding mechanisms include, guide Dogs, GPS enabled Wheel Chair, Guiding Bots. Guide Dogs have proven to be a faithful and effective companion, but it requires a lot of training and a period of getting accustomed to which might reduce the usage efficiency.

In a study conducted by Mohamed Fezari *et al.* (2007) from University of Annaba, Ultrasonic transducers have been integrated with various conventional aid devices and their operational response was recorded. The sensors were controlled by a microcontroller and the feedback was given as auditory response with the help of speech synthesizer.

Another study carried out by Ramiro Velázquez *et al.* (2003) from Laboratoire de Robotique de Paris discussed an Intelligent Glass that records the environment in real time and provides an environmental perception to the wearer in the form of interactive Tactile Interface exploiting the concept of Man- Machine Interaction. The important understanding from this study is the need to provide the wearer with an understanding of his environment. [6]

The third study surveyed was by Kyle Curham *et al.* (2012) from University of South Florida focussed on providing Haptic Feedback to the disabled person in the form vibrations. This research also used the concept of SONAR and the working device was proposed as a hand mounted unit.

The results of this study tell the importance of device portability and handling ease. [2]

Finally Mahidi Safaa A. *et al.* (2012) from Technical Institute of Babylon, Iraq worked on a handheld device for obstacle detection using SONAR. The concept of Handheld was adopted from the two research works mentioned above as it gives more degree of freedom and ease of usage. [3]

IoT Controlled All Terrain Rocker Bogie Robot

Prasath Kumar.S, Auvai Saraswathy.M, Malligeshwari.H, Nandhinni.Su

Abstract*: *In today's world, we concentrate mainly on newly emerging technologies for several monitoring, surveillance and recovery operations. This paper presents combination of two emerging technologies, which are Robotics and IoT. Most surveillance and monitoring robots does not have the ability to move on uneven surfaces and on slopes, but the rocker bogies have these features. While the present rocker bogies are remote controlled, it needs a human to be near it to control it. So our aim is to design a rocker bogie robot that can be controlled via IoT from a distance, which can be done using web page controlling. The control mechanism is provided with video transmission facility through high speed image transmission. The robot is fitted with a camera which captures the scene and transfer the images to the server on which the user can control and watch the live feed. We present the design of rocker bogie suspension and how to control it using commands in the further sections.

Keywords: Robotics, IoT, Rocker Bogie Suspension, Live feed, Web page controlling.

I. INTRODUCTION

Surveillance is essential in many fields for monitoring and providing accurate information about the status of a place which is prone to illegal entries of spies. Now-a-days as technology improves, robots are being used for monitoring and surveillance applications. These robots have a camera fitted to them which displays the scenes captured by live streaming to the user. But, there are several disadvantages which include the inability of these robots to move on uneven surfaces and slopes. This is overcome by rocker bogie suspension setup which is capable of moving in all types of uneven surfaces and terrains.

Rocker bogie suspension is nothing but a combination of a rocker and a bogie where bogie means the wheels of the robot and bogie means the connecting link between the bogies. This setup allows the robot to move on obstacles which are up to twice the diameter of the wheels.

Existing Rocker bogies are either remote controlled or based on artificial intelligence. The main drawback of remote controlled rocker bogies is it needs a human to control it within its nearby range which cannot make humanless monitoring possible. The disadvantage of artificial intelligence based rocker bogie is it cannot be controlled in desired direction. It makes its automatic moves and cannot be controlled by the user.

To overcome all this problems, rocker bogie robot can be setup with IoT controlling section which would make the robot to traverse in the user desired direction as well as avoid any steeps present in the moving path. This makes the robot move even in slopes of 45 degrees and return without falling.

II. OVERVIEW

The proposed rocker bogie robot controlled using IoT takes commands from the webpage where the scenes captured by the robot are displayed. The webpage is divided into two sections. The section on the right side shows the scenes captured by the robot through live streaming. The session on the left has control buttons for the user to operate the robot from long distances.

The control section is written in HTML to place the buttons on the correct position.HTML is the main language used to build the webpage which use Php for traversing from the main page to the button status page. Clicking on the button changes the status of the button page which gives the control commands to the Raspberry pi3 which is present in the rocker bogie robot.

The Raspberry pi is the main component present in the rocker bogie setup which gets the command from the webpage and processes it and sends it to the motor driver IC. It does it through built in wifi modules for the access of the commands. The Raspberry pi used in this setup is of model B with quad core 64 bit ARM cortex A53 which is clocked at 1.2Ghz.We use Raspberry pi3 instead of Raspberry pi2 because it is 50% faster.

The motor driver IC gets the command from the Raspberry pi and controls the motors based on the command. The motor driver IC is L293D which is 16 pin IC with supply voltage 5volts and 600mA output current capability. It has two voltage pins one is used draw current for the working of L293D and other is for applying voltage for motors. It allows DC motor to drive on either directions simultaneously. We use L293D IC because it has internal ESD protection and high noise immunity inputs.

The dc motor driven by the driver runs at 100 rpm which is basically a 12 volt DC motor. The rocker bogie has 6 wheels and connecting links acting as the rockers The whole setup is supplied with a 12volt-1A sealed rechargeable lead battery. The Raspberry pi takes commands written in Python which is recent and easiest coding language. This project requires XAMPP Php interpreter for interpreting the scripts written in the Php and Pearl language. It is a free and open source cross platform for the webserver. The tight VNC software is used to project the scenes captured by the robot as live

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Pupil Detection Algorithm Based on Feature Extraction for Eye Gaze

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Abstract*: Exact real-time pupil tracking is an essential step in a live eye gaze. Since pupil centre is a base point's reference, eye centre localization is essential for many applications. In this research, we extract pupil eye features exactly within different intensity levels of eye images, mostly with localization of determined interest objects and where the human is looking for. Since it's a digital world and digital transformation, everything is becoming virtual. Hence this concept has a huge scope in e-learning, class room training and analyzing human behaviour. This research covers eye tracking technology to track and analyze the learners' behavior and emotion on e-learning platform like level of attention and tiredness. Harr's cascade classifier was used to first locate the eye's area, and once found and support vector machine (SVM) for classification with the trained datasets. We also include the state of emotions, facial landmarks of the salient patches on face image using automated learning-free facial landmark detection technique.Experimental results help in developing learner eye gaze detection in system using Pycharm and hardware output using Raspberry Pi. In Raspberry Pi is given with the input image captured using external webcam and based on the engagement level of the learner content 1 or 2 would be displayed in the Raspbian OS environment.

Key Words: Image processing, SVM, Harr's Cascade.

I. INTRODUCTION

In a virtual learning world, learners can lose motivation and concentration very easily. Our research is based on studying learner's behavior on an online learning platform to create a system able to analyze the learners based on their behavior, emotion and listening to educational content to their needs.

Eye tracking is one of the techniques for recording eye movements. This technology is used to measure eye positions and eye movement in many fields such as psychology, psycholinguistics, ergonomics and e-learning. This paper introduces the use of eye tracking technology to track and analyze the learners' behavior and emotion on e-learning platform like level of attention and tiredness.

In e-learning, it is necessary to create more effective interaction between the educational content and learners. In particular, increasing motivation by stimulating learners' interest is very much important. Users' eyes can be a significant source of information to analyze learners' behavior and listening to class. Eye movements provide an indication of learner interest and focus of attention. Movement of eyes provides useful feedback to personalize learning interactions which can help in effective teaching. With a study of eye movement, learners may be more motivated.

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II. RELATED WORKS:

"AUTOMATED WHEELCHAIR" can be regulated by theEYE-BALL movement by utilizing the concepts of Image Processing and other guiding technologies [1].

High accuracy of face recognition, detection of facial parts such as eyes, nose, and mouth is achieved by 2D Hough transformation for detecting circle of unknown radius in which, first it generates 2D parameter space (xc, yc) using the gradient of grayscale through obtaining the radius of circle r for each local maximum in the (xc, yc) space. The next step is eye detection using Support Vector Machine (SVM). At last, pairs of eyes satisfying predefined conditions are generated and ordered by sum of the likelihood of both eyes.[2]

An eye tracking system helps in tracking the movement of the eyes to know exactly where the person is looking and for how long they stare at. The suitable devices for eye movement acquiring and software algorithms are chosen as per the application requirements[7]. Some vendors have invested in eye tracking technology. But their solutions are focused on commercial remote camera-based eye-tracker systems for which the light source and camera are permanently affixed to a monitor which is considered as one of the demerits of the system.[3]

The automatic eye detection technique is subsequently validated using FRGC 1.0 database. The result of validation shows that our eye detector has an overall 94.5% eye detection rate, with the detected eyes very close to the manually provided eye positions. [4]

Three different algorithms were used for eye pupil location and testing. This algorithm efficiency comparison was based on human face images taken from the BioIDdatabase. In this case human face images were acquired by a webcam and processed in a real-time system [5].

For images with low resolution, computer vision community due to noise, shadows, occlusions, pose variations, eye blinks, etc., is used and a two-stage algorithm is proposed for iris centre localization[8]. A fast convolution based approach is used for obtaining the coarse location of Iris Centre (IC) and IC is further refined in next stage using boundary tracing and ellipse fitting. The algorithm has been evaluated in public databases like BioID, Gi4E[6].

To improve cursor stability, eye pupil center was filtered with Gaussian filter to remove the spikes[9].

The viability of autonomous public eye trackers as both data-gatherers and public exhibits is proposed in this research[10].

In automotive applications, integrated power electronic systems for automotive electronics gives a solution to

Advanced Patient Health Monitoring System Using Power Line Communication Technology

S. Sweetline Shamini ,Gayathri.M, Harshini.M, Suruthi.S

Abstract: ***Open source automation system is rapidly developing towards more reliable communication systems. In recent years for its convenient installation and low cost the power line increasingly become a popular transmission medium in creating industrial/ resident work. PLC is a technology uses power lines as physical media for data transmission. PLC offers a no new wires solution because the infrastructure has already been established. PLC modems are used for transmitting data at a rapid speed through a power line in a house, an office, a building, and a factory, etc. Due to this additional telemetry features, cost of the devices are more and all hospital or clinic cannot afford to buy them. Hence in our work, temperature, blood pressure and heart beat monitoring equipment based on power line communication is developed. This is cost effective equipment which uses existing power cables as communication medium. Power Line Modem (PLM) is used for transmitting and receiving the signals over power line cable. Signalsare modulated and demodulated using direct-sequence spread spectrum (DSSS) technology. When compared with other communication technologies like local area network (LAN), ZigBee, Bluetooth, the establishment cost for healthcare monitor using Power Line Communication (PLC) was low.***

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Index Terms: PLC Technology, PLC modem, Energy Efficiency, ZigBee, FSK.

I. INTRODUCTION

This project develops a real time communication using power line as the physical medium for data transmission. The main aim of this project is to monitor the patient health using PLCC technology. The health parameters and the data extraction methods have been set up in such a way that it is given as a input signal to the PLC modem. Then the data is modulated and transmitted through the power line using PLC transmitter.

If in case, any emergency occurs while monitoring the patient the buzzer will indicate and a message intimation will automatically be sent to the doctor through GSM. The data is extracted from the receiver and displayed. This project provides effective communication between patient and medical assistant.

II. RELATED WORKS

In hospitals, medical equipment like ECG machine, ventilators, infusion pumps, heart beat and blood pressure monitors are placed near the patients who need medical assistance. Medical Intensive Care Unit (MICU) in some hospitals has automated patient monitoring system for their patient. In some cases these automated units are interconnected by networking for central monitoring and medical data storage. Recent year's communication technologies are applied in healthcare for performing surgery and delivering assistance to the patients in the form of tele-surgery, telemedicine, biotelemetry using LAN, Radio Frequency (RF), ZigBee, WAN etc. Rural and urban sectors are targeted by the medical industries for assisting and delivering medical care.

High-speed data transfer over power grids is ensured by PLC technology supported by different worldwide standards. Realization of this technology is advantageous especially in buildings where there is no data network or other transfer medium. PLC technology can be used as an alternative way to Wi-Fi, for example, due to wall width when Wi-Fi is not usable. This technology has been often given in relation with possible usage in smart homes. Installation of modems is easy and fast. After connection of PLC modem in power supply, data are available in power grid at home or in a building.[1]

Power line communications (PLC) have become aviable solution in smart grid since most devices are connected to power lines. Although PLC stations can receive power through power lines, they also require efficient use of energy. To this end, recently published PLC standards define a power saving scheme. Since the current PLC power saving scheme only defines a simple constant sleep period strategy, two adaptive sleep period adjustment schemes are presented here. The delay performance and power consumption of the three power saving schemes are verified numerically and through simulations. The two adaptive schemes are confirmed to properly balance delay performance and power consumption for any traffic type.[2]

To improve energy efficiency (EE) in power linecommunication (PLC) systems, we proposed a dynamic load based PLC system model as a new model for EE maximization and an energy-efficient resource allocation strategy optimizing load impedance, transmission power as the optimization arguments. Since the load impedance at receiver is influenced by characteristics of a power line channel, optimizing the load impedance is required to maximally induce a received power while considering the channel characteristics. We need to

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A novel rescuebot for borehole accidents

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Abstract : Major reports are saying that many children were dead due to the unclosed bore wells. The rescue process cannot be handled smoothly because the environment inside the bore well cannot be predicted by easy means. A less expensive robot can be developed with simple mechanisms for controlling will simplify the rescue process. A movable robot capable of adjusting to the bore well dimensions is constructed. The robot has two arms that can be adjusted to rescue the child with the support of camera also aiding in the survival of the baby. Some additional features are also introduced to enhance and ease the comfort of the rescue operation. A compressor is used to fill an air bag that is implemented in this robot to make the rescue operation easy and be comfortable to lift the victim safely. The gas and temperature inside the bore well can be measured using gas sensor and temperature sensor respectively.

1. INTRODUCTION

Robots are humanoids which are having the ability to do the impossible work easily with less consumption of time. The branch of technology that deals with the operation and designing of robots is called robotics. The solution for bore well accidents can be enhanced with this technology. The child can be picked up using arms of the robot [1]. Control systems, sensors, manipulators, power supplies and software are all working together to perform this operation. Whether rotating on wheels, moving on wheels or propelling by inner force mechanism, a robot should move. It can move their arms, head, neck, fingers as well. A robot design must be able to recharge itself. A robot might be solar powered, electrically powered, battery powered. The energy needed by the robot is directly proportional to what the robot has to do. The rescue operation robotic mechanism for bore well accidents mainly consists of three processes: approaching the child, handling the body and taking child out of the well [2].

2. THE RESCUE MECHANISM AND RELATED WORK

The children are easily prone to bore well accidents because of the smaller size. The rescue process in earlier days was too difficult: digging a hole near the surrounding area of bore well. The presence of rocks in the surrounding regions of the bore well makes the rescue operation tedious. There must not be any hindrance to the resource availability for the successful rescue operation. Absence of oxygen and light is another major difficulty faced in this rescue operation. The rescue forces from the defence sector are called upon if further help is required. Time and energy consumption is more and the rescue

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Lab-on-Chip Technology: A Review on Future Scope in Biomedical Applications

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Abstract
Lab-on-Chip (LoC) integrates various analyses such as biochemical operations, chemical synthesis, DNA sequencing onto a single chip which otherwise would have been performed in laboratory taking sufficient amount of time. Due to the miniaturization of these biochemical operations, better diagnostic speed, cost efficiency, ergonomy, sensitivity and so on can be achieved. This paper gives the detailed description of Lab-on-Chip technology including its system components. Ongoing worldwide research projects based on LoC technology have been investigated and various constraints that need to be fulfilled for designing a LoC system are presented. The biomedical applications of LoC in different fields like in diagnostics, cellomics, in environmental studies to control the effect of pathogens, to check the food quality such as for the detection of various antibiotic families in raw milk have also been discussed. Finally, the current open research issues of this technology along with the possible future research scope in the biomedical area have been presented.

Keywords: *Biomedical Systems, Biosensor, MEMS, Microfluidics, Lab-on-Chip*

1. Introduction

Lab-on-Chip technology implies those techniques that perform various laboratory operations on a miniaturized scale such as chemical synthesis and analysis on a single chip leading to a handheld and portable device. In other words, LoC is a device which is capable of scaling the single or multiple laboratory functions down to chip-format. The size of this chip ranges from millimeters to a few square centimeters. [1] Current trend shows the growth of research in this area. In many universities across the world, many groups are formed that are dedicating their research in this area. For example, BIOS in University of Twente, Mina Med in Germany, and Nanobe in Finland [2] are some of the groups. Their main motive is to understand naonofluidics and nanosensing, to connect micro/nanoeng. with biomedical and life science fields, to develop new micro and nano technologies for LOC, and to demonstrate new LOC applications.

2. Design

A **lab-on-a-chip** (**LOC**) is a device that integrates one or several laboratory functions on a single integrated circuit (commonly called a "chip") of only millimeters to a few square centimeters to achieve automation and high-throughput screening.[3]. LOCs can handle extremely small fluid volumes down to less than pico-liters. Lab-on-a-chip devices are a subset of microelectromechanical systems (MEMS) devices and sometimes called "micro total analysis systems" (µTAS). LOCs may use microfluidics, the physics, manipulation and study of minute amounts of fluids. However, strictly regarded "lab-on-a-chip" indicates generally the scaling of single or multiple lab processes down to chip-format, whereas "µTAS" is dedicated to the integration of the total sequence of lab processes to perform chemical analysis. The term "lab-on-a-chip" was introduced when it turned out that µTAS technologies were applicable for more than only analysis purposes.

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Segmentation of Human Vertebral Spine -FEA Analysis

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Abstract
Back pain is one of the most common health problems facing people today. It is the second most common reason for a doctor's visit, behind only to the common cold. Billions of dollars are spent annually on treating back pain, which is also a very common cause of disability. More than 90% of people will experience an episode of debilitating back pain at some point in their lifetime. Once the chronic disc problem has been diagnosed, the conservative treatments like: specific rest, friction force medical aid or physiotherapy and exercise are followed. When correctly diagnosed, an excessive amount of medical/surgical treatments can be avoided. The aim of the study is to generate a mesh model and numerically simulate the biomechanical characteristics of the human spine, namely two vertebrae (L4 and L5) and inter vertebrae disc using finite element analysis (FEA) technique. In this process the bony areas of every MRI scanned image is segmented and the boundary lines are stacked into a smooth surface. Additionally, the technique generates the quantity mesh exploitation linear unit that is used to process the mesh for agreement. Moreover, L4 and L5 with disc were considered as linear materials with the exception of the ligaments. The contact behaviour of the two bones, simulation of disc and obtained displacements and stress describe about the pre-operation of human lumbar spine. The results depict that the potential fracture of the considered patient with respect to displacements. In this paper the implementation of bilateral filter technique is discussed . Using various edge detection algorithms namely, Canny edge detection, Sobel edge detection, Prewitt edge detection and Roberts edge detection, the results were compared. Among them, spine Canny edge detection algorithm produced effective output using MATLAB estimating the following parameters like total deformation, normal elastic strain, normal stress. With the help of these parameters, the human spine model was analyzed using the simulation software ANSYS. The implementation has done with MATLAB, whereas the stress and strain have been found at the plate bone of aspect joint of L4 and L5.

Keywords: *Magnetic resonance imaging(MRI) , Bilateral filter , Canny edge detection, Finite element modeling, MATLAB ,ANSYS*

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I. INTRODUCTION

The human back is composed of a complex structure of muscles, ligaments, tendons, disks, and bones, which work together to support the body and enable us to move around. The segments

Irovers: Real Time Unmanned Four Wheeled Iot Vehicles for Fire Monitoring and Extinguishing Using Sonic Waves

SUBASHINI.V, .ARTHI M, ANBARASI M, RAJAVENI R

Abstract*: The aim of the proposed system is to build an autonomous mobile robot system for measuring the various levels of air and noise pollution as well as the fire monitoring and in case of fire, this robot is used to extinguish the fire using SONIC WAVES. This is a IOT based robot which moves autonomously avoiding obstacles using the IR sensor. This robot is used for temperature monitoring for the analysis of the presence of fire. The data from the robot is sent and received using WIFI in IOT. This mobile robot is capable of avoiding obstacles using IR sensor thereby it can be easily introduced in places of fire accidents for the process of fire extinguishing. The fire detection are monitored by using the temperature sensor. These information from the sensor are sent to the PIC microcontroller and then using the wi-fi the information are sent to the cloud. The fire extinguishing process is carried out by the sonic fire extinguisher .

Keywords: IOT, sensors

I. INTRODUCTION

Fires are the accidents which occur most frequently, whose causes are the most diverse and which require intervention methods and techniques adapted to the conditions and needs of each incident. Depending on the type of fire (nature of the material ablaze), meteorological conditions (wind) and the effectiveness of the intervention, material damage can be limited (a single car, building or production or storage warehouse installation), or affect wide areas (forest or agricultural fires, hydrocarbons, gas or other highly flammable products, storage or piping installations, harbor installations and rail or marine transport equipment). Explosions are in a different category.

Each type of fire is the object of specific technical prescriptions as regards prevention, intervention and the behavior of the population affected. It is also relevant to note that many fires have a criminal origin and that in times of armed conflict or crisis as well as of indirect wars (sabotage) human intervention also provokes major accidents attires, cotton (bales, loose, explosive dust), fodder (fermentation), fires in high warehouses, silos or underground garages as well as forest fires.

All these types of intervention are subject to special measures. For practical reasons it is best to refer to technical documentation, which should be known or available to all security and fire-fighting services, and to national and regional disaster alarm and information centers.

This is especially the case for rescue and fire extinction on motorways, buildings designed to be Used by a great number of people (hospitals, hotels, cinemas, high-rise buildings, department stores, etc); fires affecting chimneys.

III-LITERATURE SURVEY

The first intelligent extinguisher used for eliminating a fire in domestic places. Also it is having a collision sensor to eliminating a obstacles. But the capacity of first intelligent extinguisher is less that is 1.5 liters. Termite is used for extreme hazard areas like aircraft fires and nuclear reactor and size also small. But cost is high. Approximately 95 lakhs.

S.no	Author	Paper Title	Year	Findings
1	B Siregar,H A	Fire Extinguisher	2017	Smart phones are the fire extingusihing robot.image is captured by camera in phones.
2	Varun S V,Vinod Rao.S	Autonomous fire extinguisher robot	2017	robot development isguided by sensors
3.	Srinivas Devarakonda,Parveen Suvesu,Hongzhang Liu,Ruilin Liu,Liviu Iftode,Badri Nath	Real Time air quality monitoring through mobile sensing in metropolitan areas.	2013	Monitoring air quality using fine grained real time pollution measuremen t.
4.	Poonam	Intelligent Fire	2014	Multi Sensor based security system that contains a firefighting system.

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Patient Monitoring using Pan of Wireless Intelligent Sensors

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Abstract
A wearable device for monitoring multiple physiological signals (polysomnograph) usually includes multiple wires connecting sensors and the monitoring device. In order to integrate information from intelligent sensors, all devices must be connected to a Personal Area Network (PAN). This system organization is unsuitable for longer and continuous monitoring, particularly during the normal activity. For instance, monitoring of athletes and computer assisted rehabilitation commonly involve unwieldy wires to arms and legs that restrain normal activity. We propose a wireless PAN of intelligent sensors as a system architecture of choice, and present a new design of wireless personal area network with physiological sensors for medical applications. Intelligent wireless sensors perform data acquisition and limited processing. Individual sensors monitor specific physiological signals (such as EEG, ECG, GSR, etc.) and communicate with each other and the personal server. Personal server integrates information from different sensors and communicates with the rest of telemedical system as a standard mobile unit. We present our prototype implementation of Wireless Intelligent SEnsor (WISE) based on a very low power consumption microcontroller and a DSP-based personal server. In future we expect all components of WISE integrated in a single chip for use in a variety of new medical applications and sophisticated human computer interfaces. Existing growth of wireless infrastructure will allow a range of new telemedical applications that will significantly improve the quality of health care.

Keywords: *personal area network, wireless, intelligent sensors, patient monitoring, telemedicine.*

1. INTRODUCTION

Rapid growth of wireless infrastructure in following years will allow a range of new medical applications that will significantly improve the quality of health care [1][2]. Wider acceptance of physiological monitoring hardware will allow development of devices based on natural human-computer interfaces. Micro Electro Mechanical Systems (MEMS) made possible the development of networks of intelligent wireless sensors for military and space applications [3][4] through the increase of processing power, miniaturization, wireless communication, and decreased power consumption. Defense Advanced Research Projects Agency (DARPA) and Army Research Laboratory (ARL), with their key partners – UCLA Electrical Engineering Department and Rockwell Science Center, are developing Wireless Integrated Network Sensors (WINS) [5]. Department of Commerce, through National Institute for Standards, sponsors Smart Spaces [6]. This is NIST's approach to pervasive computing that is impossible without wireless sensors. DOE, and its Office of Industrial Technology, sponsor Oak Ridge National Laboratory to work on the

Design and Implementation of Performance Improved Medical Signal Filters with and without Multiplier

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ABSTRACT

The digital filter can be done professionally with the compact area and reduced power with simplified multiplication arithmetic. More than Decades of years Computer aided analysis of ECG signal is getting with incredible quantity of work being carried out in the earth. This paper is a small work on our part in that track. ECG Electrocardiogram signal is most comely known familiar and used medical signal, the ECG signal is very responsive in nature, and still if small noise combined with actual signal the different properties of the signal changes, Data ruined with noise must either filtered or eliminated, filtering is important issue for design thought of real time health care process. This work presents a better FIR filter which can be designed in VLSI technique, with or without multiplier and has less power and area improvement.

Keywords: *FIR filter design; ARM processor; Multiplier; ECG;*

Introduction

In signal processing, the filter functions to remove the noise from the signal like random noise and also to extract the necessary parts of the signal like components within a precise range of frequency (Quan et al., 2009)[1]The design of the filters for specific application includes the coefficient calculation according to various criteria including sampling frequency, pass band and stop band frequency, filter order etc.

In future, the mobile phones and portable computing systems are anticipated to offer increased services, faster data rates and higher processing speeds at reduced power dissipation levels. This delivers us with an inspiration to explore new methods in low-complexity design of high-performance digital signal processing blocks which operate at lower power levels. Semiconductor technology today provides unprecedented level of device integration where several orders of millions of transistors can be packaged in a single chip using the state-of-the-art. The number is expected to grow steadily for many years.

Human bodies are continuously provides messages about fitness. This messages may be observed through body-structure-related devices that evaluate heart speed, blood stress, oxygen infiltration levels, blood glucose, nerve transmission, brain movement and so forth. Usually in the past, such observations are taken at clearly stated points in time and indicated in patient's chart. Doctors in fact observe a smaller amount than one percent of these values as they make their round and treatment are prepared based upon this chart readings

Bio-medical signal processing includes the study of these observations to offer helpful message upon which doctors can make conclusions. Engineers are finding new techniques to prepare these signals by means of a range of mathematical formulae and sets of computer commands. Functioning with conventional bio-measurement tools, the signals can be figured out by software-commands and provides the doctors , idea about what happening or viewable at present. By using more fancy (or smart) means to carefully study what bodies are saying, we can possibly decide the state of a patient's health through equipments which will not require cutting into the body.

Background

An extensive literature review was carried out on existing digital filters model and the method that are used for enhancing the performance of the digital filters.

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De-Centralized Certificate Creation and Verification using Block Chain (DCCVuB)

V Brindha Devi, R Skanda Gurunathan, N Keerthi vasan

Abstract: ***The rapid growth in the population has lead to generation of large amount of data from each individual. Each and every individual holds several physically signed documents. Currently, the documents, certificates, and contracts are all printed in papers and manually signed. It is difficult for other party say a recruiter, or a government official or any other custom officer to verify the validity of the certificates and other documents of the individual. It consumes a tremendous amount of time for validating and verifying such documents manually. Thus we propose a system to develop a Decentralized application (DApp) for implementing a Blockchain[1] to store and verify the documents. By the nature of blockchain, the documents are securely stored with high integrity, and no further modifications can be done to the blocks in the chain which in turn reduces the creation of forged documents. Also using Distributed Ledger technology(DLT)[5] and IPFS the data is decentralised so that it is readily available with integrity. Also, using MultiSig[3] concepts, the system is more secured by two step authentication. Thus, blockchain creates trust and DLT provides integrity ease of access. And with use of IPFS the DApp is decentralized4]***

Index Terms: ***Document Verification, Blockchain, Certificates, Smart Contracts, MultiSig***

I. INTRODUCTION

Our paper aims at providing trust to the user documents such as certifications, contracts, legal documents, identity documents, etc., stored on a blockchain in a distributed environment. Our system involves three categories of user. The Certificate Issuer, the Certificate Recipient, and the Certificate Verifier. Certificate Issuer(CI) issues a certificate or contract in the name of Certificate Recipient(CR). The issued certificate data is added to the blockchain by mining a block in the blockchain. DLT[5] implemented using IPFS[4] or Hyperledger[7] or Ethereum[9] that distributes the newly constructed blockchain to all the nodes in the blockchain[5] network. Each node verifies that authenticity of new chain and accepts or rejects it. When a Certificate Verifier (CV) wants to verify the data of the Certificate Recipient, CV computes the hash of recipient's data and compares with the hash in the blockchain. Also Asymmetric key encryption and decryption techniques are used to encrypt and decrypt the data present in the blockchain to safeguard it from eavesdropping in other nodes.

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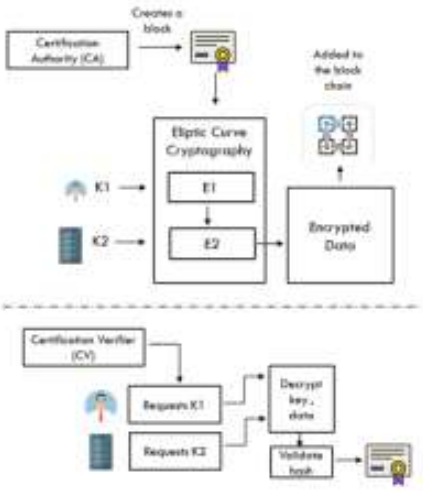
II. EXISTING SYSTEM

In existing system, the verification of documents is manual and data is fetched and verification is done from a centralised server. It requires lot of efforts to maintain a centralised server and at the time of verification, the server may become unavailable. Thus, relying on a centralized server for documents such as certificates doesn't guarantee availability and integrity. This we propose a system that uses a distributed system to ensure availability and blockchain is used to ensure the integrity of the documents. Also the system uses asymmetric key encryption mechanism to provide confidentiality to the data stored in the blockchain.

In Chapter III we propose DCCVuB Structure. In Chapter IV we propose methods creating user and records (mining) in the blockchain. In chapter V we propose methods for distributing the blockchain over the network using IPFS. In chapter VI we propose the process of verification of records in the blockchain. In Chapter VII we propose encryption and decryption mechanisms to ensure security of the system. In Chapter VIII we propose the implementation details of the system. In Chapter IX we propose the future work and conclusion of DCCVuB



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IOT Based Low End Automotive Drive Recorder As Blackbox

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Abstract— ***Automotive electronics plays an important role in the automobile industry and essentially addresses the safety and security concerns. The proposed work aims at a cost effective solution to the design and development of an event data recorder called black box which is more or less equivalent to the one that is being used in the aviation sector. The paper deals with the design of the black box that has features equivalent to the data recorder which could be very useful for domestic vehicles to record their parameters. It is also having additional features that could assist in reducing the number of accidents, by analyzing the previous accidents. The system also provides automatic accident alert system which helps in informing the nearest hospital and the traffic authority by providing not only the coordinates of the accident location but also the exact physical address for immediate medical attention which can save numerous lives every day. The system also provides other features like advanced web tracking and reduced overall cost optimization by integrating multiple features. The experimental results shows superior performance compared to the existing methods for accident analysis.***

Index Terms— ***Black box, Automotive electronics, accident analysis, web tracking, data recorder.***

I. INTRODUCTION

Internet of things is the combination of different technologies like real-time data analytics, machine learning, sensor networks and embedded systems. IOT extends Internet connectivity to range of non-internet-enabled physical devices. These devices are embedded with technology and so they can communicate using the Internet, and so they can also be monitored and controlled remotely.

Motivation and Objective for the Proposed system

The black box system has already been in use in aircraft since 1989 to store data and track the plane details. Two type of black boxes are used, one for capturing flight data that stores information on specific parameters like flight control and engine performance and the second one called as cockpit voice recorder – which records the background sound and conversation.

The objective of this work is to analyze the reason for accident and to prevent the future accidents by using a black box which monitors the whole vehicle by using different sensors such as gas sensor, vibration sensor, crash sensor, temperature sensor, and ultrasonic sensor. We have used GPS to track the location of vehicle and GSM is used to send alert message to the registered mobile number of the driver. The accident details have been stored both online and offline i.e., in the online mode, the webpage updation is done through an IOT module which is having unique URL to track the current location and accident details through sensors. In the offline mode, SD Card is updated and also we can send an alert message to nearby traffic authority and hospitals. IOT has become part of our overall infrastructure just like water, electricity, telephone, TV and currently the Internet. Internet typically connects full-scale computers, whereas the Internet of Things connects everyday objects in the physical world.

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Tracking of Prenatal and Postnatal for Fetus Condition System

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***Abstract*: The broad acknowledgment of cloud based administrations in the medicinal services area has brought about financially savvy and helpful trade of Personal Health Records (PHRs) among a few taking an interest elements of the e-Health frameworks. By the by, putting away the secret wellbeing data to cloud servers is helpless to disclosure or robbery and requires the improvement of philosophies that guarantee the protection of the PHRs. Along these lines, we propose a system called SeSPHR for secure sharing of the PHRs in the cloud. The SeSPHR plot guarantees understanding driven control on the PHRs and jam the secrecy of the PHRs. The patients store the scrambled PHRs on the un-confided in cloud servers and specifically concede access to various sorts of clients on various bits of the PHRs. A semi-confided in intermediary called Setup and Re-encryption Server (SRS) is acquainted with set up people in general/private key combines and to create the re-encryption keys. Besides, the technique is secure against insider dangers and furthermore implements a forward and in reverse access control. Besides, we formally dissect and confirm the working of SeSPHR philosophy through the High Level Petri Nets (HLPN). Execution assessment with respect to time utilization shows that the SeSPHR approach can possibly be utilized for safely sharing the PHRs in the cloud.**

***Keywords*: Cloud computing, PHR, SRS,SeS, PHR**

INTRODUCTION:

Advancements in medicine, quality of education and technological growth have been massive over the past few years. Starting from smart phones to 3D technologies and robotic surgery to Nano medicine, the world has grown to a whole new level. Sadly, these advancements are not easily accessible by all. Remote or underdeveloped regions of the world are still suffering without the aid of advanced medicine and technology. India, being a diverse nation has its population widely spread into two areas, rural and urban. Urban areas are developed and have access to all the latest developments. The inadequate development of rural areas has had even less impact on key issues such as unemployment and health issues.

The broad acknowledgment of cloud based administrations in the medicinal services area has brought about financially savvy and helpful trade of Personal Health Records (PHRs) among a few taking an interest elements of the e-Health frameworks. By the by, putting away the secret wellbeing data to cloud servers is helpless to disclosure or robbery and requires the improvement of philosophies that guarantee the protection of the PHRs. Along these lines, we propose a system called SeSPHR for secure sharing of the PHRs in the cloud. The SeSPHR plot guarantees understanding driven control on the PHRs and jam the secrecy of the PHRs. The patients store the scrambled PHRs on the un-confided in cloud servers and specifically concede access to various sorts of clients on various bits of the PHRs. A semi-confided in intermediary called Setup and Re-encryption Server (SRS) is acquainted with set up people in general/private key combines and to create the re-encryption keys. Besides, the technique is secure against insider dangers and furthermore implements a forward and in reverse access control. Besides, we formally dissect and confirm the working of SeSPHR philosophy through the High Level Petri Nets (HLPN). Execution assessment with respect to time utilization shows that the SeSPHR approach can possibly be utilized for safely sharing the PHRs in the cloud.

EXISTING SYSTEM:

The cloud computing also integrates various important entities of healthcare domains, such as patients, hospital staff including the doctors, nursing staff, pharmacies, and clinical laboratory personnel, insurance providers, and the service provider. Therefore, the integration of aforementioned entities results in the evolution of a cost effective and collaborative health ecosystem where the patients can easily create and manage their Personal Health Records (PHRs). Generally, the PHRs contain information, such as demographic information, patients' medical history including the diagnosis, allergies, past surgeries, and treatments, laboratory reports, data about health insurance claims, and private notes of the patients about certain important observed health conditions.

DISADVANTAGE:

1.Storing the private health information to cloud servers managed by third-parties is susceptible to unauthorized access.
2.In particular, privacy of the PHRs stored in public clouds that are managed by commercial service providers is extremely at risk.
3.The privacy of the PHRs can be at risk in several ways, for example theft, loss, and leakage.

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Heart rate encapsulation and response tool using sentiment analysis

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ABSTRACT

Users of every system expect it to get better. Providing feedback to the owners of the system was difficult but with the advent of technology, it has become handy. Users can now post their comments through online blogs, android apps and websites. Due to the enormous data piling up every second, it has become a problem in analyzing it. In this paper, sentiment analysis is used for analyzing comments and reviews posted by users. The experiments are done with dynamic and real data. The tools, algorithms and methodology that could fetch accurate results are described. Experimental results indicate 90% of accuracy in proposed system. The review report generated would help the hospital management to identify the positive and negative feedback which further assists them in improving their facilities that could not only create customer satisfaction but also enhanced business processes.

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1. INTRODUCTION

Healthcare industries like hospitals, pharmacies, laboratories, software solutions are growing tremendously which is leading to exponential growth of data. Continuous advancement of all these facilities is necessary as they deal with health of the human. The zones of enhancement are identified through observation, experience and feedback of the users. The word feedback refers to the reaction to a product that would act as a main ingredient in improvement. The technical boom has let the users deliver their feedback at any point in time. Hospitals consider this as an important parameter in providing care [1].

Upsurge in the patients directed to diverse views and insights with respect to clinical amenities. These are carried to the infirmary through android app submissions, mails and websites [2]. Survey reveals that 85% of individuals use websites and blogs to post their comments [3]. There is a wide angle to analyze but it has become difficult as the data is unstructured. Owing to this, an instant action cannot be applied to address the issue and correct the condition. This would result in loss of trust among the users. Manual scrutiny might draw precise results but would require profuse manpower and time. Since health information is sensitive, misusing it could cause drastic effects. Hence the associated data is to be collected in the utmost efficient way that would else result in improper data. The feedback submitted is an expressive statement of the user which aids as a grade sheet for the hospital. The usage of the words is diverse in numerous cases for which the algorithms are intended with many restraints like tense, context, substitutes, adjacent words. Some feedback is sensitive and hence sent through emails. The data is encapsulated so it is not exploited. The response tool proposed in this paper is built to expand the healthcare commercially [4], aesthetically and to increase user satisfaction [5].

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An analysis on Version Control Systems

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N. Deepa ; B. Prabadevi ; L.B. Krithika ; B. Deepa **All Authors**

87
Full
Text Views

Abstract

Document Sections

I. Introduction

II. Study of Existing Version Control Systems

III. Proposal of A Postmodern Version Control System

IV. Parametric Comparison of Existing Tools and the Proposed Tools

V. Conclusion

Authors

Figures

References

Abstract:
Managing the source code of the project and other related documents in an organization is a mandatory need, which may ensure clarity in the delivery of the product enhancing the focus of the organization towards its intended product's quality. In this digital era of computing, we have many software configuration management tools to handle various documents, its revisions, versions and so. In this paper, we analyze the importance of various Version Control Systems (VCS) evolved to assist the software development lifecycle of the project, and compare favourite VCS tools in the market based on their features, measure their performance across chosen attribute. Also, we propose a new tool having some of the best features found in our comparison study as well as a few extra attributes that we believe will raise the quality of this new tool. This tools can combat the issues we face with existing tools in the market.

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I. Introduction

Version control, which is considered to be a very important component of software

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A Supervised Classification Techniques to Optimize Error Evaluation and Space Complexity

M.Santhiya, M.Shobana , R.Jegatha

Abstract*— Bayesian classification is based on Baye's Theorem, which is applied on a conditional probability basis of posterior and prior probabilities in parallel with future evidence. Prior Probabilities are the original probabilities of an outcome which will be updated with new information to create posterior probability. The revised probability of an event occurring after taking into consideration new information.A Bayesian classifier is used to predict the values of features for members of that class. It is used to over come the diagnostic and predictive problems. This classification provides a usefal perspective for understanding and evaluating machine learning algorithms.It is a probabilistic learning algorithm which calculates the explicit probabilities for hypothesis, among the most common learning problem.The proposed work has focused on designing of two classification algorithms naïve space and naïve Mine classification to optimize space complexity and error evaluation forlarger data sets.

***IndexTerms*– Prior & Posterior Probability, Bayes Theorem,Naive Space,Naive Mine.**

I. INTRODUCTION

The data or information that is anticipated in the present situation is significantly arranged or characterized. Arrangement goes under regulated learning methods of AI. Characterization can be quickly portrayed as the undertaking of doling out a class to occasions of information depicted by a lot of characteristics. It incorporates the development of a classifier which is prepared on a lot of preparing information that beforehand has the right class alloted to every datum point. Arrangement fabricates a brief model of the appropriation of class names and afterward used to group new information where the estimations of highlights are known however the class is obscure. Bayesian arrangement depends on Bayes hypothesis. Bayesian hypothesis gives a numerical math of conviction, which depicts what it implies for convictions to be reliable and how they should change with evidence.This supposition, called class restrictive freedom, which is made to improve calculation, thus it isconsidered 'Naive'.Bayesian classifiers are the statisti calclassifiers which predicts class participation probabilities. Guileless Bayes classifier works best in two cases, When the highlights are totally autonomous and also when the highlights are practically needy.

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II. LITERATURE SURVEY

Bayesian characterization [1] with Mistake Adapted successive testing system. Earlier Learning can be utilized related to the preparation information to build the ideal Bayesian Classifier. Discovering more exactness in forecast of information ought to be improved. To present grouping and bunching systems and execution investigation with exactness in blunder detection.Spatial parallel order, Spatial summed up direct model (SGLM)[2] and the Bayesian spatial summed up straight blended model (SGLMM) is utilized to recoup information robustness. A Bayesian characterization for perceiving written by hand numerical articulations [3]. Presenting some constraintson how data sources might be parceled, [4]we inferred an effective parsing calculation got from Unger's method.Expert elicitation and Bayesian System demonstrating for transportation Mishaps. How BBN is connected for demonstrating dangers in the oceanic area, uncommonly on where information originate from and how they are connected. A Bayesian approach [5], forcharacterizing vulnerability in announcing apopulation breakdown, this gauge of vulnerability as an approach to set a certainty interim around a predefined rate decay from the most extreme. Probabilistic methodology [6]for Anticipating the Size of Coding Units in the Quad-Tree Structure of the Quality and Spatial Versatile HEVC. An improved pressure execution atthe cost of critical increment in computational codingcomplexity. On Bayesian Network Classifiers[7]with Decreased Exactness Parameters, Execution is better wavelet-based improved Bayesian surmising. Precision and execution in system model ought to be expanded for discriminatively improved parameters for everything except extremely low piece widths. Moving endlessly from Blunder Related possibilities [8] to accomplish spelling remedy in P300 spellers. For bigger informational collections mistake must be assessed and improve the precision. its utilization as a compelling specialized instrument is dependent on high P300 arrangement exactnesses 70% to represent mistake revisions. Generalized different bit learning [9] with Information Subordinate Priors. Earlier likelihood of blunder ought to be improved with exactness. Early interterm flaw diagnosis[10] in acceptance machines utilizing an explanatory.

Original Article | Published: 25 July 2019

Enhanced fault identification and optimal task prediction (EFIOTP) algorithm during multi-resource utilization in cloud-based knowledge and personal computing

J. M. Nandhini ✉ & T. Gnanasekaran

Personal and Ubiquitous Computing (2019) | Cite this article

60 Accesses | **1** Altmetric | Metrics

Abstract

Virtualization technology is playing an important role in cloud computing for efficient task scheduling and application deployment. Cloud computing offers a platform to store and retrieve a large volume of information without any restriction on time or location. The system optimizes the available resource based on the user application requirement. Server and data storage devices can access distributed data residing in remote places via virtualization mechanism, where cloud applications are easily migrated from one server to another. Issues related to fault identification and resource optimization problems often occur in a cloud environment. To resolve these issues, an enhanced fault identification and optimal task prediction (EFIOTP) algorithm are proposed for finding and preventing faults during task execution with multiple resources. The research work objective is to design a deadline-determined resource allocation model with the VM resource isolation method in a cloud. The proposed work evaluates the maximum amount of task execution by considering different types of resources to identify and predict the faults at various levels and to minimize the occurrence of faults and task execution time. Based on the experiment evaluation, the proposed EFIOTP algorithm reduces 775 task completions (TCT), 0.237 datacenter server utilization (DCSU), 2% virtual machine cost (VMC), and improves the 0.39 hypervolumes (HV) on several parameters and scientific workflow application.

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An Assessment Survey of Cloud Simulators for Fault Identification

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Abstract: **Cloud computing is a large set of logical computational resources accessible via internet. Cloud computing offers services to obtain coherence, scalability, economy subscale with maximum efficiency and resource optimization. Fault tolerance is the characteristic that enables the system to stay operating and adhere SLA even when the in the system faults and failures. For a system to be fault tolerant the interval of fault identification and removal must be minimum to follow the QoS requirements. virtualization in the Data center can assist in fault prediction that makes the system fault tolerant. A cloud simluator is an extensible tool to analyse, evaluate and measure the system performance of the cloud cloud applications to satisfy the QoS provisions. This paper deals with the survey of the various cloud simulators with emphasis on using CloudSim**

Keywords:Data Center, Simulation, CloudSim, Fault tolerance

I. INTRODUCTION

Cloud computing delivers computing services comprising servers, databases, networking, analytics, software development platforms and other services over internet thereby providingflexible resources, rapid modernization and economies of scale. The distributed services are used by the cloud customers as needed. cloud computing extends scalability, security, anytime, anywhere access, high availability for consumers and organizations. The usage of cloud computing is in a fast pace. For the purpose of evaluation and analysis the components of cloud computing such as data centers, virtual machines and other services can be modelled using cloud simulator.

One of the most popular tool available inthe industry for modelling cloud computing iscloudsim. Cloudsim is developed in Java based on Gridsim.The main benefits of a cloud simulator are design and performance feedback, flaw detection at various abstraction level, conceptual demonstration made easier, cost optimization and experimental feedback, risk mitigation at initial stage.[1]

II. SIGNIFICANCE OF SIMULATION

Cloud computing offers IT infrastructure, applications , resources to the end users as services using pay as per use model . Before executing new algorithms and methods in the real time environment, they have to be tested for their performance and other security issues. Cloud simulation makes the task easier by simulating a real time environment that can be used at liberation . Simulation eases the complication in the infrastructure, examining the threats and measuring the quality and overall performance. The key advantages of using a simulation based framework are:[2]

- Making scalable and reliable real time environment.
- Facilitating dynamic flexible configuration and development environments.
- Customizing the visual interfaces in a simple way.
- Increasing the cost benefit by reusing the available components.
- Creating a platform to test the proposed algorithms and methods thereby allowing to examine the quality and performance.

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Intelligent Crime Analysis System Using Pyspark

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and P. Pavithra

Abstract--- *Crime analysis is one of the most important activities of the majority of the intelligent and law enforcement organizations all over the world. Generally they collect domestic and foreign crime related data (intelligence) to prevent future attacks and utilize a limited number of law enforcement resources in an optimum manner. A major challenge faced by most of the law enforcement and intelligence organizations is efficiently and accurately analyzing the growing volumes of crime related data. The vast geographical diversity and the complexity of crime patterns have made the analyzing and recording of crime data more difficult. Data mining is a powerful tool that can be used effectively for analyzing large databases and deriving important analytical results. This paper presents an intelligent crime analysis system which is designed to overcome the above mentioned problems. The proposed system is here is we find weather analysis along with the crime happened and we proposed Pyspark here to store large amount of data's for crime analysis. The proposed system consists of a rich and simplified environment that can be used effectively for processes of crime analysis.*

Keywords--- *Pyspark, Bigdata, Data Mining.*

I. INTRODUCTION

Crime analysis has become one of the most vital activities of the modern world due to the high magnitude of crimes which is a result of technological advancements and the population growth. Law enforcement organizations and the intelligence gathering organizations all around the world usually collect large amounts of domestic and foreign crime data (intelligence) to prevent future attacks. As this involves a large amount of data, manual techniques of analyzing such data with a vast variation have resulted in lower productivity and ineffective utilization of manpower. This is one of the most dominant problems in many law enforcement and intelligence organizations.

There are several significant reasons for crime analysis such as to identify general and specific crime trends, patterns, and series in an ongoing, timely manner, to maximize the usage of limited law enforcement resources, to access crime problems locally, regionally, nationally within and between law enforcement agencies, to be proactive in detecting and preventing crimes and to meet the law enforcement needs of the changing society. There are various crime data mining techniques available such as clustering techniques, association rule mining, sequential pattern mining, and classification and string comparison.

Several web based crime mapping systems are available on the Internet such as narcotics network in Tucson police department, but majority of them have been custom made for legislative authorities in different countries and those systems are not accessible to parties outside that particular law enforcement or legislative authorities.

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EFFICIENT REGISTRATION OF LAND USING BLOCK CHAIN TECHNOLOGY

A.Ponmalar, M.Poovarasan, T.Vasumathi, G.M.Keerthana, A.Yogesh, Dr V.Dhanakoti

Abstract: ***A Block chain as a technical solution for real estate(land registry)transactions that is a technical demo shows technology and development of the solution. In the proposed system, the knowledge about the block chain and what are all the ways the concepts of block chain will be used in real life applications such as land registry, vehicle registration, financial records,etc. In this paper we can detailed study about the land registry concept . There merits and demerits on using the concepts of block chain on this fields are also analyzed.***

1. Introduction

What is block chain? Block chain concept was introduced by Satoshi Nakamoto in 2008 it can serve as a public ledger using its own unit of account (Bit coin)[1]. Development of a new information technology(IT) can bring change in the society. Blockchain is a technology to serve as public ledger using its own unit of account (bit coin).The invention of bit coin using blockchain concept is the first digital currency. This block chain technology involves creating a new methodology digital verification records of files. E.g. transactions[2]. This verified records are considered as fingerprints. This records are groups into blocks and they are linked together. It is generally defined as the block of chains, each and every block contains a cryptographic hash value of the previous block in the chain.

A block chain is a public or distributed ledger that is used for managing the transactions in an efficient manner. A block chain uses only a peer to peer network as a protocol for communicating all the new blocks. The third parties can't able to alter the data in any given block when the transactions

completed. But the data can be alter by doing alterations of all the subsequent blocks[3]. Data stored in a block chain are impossible to alter, rewrite, delete or do any illegal manipulation activities, it's highly secure and reliable network. Block chain is consider as the decentralized system which uses peer -to -peer network system, so there is no centralized government or organizations to control these block chain because it is a public digital ledger that is used for providing security as well as managing all the transactions

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across the world who are all connected to block chain so that a data cannot be altered in blocks , without the alteration of all subsequent(previous and after) blocks.

There are three types of networks available in block chain, they are public block chain, private block chain and consortium block chain.

In Public block chain there is no restrictions for accessing the data. Everybody can send a transactions through the internet connection and become a valuator. The well-known public block chains are Bit coin and Ethereum.
A private block chain is authorized as a middle-ground for companies small group's that are generally interested in the block chain technology but they are not with any level of control . Only the network administrator can allow the persons to join on block chain . There is some restrictions to access the data . This type of block chains can be considered as a private network.

A consortium block chain is a semi decentralized system. It is also authorized but instead of a single organization a unique group controlling it, a number of companies, where each might operate a node with the help of a network. In consortium chain, administrators restrict the users reading and also to see the block, this type of blockchain can allows only the restricted user that the people whom are they trust can only add them in the block and made a control with them itself.

2. Related works

Now a days blockchain technology is one of the most developing technology in the world , there are lot of researchers are involve they are trying to develop the technology ,let us see what are the related works done in the field. The most important aspect of blockchain concept is the security every one can easily trust the concept , first the concept was introduced for the transaction of the bit coin which is called as the online currency there is no dependency of the third party these are all done by the blockchain concept.

E-voting system is the another developing technology on the blockchain , by introducing the digital concept in voting system majority of the malpractices are reduced and this leads to the correct democracy nation if the concept are introduced by our government. The technology are also used in the financial services that are also helps in the development of

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SMART CAR PARKING SYSTEM IN SMART CITIES USING IR

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Abstract: **Internet of Things (IoT) plays an indispensable role in bridging the gap between all the day to day things to the networking system, and creates an ease to access all the un-internet things from any distant location. Adaption to the growth in the recent trends is inexorable for the people. With all the advancement in the technology, finding a particular place to park our automobile becomes an exasperating issue. In our work we have designed a Smart Car Parking System (SCPS) with the help of infrared sensor and a database based on application of Iot, which permits the driver to find the proximate parking slot, and gives the number of free places available in that respective parking zone. This ideology mainly focuses on diminishing the time involved in discovering the parking space and also it decreases the unwanted travelling, through filled parking slots in a parking arena. This will in turn reduce the consumption of fuel, which would reduce carbon footprints in our environment. Thus, this will pave way for an eco friendly surrounding.**

Index Term: IoT, SCPS, HTML, IR, GPS, LCD

I. INTRODUCTION

The concept of Internet of Things (IoT) started in 2008 and 2009. The gadgets could be easily tracked, managed or monitored using remote computers connected through Internet. IoT enlarges the use of Internet. It acts as an inter-network of the devices and physical objects, or 'Things'. The two eminent words in IoT are"internet" and "things". Internet means a vast global network of coupled servers, computers, tablets and mobiles using the various types of protocols and connecting systems. Internet allows the process of sending, receiving, or communicating of information. IoT generally comprises of inter-network of the equipments and physical objects. These objects can gather the data from isolated locations and interact to units managing, acquiring, organizing and analyzing the data in all the processes.

It provides an institution where things (date to day equipments, watch, wake up clock, home devices) become chic and behave lively through sensing, computing and communicating by embedded small devices which communicates with remote things or isolated persons through connectivity. The scalable and robust nature of Internet of Things is allowing developers to create and host their applications on it. In basic terms IoT can be explained in form of an equation stating:

Physical Object + Sensor + Internet = Internet of Things

The ideology of producing a Smart City is now becoming viable with the exposure of the Internet of Things. The key aspect for the exposure of smart cities is comfortable parking facilities and systematic transportation and management [12]. There are several issues in smart cities; one among these issues is related to car parking. In these days, urban people are finding it difficult to avail parking spot to drop their vehicle. It is always exhausting for drivers to park their vehicles. It tends to become harder with ever increasing number of private car users. These circumstances can be considered as an opportunity for smart cities to undertake actions in order to improvise the parking resources.

Thus, this leads to reduction in time spent on searching vehicles, traffic congestion across the highway and road accidents that occurs because of these vehicles. Problems concerned with parking and traffic congestion can be resolved if the drivers are informed prior about the availability of parking slots in and around their intentional destination.

Current advancements in making low-cost, low-power embedded systems are useful for the developers to build new applications for Internet of Things. The developments in sensor technology, many modern cities have paved way for deploying various IoT oriented systems in and around the cities for the purpose of monitoring. The LCD display is highly efficient for the improvement in this technique. The use of GPRS is made to make the system more advance and distinct.

A recent survey performed by the International Parking Institute [1] reflects an increase in number of innovative ideas related to parking systems. Presently there are still certain parking systems [2] that claim to drivers to deliver

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Implementation of effective test automation with instrumented customer experience data

R. kavitha, P. Subha,

Abstract: ***In the B2C & B2B ecommerce arena, the Measurable Business Results (MBR) of an application is its ability to retain customers and its prospects. And in an ephemeral product and services world, customer experience (CX) is a pillar of value creation. A superior customer experience is a means to stay ahead in the competitive environment. The issues that arise on the customer experience has a greater visibility on the smaller social world and is a direct impact to MBR. With all said, a greater priority of resolving such issues with an effective test automation that leverages the CX oracles in automating the test suites is a solution to mitigate the issues around customer experience. The approach involves flooding the test oracles created with the real customer experience data to the test automation suites that cover the 360 degrees of the functional, regression and integration testing of the application.***

Index Terms: Customer experience, test automation.

I. INTRODUCTION

The application testing with respect to functional, regression and integration testing is a continuous process with the discovery of new data set that suits the changes that has been incorporated as a new feature or changes to the existing one. Every time, the data set identification and streamlining the data set for automated testing is a herculean task and often involve manual efforts to make it happen. There are different mechanisms to validate the correctness of the system under test. The approach taken here is the continuous flooding of the test oracles that get generated by the instrumentation mechanism of the application. The application under test is continuously instrumented gathering the data of customer experience that deal with each specific class and methods of the application. In a nutshell, it is the Integration of Technology with Customer Experience with Open Source API & Frameworks towards enhancing a Java/Web Application with better quality using the automated testing with the following modules.

1. Bytecode Instrumentation to trace CX Behavioral and Interaction Data
2. Automated Testing with CX Data

A. THE CHALLENGE OF TODAY'S IT ENVIRONMENT

The following are few challenges that we see as an inherent issue in the testing world

1. Lack of API Testing
2. Lack of Automated Testing
3. Lack of visibility into production applications
4. Difficulty in managing environments

Fig. 1.1 The Challenges of IT Environment

The results of the above challenges when turned out to be an issue in the production system will result in

1. Voice of Customer – The interaction and behavior data of the customer are analyzed only when the application suffers a huge threat with its stability and reliability
2. Negative Scores of Customer Experience is direct impact to the brand.
3. CX Analytics - is the baby of top management for any organization directly proportional to the following

– Conversion and Revenue
– Scorecards & Competitor Ranking's

B. THE INTEL EFFECT

One of the greatest security issue identified in the early Jan of 2018 was the Meltdown & Spectre Attack. The fundamental design flaw of the intel chips was identified after decades of it being the market leader in the industry. The vulnerability was the leakage of kernel memory to any application when introduced with chip-level security bug. The defense mechanism adapted by various operating systems in the Kernel Address Space Layout Randomization (KASLR) is defected by this vulnerability. This vulnerability can be exploited by hackers and malware to read the kernel's memory and the complete system is under threat inclusive of its network.

C. THE VOICE OF THE CUSTOMER

The feedback from the customer about the product or services to different mediums is the voice of the customer (VoC) and materializing this input to the testing arena before it reaches the public forum will benefit to a larger extent. The following are the different source of VoC data.

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Role of Social Sentiment Analysis in Stock Trends Forecasting

K.Anuratha, M.Parvathy, S.Sujeetha, J.Ghayathri

Abstract: ***Social media like Face book, Twitter have attracted attention from various sectors of study in recent years. Most of the people share ideas, opinions on various topics such as Stock Market Prediction, Digital marketing, Movie review, Election Results Prediction and Product reviews etc,. Forecasting Financial Market is considered to be one of the significant applications of Sentiment Analysis on Social Data like Face book, Twitter. It is essential to accurately predict the movements in stock trends, as the stock market trends are volatile. In the past few years several researches have been carried out for predicting the future trends of stock market through sentiment analysis on social media comments. This paper gives the survey on the various techniques, tools and methodologies adopted by several researchers on Stock Market Prediction based on sentiment analysis of Social networks.***

Keywords: Stock Prediction, Twitter, Sentiment Analysis, Classifiers, Accuracy, Deep Learning

I. INTRODUCTION

It is always interesting for the researchers to find ways to predict what will happen in the future. Social media is a communication platform contains valuable knowledge hidden in it. Information available in the social media resembles real world events and they can be exploited by the researchers to enhance the application capabilities. Stock market prediction can be considered as the one of the important applications of social media. The Stock market is a complex system as it is been influenced by the political, economical and social factors. The prices of stock are very dynamic and impressionable to changes due to the nature of financial domain. Though it is a complex system still stock market is one of the important economic factors.(Al-Augby,2015)[17].The focus of stock market forecasters is to develop a successful approach to predict the stock prices. Prediction of stock market is one of the tough tasks because globe the use of social networks is popular and huge, as it provides a medium to express, share and publish the opinions of people. The effect of social media in stock market prediction has been studied by several researchers, in recent times. Social networks play important role in the society to share the ideas and thoughts of the users through the internet among the virtual community. The knowledgeextracted from the social networks can be applied to predict movement of stock market to some extent.

The most famous micro blog Twitter allows it users to create tweets, short messages that can be shared with and responded by other users of Twitter. The users are much focused on the message they wish to communicate, as twitter employs a restriction on message size. This feature of Twitter makes the tweets good candidates for the Sentiment Analysis task.

Sentiment analysis falls under Natural Language Processing (NLP), a branch of Machine Learning which deals with How computers process and analyze human linguistics?.

This paper is planned as follows: Section II describes Sentiment Analysis. Section III describes the inference from the related research on stock prediction – Stock Prediction Roadmap. The Comparative Study on the different approaches is summarized in Section IV. Section 5 describes the Conclusion on the work carried out and proposes the scope for future work.

II. SENTIMENT ANALYSIS

Sentiment analysis is the process of determining opinion from people's emotion and feelings. Sentiment classification can be done at phrase level, sentence level and document level. The sentiment analysis uses Natural Language Processing (NLP) to divide the language units in to three categories: Negative, Positive and Neutral [20].

The different opinions of people, shared in the social media play significant role in the process of decision making and recommendations [20]. The analysis on micro blogging websites are done using Sentiment Analysis. The contents of Social Media such as posts, tweets, photos are analyzed by people of different community such as politicians, marketers and analysts etc,. Nowadays, stock market investment plays an inevitable role in the finance sector, as high stock market value is considered as the parameter of high economies. The volatile nature of stock market has

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Advanced Coherent System For Predicting Cardiac Risks using Data Mining Techniques

L.Arthi, S. Sujeetha, J.Thirunavukkarasu, S. Kalaiarasi Karunya

Abstract: ***Considering health care and medical industry related data there are millions or tons of data which contains numerous hidden information. This information can be mined through which we can make effective decisions in their related industry. There are numerous far advanced methods and techniques in mining and determining the useful decisions using the retrieved useful information. Such an effective system called Coherent cardiac risk prediction system (CCRPS) is developed using neural networks in early detection or prediction of various risk level in cardiac disease. This work employs a multilayer perception neural network with back propagation as the training algorithm. This system aims in predicting the likelihood of patients getting disease related to cardiac such as CHD, a prior heart attack, uncontrolled hypertension, abnormal heart valves, congenital heart disease (heart defects present at birth) and heart muscle disease. The system uses a total of twenty-one medical related parameters such as age, sex, chest pain type, resting blood pressure (in mm Hg on admission to the hospital), serum cholesterol in mg/dl, Smoking, stress etc for prediction purpose. It enables or activated the important knowledge such as how the medical factors related to cardiac disease and patterns and the relationship to be established. Through this system we obtain effective results that have crafted its own diagnostic method or way to predict the risk level measurement of cardiac disease.***

Keywords: ***data mining, mining tools, classification, neural networks, multilayer perception neural network, back propagation, risk diagnosis.***

I. INTRODUCTION

Data mining or Knowledge discovery is the way of extracting meaningful information from a huge data. The data which obtains from various sources are collected as huge data sets which may or may not be in an orderly manner. These data contain so many secret information hidden within them. Many organisations may not be aware of such information and hence retrieving such useful information are not possible. The solution for retrieving such information with-in a span of time is done with the help of some tools and algorithms.

There are many Data mining techniques which helps in analysing the data and make much better decisions in the organizations. In this paper we focus onto the medical sciences more specifically about cardiac disease, where more patterns or some hidden data can be retrieved and treated through the above said techniques. This helps in diagnosing or predicting near to accuracy and treating the medical cases in much efficient manner. This also promotes automation in early diagnosing and treating phases.

Cardiac disease is considered to be a dreadful disease which lead to sudden death or severe disability with psychological impact and affects the economic standards of a family. As per the survey reports of WHO, more than seventeen million people across the globe are dying every year because of Coronary Artery Disease. There are numerous heart disease, some are Coronary artery disease, Heart valve disease, Angina, Heart Arrhythmias, Endocarditis, Rheumatic heart disease, Cardiomyopathy, Congenital Heart Disease which occurs by numerous factors. Menopause in later stages in women, complications during pregnancy can also be a reason for heart disease and heart attacks.

As a tremendous growth in healthcare industries as well as new diseases occurring day by day the healthcare data centres and so huge and they get millions and millions of data each second. Hence data mining and machine learning algorithms plays the most fundamental part of extracting meaningful information. Even some advanced machine learning techniques are used so that some basic automations are made.

Prediction automation in most of the cases are always a good practise in healthcare industry for instance when a patient enters with a heart pain the specialist wont just predict with a touch examination, but allowed to a diagnostic centre after an emergency treatment. The prediction with an automation may have more parameters such that the results are almost accurate decision which helps the medical practitioners to treat the patients well.

A. Weka

Weka is a collection of machine learning algorithms for data mining tasks. The algorithms can either be applied directly to a dataset or called from your own Java code. Weka contains tools for data pre-processing, classification, regression, clustering, association rules, and visualization. Weka makes learning applied machine learning I recommend Weka to beginners in machine learning because it lets them focus on learning the process of applied machine learning rather than getting bogged down by the mathematics and the programming — those can come later.easy, efficient, and fun. It is a GUI tool that allows you to load datasets, run algorithms and design and run

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Determination of Organic Matter and pH Value of the Soil Using Deep Learning Techniques

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Abstract--- Tamil Nadu net cultivated land is 48.92 lakhs ha in which 58% land are under irrigation and rest are rain-fed. The productivity of rice, maize, sugarcane, cotton, and grams compared to the other countries are very less. The productivity of vegetables in India is 11.2 tonnes/ha and fruits are 16.2 tonnes from the document on Tamil Nadu Vision 2023. This motivated to develop a system that identifies the organic content of the soil. So there needs a technology to estimate or predict the organic matter of the soil before cultivation of any crop that ends up in good crop yield with better productivity. To estimate the soil organic content and pH value present in the soil, Shortwave Infra Red (SWIR) and Visible-Near Infrared (VNIR) bands ranges between 400-2500 nm are used. The work is to elaborate on soil organic and pH estimation using remote sensing (RS) techniques. SOM provides important functions including nutrient preservation, water holding capacity. It acts as a key pointer for soil quality. Soil pH is measure of acidity and alkalinity present in the soil, on a scale read from 0 to 14. The comprehensive study on soil spectroscopy needs to be investigated. The soil images are captured using UAV using hyperspectral sensor camera for the chosen study site. The estimated organic contents of the soil benefits the farmers to improve the crop yield which results in the increase of their productivity.

Keywords--- Organic Soil Content, Hyperspectral, ph Value.

I. Introduction

Agriculture is the backbone of the Indian economy as it contributes 18% of India's GDP and 1/6th of export earnings. Agriculture is more important because of world food demands for the increasing population and more production of crops eventually helps in achieving zero hunger. Agriculture is the main source of income for most of the people in India. For good crop production, the land used for the cultivation should be healthy. The soil used for cultivation should be rich in minerals like nitrogen, phosphorus, calcium, potassium etc. Soil naturally contains these minerals. These nutrients allow plant growth. When soil nutrients are missing or in a shortage than required, plants suffer from nutrient deficiency and stop growing. When the nutrient level is too low than normal, the plant cannot function properly and thus cannot produce the food necessary to feed the worlds' population. For every time the crops are harvested for human consumption, the natural supply of nutrients in the soil must be refilled. This is why farmers add nutrients to their soils in one or many ways like organic matter, chemical fertilizers, and even by growing other small plants etc. This maintains the fertility of the soil. So, those farmers can continue to grow the crops healthy and nutritious next time.

In spite of much technical advancement, agriculture remains the ma-jor source of income for 60-70% of the population in our country. There are several problems faced by the farmers due to lack of knowledge in using the fertilizers. This leads to crop failure or reduction in the productivity of crops. It has been shown that for proper usage of fertilizers minerals present in the soil should be known. For this government has issued Soil Health Cards (SHC) for every farmer. The work done by SHC's is physical and costly. So, in the proposed sys-tem, the Hyperspectral images from satellite are collected for the area specified and analyzed the images. To generate the spectral Signatures of organic matter present in the soil. According to data collected the amount of organic matter present in the soil using Machine Learning techniques.

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A Study on Financial Problem of Organised Retail Stores in Kancheepuram District

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Abstract
The size of Indian retail industry is more than US $350 billion but it is highly organized. The organized sector has started developing in the past few years. Many International brands have entered in to the market with the growth in organized retailing, organized retailers are fast changing their business models. The aim of this paper is analyzing financial problems of organized retail sector.

Keywords; *Retailers, organized, financial problem, market*

I. INTRODUCTION

Indian Retail Industry is placed a few of the ten largest retail showcases in the world. The attitudinal move of the Indian client and the rise of looked after out retail arranges have modified the substance of Retailing in India. With the indications of reappearance of monetary development in India, consumer shopping in retail detail is being predicted as a key open door area. The sorted out retail enterprise will develop up to 18 percentage in 2017. With those stages of improvement, there may be excessive extension proper now. Huge Indian business enterprise gatherings like Reliance, Tata, Birla and Mittal are investigating openings in retailing. There will be increment in mindfulness tiers as for gadgets, use and all prompting higher preference level the various customers.

II. INDIAN RETAIL SCENARIO

India's retailing blast has acquired further power, dynamism and liveliness with conventional game enthusiasts checking out in the Indian marketplace and the dominion's present day-day goliaths locating a way to charm the patron. Simultaneously, the early people are rethinking their methodologies to stay extreme and match the new market scene. The following not a few years have become a kick out of the chance to take a look at short development in the composed retailing bunch with a few riding global gamers installing their essence in India with the resource of improving their preparations to healthy close by tastes and purchasing conduct at the same time as territorial game enthusiasts have ventured up their guards and are endeavoring to choose up side over global gamers by way of utilizing their perception into community markets. The big majority of the looked after out retailing in India had as of past due started out and turned into basically moved in metropolitan city regions. Despite the truth that India has greater than five,000,000 stores everything being equal and patterns, the state needs present day feeling of looked after out retail places. This offers awesome risk to shops. As a good deal as ninety six percentage of the 5,000,000 shops are littler than 500 rectangular toes in territory. This implies India's consistent with capita retailing area is round rectangular ft this is most minimal on the planet. A little extra than 8 percent of India's populace is worried with retailing while contrasted with 20 percent in U.S.

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e-Governance through e-Seva in Tamilnadu

C. R. Senthilnathan, V. Dhanyalan

Abstract: e-governance services have become a key measure for the governments to improve their services to the general public after the advancement of information and communication technology (ICT). India being one of the developing countries, has initiated their ICT services in the form of e-Seva. Though governments started these services in India about four years ago, this study is initiated to find the consumers perceptions on the e-Governance and the gaps in the consumer expectations. Three consumer namely, system stability, service reliability and service quality are used in the study to measure the satisfaction. It is found that of the three measures, system stability and service quality have less positive impacts on consumer satisfaction indicating that definitely the government has to improve their service. Whereas the service reliability is better as far as the satisfaction level of the consumers concerned.

Keywords: e-Seva, Consumer perceptions, ICT, Service quality.

I. INTRODUCTION

e-governance / e-seva is all about the implementation of information and communication technologies (ICT) to help the government in administration, support public services and creating relationship among its citizens. Government usage of ICT is to create governmental policies, norms and regulations and flexibly to manage and monitor its governance in known as e-governance (Palvinder Sharma (2007)). Before the implementation of e-governance across Pan India, one should take into consideration the ground-level realities in accessing internet in the villages of India (Malhotra C., Chawla V. Dan. I. (2010)).

Like any other developing countries, India also faces many major hurdles and opposition to the implementation of ICT in various government sectors (Mistry H. (2010), Dwivedi (2010), S.K. Kumar S.P (2010)). The reasons for these inadequacies in addition to Resource lack of motivation and awareness , lack of trust, and lack in technical change. Some of the previous studies (Rajagopalan R.(2009), Damm P. K.(2010), Okike K.M.(2012)) have identified that major problem in Indian e-governance is that it is not citizen centric and suggest that it should be citizen and users specific, community centric and duly understanding the local needs and their demands.

One of the major vision projects of Indian Government is to enable all Government services with information technology which will enable accessibility to every state in the Indian village in a more efficient and reliable way. The vision project name is e-Seva meaning service through electronic media.

II. OBJECTIVES AND SCOPE OF THE STUDY

- To study the consumer perception on e-Seva services
- To find the extent of consumer satisfaction

This study will help in identifying the satisfaction level of the consumer and would help in rectifying the lacuna in the service procedures. This will also bring out the consumer expectations which can be addressed as some factors for enhancing the consumer satisfaction.

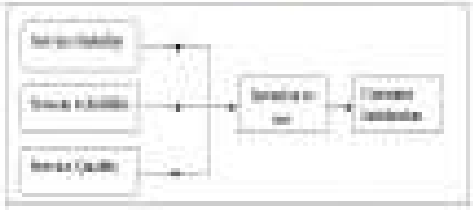
III. REVIEW OF LITERATURE

In the economy wise classification, one among the top states is Tamilnadu. Tamilnadu has enabled many of its services through the e-seva platform (Kumar et al.,(2017)). Over the years the public interest has increased dramatically in the use of ICT and e-technology is the solution for this. Today, e-governance plays an importance role in transforming the political, social and economical landscape of an economy. The reasons of the implementation of ICT by the government is not an easy as it looks. The reasons of implementation includes other important factors like cultural values and attitude within the government and its offices (Angchuan, Sikdar, 2003).

IV. METHODOLOGY

The sample size of the current study is 206 with the respondents selected at simple random technique with a well structured questionnaire. Five point likert scale is used to assess the responses of the respondents. To statistically analyze the data, SmartPLS software is used.

V. CONCEPTUAL FRAMEWORK



The major two objectives of any government is to convey the relevant information to the general public and to increase the level of transparency of the government functioning (Silva,Chiang et al., 2000). A good government system's goal should be to provide the required, reliable, useful and timely information services which is easily accessible to all the people (Bakos, 2000). The three major dimensions which determines the satisfaction level of e-seva (eGovernment) users are service quality, system reliability and stability. Service quality refers to all the services as the one-stop service centre like the individuals, business, community

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Impact of Direct-To-Home (DTH) on Indian Television Viewers

C. R. Senthilkumar, R. Jayalakshmi, M. Manju Bashini, P. Vasumathi

Abstract:— Above us times has revolutionized the television viewing in India. Despite of the high switching costs, alternate offers like more regional channels, discounts, free installations and recent subscription modes are attracted more consumers. Hence, independent variables consumer satisfaction, alternate offers and switching cost were used to understand the consumer loyalty towards DTH service providers. The data collected was analyzed using statistical tools revealed that, substantial amount of switching cost for changing DTH service providers is a biggest hurdle which makes the consumer loyal. The consumer satisfaction which has a positive influence on the consumer loyalty is also the fact that irrespective of the service providers, their responsiveness towards customer calls and complaints are not addressed at the expected level.

Key words: Customer Perception, Loyalty, Customer satisfaction, Alternate offers, Switching cost

I. INTRODUCTION

Direct-to-Home (DTH) was perceived in India during 1996 and government permission was given during 2000 Novembers. But the first DTH services was launched only during 2003 by Dish TV. Currently there are 4 private DTH operators and one government DTH operator (Doordarshan). 500 paid TV channels, with a total of 877 TV channels in India. Total number of active DTH subscribers is 30.09 million in India. As the entry and growth of private service providers increased, the government of India formed a regulatory body TRAI (Telecom Regulatory Authority of India) to monitor and control the telecom services.

Use of newer technology has moved the television viewers to the next level by using satellite signals. DTH is reception of the satellite TV signals with a dish in each individual house pairing with a set-up box to decode.DTH has become more popular with the introduction of high definition (HD) channels and the choice of selected their favourite channels and paying only for those channels they have subscribed.

II. OBJECTIVES AND SCOPE OF THE STUDY

- To study the subscribers' perception on DTH service providers in India.
- To find the extent of consumer loyalty towards service providers.

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This study will help in analysing the satisfaction level of the DTH users and would help in identifying the reasons for their choice on switching service providers. This will also bring out the consumer expectations which can be addressed in near future for enhancing the customer loyalty.

III. LITERATURE REVIEW

Direct-to-Home (DTH) is a high digitalized satellite services provided for the subscribers any part in the country to the television viewer. Cable and satellite operators are completely dominated in use of DTH. The advantage of absence of cable makes possible the television customers even in the remote places in the country. So DTH has revolutionized the Indian television receiver entertainment scenario (Gupta and Bhawan (2003)). Over the years the awareness and reach of DTH is remarkable in India (Fernandes, Anjanshi (2015)). The growth of DTH is more in rural areas compared with Urban areas in India (Thakur & Kohli (2011),Dhawan@Jamdia (2013)).

DTH thought that many users but it also has some domestic rivals including it. Media(Kerala (2009). Like any other business sectors, DTH also has many hurdles like new entrants, rivalry and threat of substitute. (Dhawan (Jalandra,2012) To overcome these threats and to attract more new customers DTH service providers should provide customer problems with a faster and clear response to their satisfaction(Jawahir Kumar and Nagarajan (2012) and with more number of favorite channels (Bhardas Khan, Labib Raj (2013)). To attract more customers value added services such as interactive education for students, farming advisory content and religious content are popular in DTH services Durgadhanap (2011). The other way to survive in the DTH business are to maintain good picture quality, affordable price rather than other factors to make a successful business and satisfy the subscribers (Jayashree.S. Venkatesan.A (2013),Mly-Dynamic &(2013)).

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Investment Avenues Available for Teaching Professionals – An Empirical Study

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Abstract

Competitive pressures have triggered massive shifts in the style and speed of business across the globe. In this situation, financial sector has offered various avenues for investments. Investment avenues are widening in the world to create a positive sources of income. Under these circumstances, investors have their own time and choice to invest their hard-earned savings in available avenues like bank deposits schemes, postal savings scheme, provident fund (PF), share market both primary and secondary, life insurance policies (like LIC), government security or bonds (like NSC), mutual funds, real estate, gold, company deposits and other avenues for investment. Teaching professionals earn handsomely (especially after the implementation of sixth pay commission), but they seldom find time to get information about the various investment avenues. Thus, lack of financial education sets aside their disposable income in low safety, profitability and marketability of investments. As investors, teaching professional do have right to expect a good rate of return from their investment. For all these, they need adequate flow of information. Wealth creation is not an art. It is an attribute of one's attitude towards money. How does one know whether investors have the right kind of attitude towards money? To answer this question, the present study entitled "INVESTMENT AVENUES AVAILABLE FOR TEACHING PROFESSIONALS – AN EMPIRICAL STUDY" has been taken up to understand their a) awareness level; b) investment objectives, c) preference over investment avenues, duration, financial institutions and sources of information; and d) problems in current investment decisions.

I. INTRODUCTION

Investment avenues are widening in the world to create a positive sources of income. One can invest disposable income in domestic or offshore market. Though few people in society are investing their savings in a systematic manner and many are not doing so. A systematic investment plan always yields a fair return. People are earning handsomely, but they do not know where, when and how to invest. Every one should realize that financial planning is a must today in order to know where one stands financially and also to focus on one's financial efforts in the right direction. A proper understanding of money, its value, the available avenues for investment, various financial institutions, the rate of return and risk, et., are essential to successfully manage one's finance for achieving life's goal. Increasingly, over the past several years, competitive pressures have triggered massive shifts in the style and speed of business across the globe. In this situation financial sector have offered various avenues for investment. Markets whether organized or unorganized are flooded with various financial instruments/avenues to enable the investors to invest their disposable income freely. The financial institutions are clearly stating their conditions and regulations subject to market risk to the investors.

Under these circumstances, investors have their own time and choice to invest their hard-earned savings

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A Study on Performance Analysis of Selected Mutual Fund Schemes in India

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ABSTRACT

In India, there are various investment avenues available for investors to invest and earn profitable return. Among the others financial products, investment in mutual fund ensures the minimum risks and maximum return to the investors. The need and scope of the mutual fund operation has increased as the emphasis is being made on increase in domestic savings and improvement in diversification of investments. Thus it became important to study the mutual fund industry and the performance of the mutual funds. This study aims to evaluate the performance of a few selected mutual fund schemes of India on the basis of their daily net asset value (NAV) for the period of five years from 2015-2019. A sample of 10 open-ended, growth-oriented equity funds has been selected for the study. The performance of the funds is evaluated using Sharpe index, Treynor index and Jensen alpha whose results will be useful for investors for taking better investment decisions.

Keywords: **Mutual Funds, Performance, Sharpe Index, Treynor Index, Jensen Alpha….**

INTRODUCTION

In 1963, the mutual fund industry was started in India with the formation of the Unit Trust of India (UTI), at the initiatives taken by the Reserve Bank of India and the Government of India. Mutual funds constitute an important segment of the financial system. It is a non-depository financial intermediary. A mutual fund is a type of investment that pools the savings of the investors for investments in shares, debentures, government securities and other financial instruments. It is a special type of institution that acts as an investment conduit. The unit holders share the income earned through these investments in proportion to their units owned them. The mutual funds in India follow a three-tier structure. The three entities involved in the process are:

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A Factual Research on Employee Green Behavior in Select Medical Research Centres - Medical Tourist Staffs' Perspective

K S Usman Mohideen, V Selvakumar, H Hari Harasudha, K Maran

Abstract **Employee Green Behavior (EGB) is the positive environmental behavior that the employees exhibit in an organization. It is one of the several methods in which environment could be protected. The purpose of this study was to gain an understanding of variables that impact EGB of employees in the select medical centers. This descriptive paper on EGB gives insight into the significance of employee green behavior which plays a significant role in protecting the environment and analyses the benefits of green behavior for the employees as well as the environment. The study explored various variables such as Sustaining work, Avoiding harm, Conserving resources and Taking initiatives from medical tourist staffs perspective. The sample size selected for the study is 100 respondents. The respondents are selected by simple random sampling method and structured questionnaire is used to collect data. Correlation, Independent sample t-test and Chi square were used to analyse the data. There is a significant difference between Marital Status and Avoiding Harm and Marital status and Conserving Resources whereas there is no significant difference between Marital Status and Sustaining Work and Marital Status and Taking Initiative. Positive relationship exhibited between considered variables.**

Keywords: *Avoiding Harm, Conserving Resources, Employee Green Behavior, Medical Research Centers and Medical Tourist Staffs, Sustaining Work and Taking Initiatives.*

I. INTRODUCTION

Environmental sustainability is a critical dimension of corporate well-being in modern era. It can be enhanced by adopting Employee Green Behavior (EGB) Practices. Dilchar defines EGB "as any measurable individual behavior that contributes to or detracts from environmental sustainability goals in the work context." The author states that EGB is an essential component of organizational environmental sustainability. Gonzalez-Benito opined that there is a crucial need for an enthusiastic approach towards environmental management across the world. Improved adoption of ecological management is called Green Management Strategy. It aims at protecting and measuring environmental aspects. Observational learning allows people to pick up on effective behaviors and adapt to new and ambiguous environments. There is an accumulating pressure to address the long term consequences of environmental degradation and pollution and to improve the responsiveness. These practices are called as green practices and it should be formally and informally incorporated within the organization. Employee Green Behaviour variables considered are Sustaining work, Avoiding Harm, Conserving Resources and Taking Initiatives. Medical tourists are the people who come from other countries for availing treatment. Medical tourist staffs are the staffs who are assigned for taking care of medical tourist. The positive employee green behavior of medical tourist staffs creates favorable impression among medical tourists and helps to bring more and more medical tourists not only for the economy and cost but also for the care for ecology.

II. REVIEW OF LITERATURE

Mandlip (2012), in his research on the practice of green HR he stated that green HR should be incorporated in each and every process of HR starting from recruitment, training, appraisal, employee relation and reward. Green initiatives within HRM is major part of CSR. Green HR involves two essential elements: environmentally-friendly HR practices and the preservation of knowledge capital.

Luther (2015), author states that employees perceive that top management is committed to environmental management, employees are provided with environmental training before their joining or during their job as and when required and companies implement green programs which have an impact on environmental performance.

Piotr (2016), the author examines the direct effects of green organizational climate (GOC) on Organizational Citizenship behavior with the mediating effect of individual factors. It is found that employee values and commitment were positively related to OCB of employees who engage in EGB.

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EMPLOYEE ATTRITION –REASONS AND INTENTION TO ATTRITION WITH REFERENCE TO ALLSEC TECHNOLOGIES LTD.

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ABSTRACT

Employee attrition is the rate at which organizations and/or company's hiring and fire employees to either represent their firm or leave their firms. It also referred to the employee turnover rate. There are many different ways for a company to lose employees, most of which are typically taken into account to ensure that the organization is able to operate efficiently. Attrition refers to the loss of employees due to reasons other than firing and other employer-initiated events. This means that an employer has no direct control over how many personnel are lost to employee attrition. Retirement is one major cause of employee attrition, and since people tend to retire around a specific age this is a factor that can be accounted and planned for. Other causes of employee attrition, such as personnel who quit due to prolonged illness, dissatisfaction with the company, or other reasons, can be more difficult to estimate

Keytermss: Employee, Attrition organization

INTRODUCTION

Employee attrition refers to the loss of employees through a number of circumstances, such as resignation and retirement. The cause of attrition may be either voluntary or involuntary, though employer-initiated events such as layoffs are not typically included in the definition. Each industry has its own standards for acceptable attrition rates, and these rates can also differ between skilled and unskilled positions. Due to the expenses associated with training new employees, any type of employee attrition is typically seen to have a monetary cost. It is also possible for a company to use employee attrition to its benefit in some circumstances, such as relying on it to control labor costs without issuing mass layoffs.

There are many different ways for a company to lose employees, most of which are typically taken into account to ensure that the

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"KSA – Research" of Gap Analysis Towards Management Graduate's Deliverables and Industry Expectations – A Contemporary Perspective of Human Resource Professionals

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Abstract*— The object of this study is to understand the gap between the performance of management graduates and employer's expectations from them. It is measured through KSA (Knowledge, Skills and Attitudes) approach for the services industry. The questionnaire was distributed to 210 Human Resource Professionals from different spectrum identified through convenience sampling method. Data analysed using Chi-square test, U-test and Weighted average rank. The findings indicated that to reduce a gap institute should increase an institute Industry interactions through Industrial visits, Lectures, etc., The Industry expectations are quite high so, the universities and institutes design curriculum based on the Industry expectations and review the knowledge imparting strategies.

Keywords: Attitude, HR Professionals, Industry, Knowledge, Management Institute, Skills

I. INTRODUCTION

In the last decade, the world has dramatically changed. The outlook of corporate has changed drastically with new disruptive technologies. The education industry is not fortunate enough to be updated with recent trends and demands and, the institutions have not met the requirement of the hour. Especially Indian educational institutions are blindly following an outdated educational system. Very few educational institutions which can be stated for its credibility and reliability. Majority of the educational institutions have not adopted the change. Out of millions of postgraduates or professionals, only 21% of them are fit for employability. Statistics further drops deeply to 8% in the case of engineers. This is evidence for a gap between what the industry expects and what is supplied to them.

II. NEED FOR THE STUDY

For the prospect of the country Industry and Academia should go hand in hand, but in reality, they both have a diverse obligation. Industry focus on cost and institute focus on prestige, so always there is a gap between their expectations. The bitter truth is that statistically, only 14% of postgraduate management students have an ability to meet expectations of the industry (according to survey 2009 NSF) there is a need to tackle the problem of the gap between what industry expects and what the graduates possess. So this study is undertaken to find out the expectation of industry from management graduates.

III. OBJECTIVES OF THE STUDY

- To evaluate the level of satisfaction of recruiters.
- To assess the impact of demographic factors of HR professionals on expectation from management graduates.

IV. REVIEW OF LITERATURE

Farhad Analoui and Mirza Hassan Hoseini (2001), from the study, it is inferred that the appropriate mixture of KSA facilitates the fresh graduates to contribute more. In reality, there is an interlude between actuals and expected. They concluded that there should be more emphasis on self-development parameters.

Giannantonio and Hurley (2002), they found that the first and foremost challenge for HR professionals is "management of change." The graduates must focus on covering the interlude, on being ready to face prospective, turbulent and dynamic opportunities.

Suchismita Bhattacharjee and Somik Ghosh (2012), the paper aims at comparing compare industry expectations from fresh graduates with student perceptions towards requisites for their professional success. The study conducted by collecting data from potential employers and graduates who are about to complete the course. The result depicts a weak correlation between expectation and requisites in the dimension of interpersonal skills.

Ana Anwesha (2012), the study focuses on the required competencies of management students. This research found eight critical competencies for management graduates; the skills are in line with previous studies.

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A STUDY ON EMPLOYEE ENGAGEMENT TOWARDS LEADERSHIP IN SELECTED STEEL CASTINGS PLANT OF KERALA STATE

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Abstract

Employee engagement is level of involvement and commitment on behalf of an employee's level of participation in their organization and its values. Engaged an employee is aware of business context, and works with Colleagues for the benefit of the organization to improve performance within the job. This is a positive attitude towards the organization and its values held by employees. This research study is an effort to understand how employee engagement is associated with employee job satisfaction and how an employee loyalty leads to better work force and affect its loyalty. The results shown that majority of employees are compliance with the organization which brings maximum involvement of the employees and in turn retaining is not impossible. This study is conducted at selected steel castings plant of kerala state to understand the extent of employee engagement towards leadership in the organization. The data was collected by interviewing the respondents with the help of interview schedule.
Key words: Employee engagement, Leadership.

Introduction

The degree of complexity in the business world enables companies to adapt constantly to changes and meet various workplace needs. Sometimes, companies struggle and seek to thrive by lowering prices, cutting costs, redesigning business processes, and lowering employee numbers. If there is a limit to cost reduction and downsizing, new human resource management strategies are necessary for corporate sustainability and growth. Instead of focusing on cost reductions, the focus shift in human resource management (HRM) is to build employee

A STUDY ON EMPLOYEE ENGAGEMENT TOWARDS CAREER DEVELOPMENT IN SELECTED STEEL CASTINGS PLANT OF KERALA STATE

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Abstract
Employee engagement is a key business driver for organizational success. Every organization wants to gain competitive advantages over others and employee engagement is the best tool for it. Engagement is creating prospect for human resources to attach with their managers, employees and organization. This study is conducted at selected steel castings plant of kerala state to understand the extent of employee engagement towards career development in the organization. The data was collected by interviewing the respondents with the help of interview schedule.
Key words: Employee engagement, Career Development.

Introduction
The degree of complexity in the business world enables companies to adapt constantly to changes and meet various workplace needs. Sometimes, companies struggle and seek to thrive by lowering prices, cutting costs, redesigning business processes, and lowering employee numbers. If there is a limit to cost reduction and downsizing, new human resource management strategies are necessary for corporate sustainability and growth. Instead of focusing on cost reductions, the focus shift in human resource management (HRM) is to build employee engagement. As a result, several pieces of research have been published calling for a more constructive approach that focuses on the workplace, i.e. engaging workers rather than concentrating on methods for problem-coping.

A STUDY ON EMPLOYEE ENGAGEMENT TOWARDS BENEFITS & SAFETY MEASURE IN SELECTED STEEL CASTINGS PLANT OF KERALA STATE

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Abstract
Employee engagement has become a heavily discussed topic in recent years. However, there is still ambiguity within the academic literature as to how employee engagement can be influenced by management. There has been significant interest in employee engagement, but this has been coupled with a good deal of misunderstanding. This research study is an effort to understand how employee engagement is associated with employee job satisfaction and how on employee loyalty leads to better work force and affect its loyalty. The results shown that majority of employees are compliance with the organization which brings maximum involvement of the employees and in turn retaining is not impossible. This study is conducted at selected steel castings plant of kerala state to understand the extent of employee engagement towards Benefits & Safety Measure in the organization. The data was collected by interviewing the respondents with the help of interview schedule.
Key words: Employee engagement, Benefits & Safety Measure.

Introduction

Due to the varying definitions of employee engagement, the results of different studies become difficult to examine. This is because each study may look at the subject of employee engagement through a different lens, depending on the definition they decide upon. According to Ferguson (2007), with a universal definition of employee engagement lacking, it cannot be accurately defined and thus it cannot be measured and thus managed. According to Robinson et al (2004), while it has been noted that employee engagement has been defined in numerous ways, a number

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Effectiveness of Training and Development Program with Reference to Real Image Media Technologies (P) Ltd.

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***Abstract*: The project aim is analysis the effectiveness of training and development program in an organization. The study starts with the industry profile, Company profile, and also the need for study, review of literature and objectives are set out for the study. Research methodology, Limitations, Scope, Data analysis & Interpretation, Findings and Suggestions of the study follow. This study is based on questionnaire from the employees by using this tools combined it enables to determine in an effective manner. The main area of the project is the analysis part, where the data are analyzed & interpreted, to find out the methods of training and used in size effect an organization are regarding to and then conclusion, limitations & scope for further study were discussed.**

***Keywords*: Employee, Training, Development.**

1. Introduction

Training is a planned process to modify attitude, knowledge or skill behavior through learning experience to achieve performance in an activity or range of activities. The purpose of training in the work station is to develop the abilities of the individual and safety the current and future needs of the organization.

In earlier practice, training programme focused more on preparation for improved performance in particular job. Most of the trainees used to be from operative levels like mechanics, machines operators and other kinds of skilled workers. When the problems of supervision increased, the steps were taken to train supervisors for better supervision. For training to be effective it is necessary to training needs. Many organizations invest considerable resource in training and development but never really examine now training and development can most effectively promote organizational objectives, or now training and development activities should be attended in the light of business. Training effectiveness is a highly desirable step in total training programs so that one can judge the value or worth of the training. It has been given special importance to develop the skills of the employees in turn leads to the productivity and quality of both the employees and organization as well. This study has undergone to identify the effectiveness of the training and development effectively.

Development is all those activities and programme when recognized and controlled have substantial influence in changing the capacity of the individual to perform his assignment better and in going so all likely to increase his potential for future assignments. Thus, management development is a combination of various training programme, though some kind of training is necessary, it is the overall development of the competency of managerial personal in the light of the present requirement as well as the future requirement. Development an activity designed to improve the performance of existing managers and to provide for a planned growth of managers to meet future organizational requirements is management development. Training need identification is a tool utilized to identify what educational courses or activities should be provided to employees to improve their work productivity. Here the focus should be placed on needs as opposed to desires of the employees for a constructive outcome. In order to emphasize the importance of training need identification we can focus on the following areas: -

- To pinpoint if training will make a difference in productivity and the bottom line
- To decide what specific training each employee needs and what will improve his other job performance
- To differentiate between the need for training and organizational issues and bring about a match between individual aspirations and organizational goals

Identification of training needs is important from both the organizational point of view as well as from an individual's point of view. From an organisation's point of view it is important because an organization has objectives that it wants to achieve for the benefit of all stakeholders or members, including owners, employees, customers, suppliers, and neighbours. These objectives can be achieved only through harnessing the abilities of its people, releasing potential and maximizing opportunities for development.

Therefore, people must know what they need to learn in order

3PL and Warehouse Management at Uniworld Logistics India Pvt Ltd

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Abstract— The study has been undertaken with a view to study the operations effectiveness of Uniworld Logistics India Pvt Ltd which is one of the leading third party logistics & warehouse service provider to its clients. This logistics in analyzing the operational efficiency which might help in increasing the performance of the organization. The research is conducted using several customers of Danfoss department of Uniworld Logistics. Thus it can give a better output. This study focuses on analyzing the importance and efficiency of Logistics with special reference to Third party logistics. In the process of analyzing the operations of third party logistics in Uniworld logistics with Danfoss, tools like Vendor rating, Process chart, Exponential smoothing and Work measurement are used. By using vendor rating the efficient and economical transporter can be identified. Process chart helps to understand the overall activities carried out in a particular process so as to reduce the unnecessary activities. Exponential smoothing is used to forecast the work load for every month and finally Work measurement is used to calculate the standard time in packaging the compressors.
Keywords: logistics, operational, efficiency, packaging

I. INTRODUCTION

A. Operations Management

Operations management refers to the administration of business practices to create the highest level of efficiency possible within an organization. Operations management is concerned with converting materials and labour into goods and services as efficiently as possible to maximize the profit of an organization. Operation management is an area of business concerned with the production of goods and services, and involves the responsibility of ensuring that business operations are efficient in terms of using as little resource as needed, and effective in terms of meeting customer requirements. Operation management is widely classified into Service operations, Production management and Supply chain management.

APICS Dictionary defines Supply chain management as the "Design, planning, execution, control, and monitoring of supply chain activities with the objective of creating net value, building a competitive infrastructure, leveraging worldwide logistics, synchronizing supply with demand and measuring performance globally". SCM draws heavily from the areas of operations management, logistics, procurement, information technology and strives for an integrated approach. Among all these areas Logistics plays a major role in fulfilling the ambition of supply chain management.

B. Production Management v/s Operations Management

A high level comparison which distinct production and operations management can be done on following characteristics:

- Output: Production management deals with manufacturing of products like (computer, car, etc.) while operations management cover both products and services.
- Usage of Output: Products like computer/car are utilized over a period of time whereas services need to be consumed immediately.
- Classification of work: To produce products like computer/car more of capital equipment and less labour are required while services require more labour and lesser capital equipment.
- Customer Contact: There is no participation of customer during production whereas for services a constant contact with customer is required.

C. Scope of Operations management

The scope of operations management ranges across the organization. Operations management people are involved in product and service design, process selection, selection and management of technology, design of work systems, location planning, facilities planning, and quality improvement of the organization's products or services. The operations function includes many interrelated activities, such as forecasting, capacity planning, scheduling, managing inventories, assuring quality, motivating employees, deciding where to locate facilities, and more. We can use an airline company to illustrate a service organization's operations system. The system consists of the airplanes, airport facilities, and maintenance facilities, sometimes spread out over a wide territory. Most of the activities performed by management and employees fall into the realm of operations management.

- Forecasting such things as weather and landing conditions, seat demand for flights, and the growth in air travel.
- Capacity planning, essential for the airline to maintain cash flow and make a reasonable profit. (Too few or too many planes, or even the right number of planes but in the wrong places, will hurt profits.)
- Scheduling of planes for flights and for routine maintenance; scheduling of pilots and flight attendants; and scheduling of ground crews, counter staff, and baggage handlers.
- Managing inventories of such items as foods and beverages, first-aid equipment, in-flight magazines, pillows and blankets, and life preservers.
- Assuring quality, essential in flying and maintenance operations, where the emphasis is on safety, and important in dealing with customers at ticket counters,

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Work Life Balance of Women Employees in Manufacturing Sector with Respect to Madras Export Processing Zone (MEPZ)

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Abstract

In the present competitive environment, the future of manufacturing sector is on a fast and an effective growing rate among staff the other sectors. India is the fastest rapidly growing country globally, thanks for the various initiatives which are given by the Government, the privileges given to the various sectors, advancement of technologies and tie ups with other global companies. Due to the foreign investment in India, many manufacturing sectors have show high impact in the Gross rate of the nation. In this context effective employee motivation is very essential for the success of any organization, the classical perspective of the management was essentially rational and analytical and the employee's emotions were not taken into consideration. In motivating process, the human capital and the organizations have to capture their employees hearts and minds, which can be achieved by incorporating the magical term "Work life balance" amongst the working employees. In the present day work scenario, it is merely not the intelligence or the technical competence, would measure one's satisfaction or success at the workplace, it is the "skills of people" on their work life balance that seems to have a vital role. The imbalance of work life will not only influence their members, but also on the productivity of the organization which may lead to a greater mishap among other companies. Globalization and the stress for competitiveness are increasingly making all the companies to focus on their core competencies and outsource the remaining business processes. This provides an opportunity to global companies to relocate such processes to India. India has inherent strengths to support this. In this aspect the study was done to find out the work life balance of women in manufacturing sectors.

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I. INTRODUCTION

Work-life and personal life are the two sides of the same coin, these both are interconnected and interdependent too. The personal life can also be demanding if you have a kid or aging parents, financial problems or even problems in the life's of a close relative, this can lead to unexpected absence from work, creating stress and lack of concentration at work. The work-life balance of working women employees in the recent years has been a very essential aspect since the time changed from men to earn the family living in the current fast-moving world where both men and women hopefully share the responsibilities of earning for the betterment and the satisfaction of their family life. Hence, it is for the betterment of family life in achieving the various aspires and the needs of their family. With the advanced and changing high-tech advancement in education and training institutions, things have been improved and changed to a greater extent. Work-life balance is explained as a balanced equilibrium in

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Study on a Novel natural cellulosic fiber from *Kigelia africana* fruit: Characterization and analysis

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ABSTRACT

In recent days, there is an increasing use of green composites in composite manufacturing, where cellulosic natural fibers have been started using for this purpose. In line with this, a novel cellulose fiber was extracted from the *Kigelia africana* fruit and its physical, chemical and thermal properties, crystallography and surface morphology analysis were studied and reported in this investigative research paper. The physical analysis revealed the mean tensile strength as 50.31 ± 24.71 to 73.12 ± 32.48 MPa, diameter as 0.507 ± 0.162 to 0.629 ± 0.182 mm and density as 1.316 g/cm^3 for the *Kigelia africana* fiber. The proximate chemical analysis estimated the cellulose percentage to be 61.5 % and the existence of different basic components like cellulose, hemicellulose and lignin are confirmed by Fourier transform infrared spectroscopy analysis. Thermogravimetric analysis establishes the thermal stability of the fiber as 212 ^{0}C. The crystallinity index, 57.38 % of the fiber was determined by X-ray diffraction. Surface morphology by field emission scanning electron microscopy reveals the presence of protrusions in fiber which aid in the better adhesion with the matrix in composite manufacturing.

1. Introduction

The fast dwindling petroleum resources and changes in regulations on environmental policies have prompted researchers to focus on biodegradable, non-toxic and renewable resources (Porras, Maranon, & Ashcroft, 2015; Ramesh, Palanikumar, & Reddy, 2017). Synthetic fibers like carbon fiber, glass fiber and aramid fiber tend to cause cancer with prolonged exposure (Lee, Kelly, & Kennedy, 1983; Shannon, Muir, Haines, & Verma, 2005). Exposure to high dosage of glass fiber particles eventually leads to DNA damage by oxidative stress which was evidenced in human alveolar epithelial cell line (A549) exposed to glass fiber (Rapisarda et al., 2015). In addition, depression of lymphocytes in blood and allergies due to increase in eosinophil activators also occur (Indran & Raj, 2015). Many researchers have promoted the use of natural fibers over synthetic fibers due to their many favorable characteristics such as biodegradability, low cost of fiber extraction, less hazardous manufacturing process, low density, non-pollutant nature, low specific strength based on its texture and hydrophilic nature, acoustic and insulating properties (Senthamaraikannan & Kathiresan, 2018). The usage of natural fibers in composite manufacturing has increased recently, particularly in areas like construction, sports equipment, automobiles, aircrafts, naval, household appliances, textile and many more (Ramesh, Palanikumar, & Hemachandra Reddy, 2013). The plant parts like stem, root, fruit, leaf and bark determine the choice of extraction techniques (Mechanical, Chemical or Biological technique) which play a significant role on the quality and performance of the fiber (Belouadah, Ati, & Rokbi, 2015; Palani Kumar & Shadrach Jeya Sekaran, 2014). Researchers have focused on investigating newly discovered natural fibers from *Thespesia populnea* barks (Kathirselvam, Kumaravel, Arthanarieswaran, & Saravanakumar, 2019), *Coccinia grandis* stem (Jebadurai, Raj, Sreenivasan, & Binoj, 2019), Aerial roots of banyan tree (Ganapathy, Sathiskumar, Senthamaraikannan, Saravanakumar, & Khan, 2019), *Tridax procumbens* (Vijay et al., 2019), *Dracaena reflexa* (Manimaran et al., 2019), *Ficus religiosa* root (Moshi et al., 2020) to fulfill the growing industrial needs which are not fully met with existing cellulosic fiber production (Balaji & Nagarajan, 2017; Palanikumar & Subbiah, 2019). This research focuses on investigating the fiber extracted from *Kigelia africana* (Lam.) tree or also known as sausage tree fruit. No research work has been carried out on extraction and characterization of the physical, chemical and thermal properties of *Kigelia africana* fiber thus far, to the best of the author's knowledge. The tree belongs to the Bignoniaceae family. It is commonly found in

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Current Opinion in Chemical Engineering

Technologies in additive manufacturing for fiber reinforced composite materials: a review

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The increase in demand and high product diversification range with reduced unit quantities leads to the innovation of flexible and digitized production. The emerging concept, like Additive Manufacturing (AM), is extensively used to make a prototype with insufficient mechanical strength. For addressing this problem, advancement in the production of Fiber Reinforced Plastic (FRP) composites is introduced in AM. At present, the significant challenges are there in this area in exact fiber placement, sizing of fiber, and their reality into engineering problems through effective control of the process parameters. The growing demand for the prototype and tailored properties of FRP components leads to new inventions intending to acquire short production cycle time and low cost in the manufacturing process. This paper presents the recent advances in the Additive Manufacturing of FRP composite materials using Vat Photopolymerization and Material Extrusion techniques.

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Introduction

Nowadays, engineering industries face many challenges to transfer the new light weight-based products from its original phases of the new product development cycle, which extends from design to start-of-production with distinct specifications [1•,2]. A new innovative concept like Additive Manufacturing (AM) generates new openings for the widespread product development and manufacturing of engineering components [3,4•]. In AM, the products are fabricated through layer-by-layer. In this technique, digital information of part geometries is converted into the final part [5]. It is one of the disruptive technologies because it intensively affects the timeline of the products from being designed and manufactured to customer requirements. Components with sophisticated internal features are produced by AM, which is a challenging task in the traditional manufacturing processes [6,7•]. At present, AM is also used in the field of biomedical, aerospace, and other engineering industries, due to their quick fabrication of prototype without any additional tool cost or special tooling.

AM technology is extensively used to manufacture plastic products, like prototypes and end-user products. Several AM technologies are established concerning feed materials, methods, and applications. In Stereolithography (SLA), a liquid phase photopolymer is used [8•], wherein, the Selective Laser Sintering (SLS) uses powder form of polymers. Filaments of polymers are used in the Fused Deposition Modelling (FDM) process [9], which is the most extensively used technique owing to its less cost, less wastage of feed materials, and ease of use.

In the present industrial scenario, AM technology is utilized to manufacture a part using FRP composite material. The SLA technique is used to make FRP components, but most of the industries use Fused Layer Modelling (FLM) [10]. The mechanical properties of FRP composite materials are increased with the increase in length and continuous form of the fibres [11].

The Fused Deposition Modelling (FDM) is a technique in which continuously heated fibre material is fed through the extruder. These extruding components are generally fixed on CNC x-y gantry, which helps to print intricate 3D profile. In AM Technology, numerous materials have been developed for printing the components [12,13]. For example, the thermoplastic polymer filament is manufactured for Fused Filament Fabrication (FFF), which is similar to FDM [14]. A new class of polymer powder is made for the SLS process, and a unique type of polymer liquids is processed for Poly-jet and SLA processes [15,16].

Current development in AM, especially with high mechanical properties, shows the increase in the manufacture of composite materials when compared to conventional polymeric materials [17]. The fillers and fibre reinforcement increase the strength, whereas; filler materials are

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Evaluation of a Suitable Material for Soft Actuator Through Experiments and FE Simulations

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ABSTRACT

Soft actuators are generally built to achieve extension, contraction, curling, or bending motions needed for robotic or medical applications. It is prepared with a cylindrical tube, braided with fibers that restrict the radial motion and produce the extension, contraction, or bending. The actuation is achieved through the input of compressed air with a different pressure. The stiffness of the materials controls the magnitude of the actuation. In the present study, Silastic-P1 silicone RTV and multi-wall carbon nanotubes (MWCNT) with reinforced silicone are considered for the evaluation. The dumbbell samples are prepared from both materials as per ASTM D412-06a (ISO 37) standard and their corresponding tensile strength, elongation at break, and tensile modulus are measured. The Ogden nonlinear material constants of respective materials are estimated and used further in the finite element analysis of extension, contraction, and bending soft actuators. It is observed that silicone RTV is better in high strain and fast response, whereas, silicone/MWCNT is better at achieving high actuation.

KEYWORDS

Braided Soft Actuator, FEA, Multiwall Carbon Nanotubes, Nonlinear Material Constants, RTV

INTRODUCTION

The traditional robots exist in the industries are made of metallic parts, motors and fluidic actuators. In contrast, the soft robot uses compliant materials that well suit it for handling soft or fragile materials or unshaped objects. The robot that uses soft material for gripper design is ultimately called as soft robot. It could be applied in medical or industrial applications in order to handle fragile objects like organs, fabrics, papers, vegetables, meat, eggs, etc. The soft actuators are pneumatic actuators that made of polymeric materials. They have been prepared as a key component in soft mechanism in order to directly contact or manipulate the object. Many different kinds of soft actuators have been investigated in the past. The McKibben actuator is the earliest developed pneumatic actuator which

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Investigation of the effect of process parameters on surface roughness in drilling of particleboard composite panels using adaptive neuro fuzzy inference system

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ABSTRACT

Particleboard wood composites are immensely used for many general and manufacturing applications. In this study, an analysis of various machining conditions has been performed to obtain good surface quality in the hole making of particleboard by varying the input parameters. The surface roughness (R_a) values obtained are ranging from 6.03 to 28.32 µm, and the minimum value is achieved at a higher speed, lower feed, and smaller point angle combinations. From ANOVA analysis, it has been observed that the model developed is adequate, and the influence on surface roughness is strong for feed (56.68%) followed by a point angle (28.42%) and then speed (9.37%). Mathematical models have been developed using two different criteria such as response surface methodology (RSM), adaptive neuro-fuzzy inference system (ANFIS) and compared for their effectiveness. The coefficient of determination (R^2(*R-Sq*)) values of 98.5% (RSM) and 99.9% (ANFIS) indicates that the models are useful to predict R_a of particleboard. The average checking error percentage (0.20098) has been obtained for the ANFIS model trained using '*gaussmf' membership function* with 100 epochs.

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KEYWORDS
Wood; particleboard; composites; carbide; drill; drilling; roughness; SEM; speed; feed; point angle; Taguchi; modeling; RSM; ANFIS

Introduction

Particleboard (PB) is finding increased applications in wall partitions, roofing, and flooring panels. The particleboard is a composite panel product manufactured by using wood waste particles. PB is a good alternative for wooden boards or plywood if the cost is a necessary criterion than strength. Drilling is extensively needed in all fields of manufacturing, furniture and automotive industries, aerospace, and structural applications. As the material removal in the drilling process is invisible during dynamic machining conditions, the selection of proper drill material, type, and geometry is a prerequisite to obtaining a smooth and functional valued drilled surface. The board density of wood-based composites has finding an essential role in the physical, chemical, and flexural properties and also the fasteners holding capabilities of the composite panels.[1–4] The tool wear is found to be higher in the machining of wood composites than the wood machining process. The tool wear in wood composites is due to abrasion and adhesion because of the presence of resin and other filler materials, also the increase of cutting forces and temperature during machining of composites.[5] The tool life is exceptionally very short in the machining of particleboards. Even the mineral contamination influences the wear on cutting edges of the tool in particleboard machining.[6] Because of high wear, oxidation, and scraped area utilization of tungsten carbide are restricted in the cutting of PB and fiberboard.[7] The influence of feed is affecting the surface quality in drilling of SiCp/Al composite with the PCD tool.[8] The rotary ultrasonic drilling of float glass is carried out and obtained good chips.[9] The delamination developed during drilling of composite laminates is found to be more when using high feed rates and larger drill diameters.[10] Thrust force and torque in drilling are more with more massive diameter drills[2,11] and less with a tremendous chisel edge and helix angle[12] and a small point angle.[13] Delamination and thrust force developed is reduced when small diameter drills are used in the drilling of wood composite panels.[14–16] The use of cellular materials for green energy in the automotive application has been analyzed.[17]

The surface quality using flat drills with a different tip angle and a spade drill at different feed (f) at a constant speed (N) has been analyzed. They reported that an increase in feed increases delamination.[18] Standoff distance has more influence, followed by jet pressure and traverse speed on R_a in $LaPO_4$-Y_2O_3 composite.[19] The effect of speed, fly ash, feed, drill diameter has been analyzed using ANOVA for R_a of CFRP.[20] The impact of the pressure of water, standoff – distance, the flow rate of abrasive, and traverse speed was studied on the R_a of Inconel 718.[21] Tool life of gun drills made of cemented carbide is more than the drills made of steel, and surface roughness is reduced with the use of coated drills.[22] The nose radius, feed and speed are affecting the surface quality and profile errors more in turning of C18000.[23] Nose radius, geometry, etc. have more influence on surface roughness.[24] RSM can be effectively used to model, optimize, and analyze various input parameters of

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Subsurface integrity studies on the drilling of Al/B_4C/mica hybrid metal matrix composites

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ABSTRACT

When components are drilled for use in critical applications, some components might undergo surface defects and subsurface deformations. These defects arise due to microstructural and microhardness variations. This leads to sudden failure of these components. The present investigation focuses on Al/B_4C/Mica hybrid composites and Al/B_4C composites specimen with drilled surface and sub-surfaces. The goal is to identify measures to reduce surface integrity issues like microhardness, drilled surface morphology, and chip morphology on these specific components. Moreover, as a novel research, elemental and microstructural characterization of mica particles is carried out. The evaluation techniques used are Optical, EDX, SEM, and Vickers microhardness test. The stir cast specimens are drilled with process parameters of weight % B_4C and mica at specified cutting speed and feed rate. Tungsten carbide twist drill of 8 mm diameter is used. The investigation reveals that addition of mica particles causes reduction in the microhardness of drilled surfaces. The % of reduction observed is up to 13.7, 5.2 and 3 (in H_v) on 4%, 8%, and 12% B_4C reinforced Al/B_4C/3%mica hybrid composites, respectively, in comparison with that of Al/B_4C composites.

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KEYWORDS
Aluminium; composites; B_4C; mica; surface; subsurface; microhardness; deformation; drilling; characterization; surface; defects

Introduction

In the present decade, Aluminium matrix composites (AMCs) are finding application in various industries, including automobile and aviation. It is due to its advantage over aluminium alloy in terms of improved hardness, strength, modulus, and corrosion resistance. The past works of literature, reports experiments on mechanical and machining properties of AMCs reinforced with Al_2O_3 and SiC composites. In recent years, researchers focus their attention toward the investigation of wear, mechanical, and machining properties of B_4C reinforced AMCs. It is preferred over other reinforcements due to its lower density (than Al alloy), higher hardness, chemical stability, melting point, and wear resistance. According to a study by Hakami et al.[1], composites show improved hardness, strength and mechanical properties, over its base material, when reinforcements are added. While it is advantageous to have an addition of reinforcements in the composite, on the contrary, it poses threat to its machinability and uniformity in tool wear in the drilling process. As a result, surface quality is deteriorated, and there is an increase in surface roughness and subsurface deformation. Subsurface is the volume of material beneath the drilled surface. Subsurface variation in the machined surface is considered as a measure to improve the machinability in the composites.[1]

Farid et al. observed that surface integrity studies include examination on surface roughness, microhardness, microstructure, and metallurgical variation in subsurface. They also experimented drilling of Al-Si alloy with a HSS drill and identified that the drilling parameters influence the surface quality and surface integrity of the hole.[2] Machined surfaces vary from the parent material in terms of metallurgical and physical characteristics. Also, machined surfaces are subject to changes in the mechanical behavior, as a result of plastic deformation. A study by Mathew[3] reveals that metal cutting in drilling operation undergo increased friction due to clogging of the chip in between the twist drill and drill surface. There is no such hurdle in other machining processes like milling, shaping and turning. As a result of chip clogging, defects like chip fusing and material amassing in the drilled surface occur. These defects affect the surface quality of the component.

An experiment by Basavarajappa et al.[4] shows that the holes produced in the drilling process attract stress concentration in the material. Hence, added attention to be paid, to prevent failures in the material.

Griffiths et al.[5] have learned that the mechanical, metallurgical, morphological, and chemical characteristics of the drilled surface are related to the surface integrity, and these properties affect the functioning of the drilled surface. Davim et al.[6] have observed that the study on the surface integrity of the drilled hole is limited, as compared to study on operations like turning, milling, and grinding. To the best of authors' knowledge, no research has yet been carried out on the

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Natural sisal fiber-based woven glass hybrid polymer composites for mono leaf spring: Experimental and numerical analysis

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Abstract

Reducing weight and stabilizing or upgrading the strength is more important. Automotive and related industries are making a progress to replace the conventional steel leaf spring to composites material made from glass fibre, natural fibres, and so on. In this study, woven E-glass fibre, woven sisal and hybridization of woven glass and sisal fibre have been selected as materials. The resin used in this study is epoxy (B-11(3101)) VHV and the hardener is (K-6(5205)). The mono leaf spring is fabricated using hand lay-up process, which tends to be simple and cost effective. The existing dimensions of a conventional Tata Ace leaf spring are selected for modelling and analysis. Stress and deflection is tested experimentally by flexural testing. The hardness of the composites is determined with the help of Rockwell and Brinell hardness testing machine and the values are correlated with each other. Leaf spring is modeled in CREO Parametric 2.0 and introduced in ANSYS 14.5 for the numerical analysis. The results suggest that the composites have reduced weight up to 75% in comparison with the conventional one. With reduced component weight and better performance achieved by composite material, the replacement of conventional material with that of the composite is efficient. The efficiency of a vehicle will improve with a reduced component cost when composite leaf spring is used.

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Bio Caryota Chopped Fibre Reinforced Polyester Composites: Evaluation Vibration Analysis

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Abstract:
In nowadays the natural fiber reinforced composites use in automobiles, aerospace in terror parts and other application becomes raise due to less weight, low cost ,bio degradability and simple to manufacture. The natural fiber reinforced polymer composites necessary to know the vibration behavior to effectively use for the right engineering application. This work introduce the free vibration analysis of chopped caryota fiber reinforced polyester composites(CCFRPC) of cantilever beam. Also present the physical, chemical and mechanical characteristic of fiber was found by experimental methods. The vibration analysis is measured out in the beam having varying fiber lengths such as 10mm,25mm,50mm,100mm and 125mm.The 50mm fiber length of chopped fiber reinforced composites has optimum frequency than the other lenths of chopped fiber reinforced composites. Hence the 50mm length of chopped fiber reinforced composites suggested for automobile and industrial application.

Keywords: *Caryotafiber, Free vibration and Cantilever beam*

I. INTRODUCTION

Recent scenario the research is coming out in large quantum and is varied in nature in terms of its input, deliverable and utilization. It is important the quality of composite material can be used in automotive industry work flow of the improvement of natural fiber reinforced composites. V.S.Sreenivasan et al [1]identify the newely developed sansevieria cylindrical fibers,to determine the characteristic of fibers. Also studied the microstructural,XRD and FTIR analysis of fibers.Sathiskumar et al [2] found the physical , chemical and mechanical properties of sansevieriaehrenbergii fibers and also studied the thermal stability of the fibers using TGA and DTG analysis.Arthanarieswaran et al [3]. They have observed that the addition of glass fiber in the matrix along with the natural fibres increases the strength of composite material, also indicated that the performance of these materials are affected by inefficient fabrication in the composites, voids formed during the fabrication, etc.Nilza et al [4] have analyzed the characterization test such as ash content, carbon content. They have used Jamaican cellulose fibre, and indicated that this fiber can be used in interior work, also these composite may be used in structural application.Ratna Prasad and Mohan Rao [5] have tested the Jower, bomboo and sisal fibre reinforcements, and they have found that these fibres are available in large quantity, cheaper than other fiber used and renewable. Also they have asserted that the fiber arrangements and the volume fraction of fibres in the composites mainly affect the properties of this composite.Sathishkumar et al [6] They have

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Bio Caryota Fiber Reinforced Polyester Composites: A Study on Fracture Toughness Mode I

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Abstract:
The aim of the paper found the fracture toughness of caryota fiber loading with 35wt%, 40wt% and 45wt% having different fiber length of 10mm, 25mm, 50mm, 100mm and 125mm. The fiber have been used in many applications such as automotive, aircraft house hold, sports good etc. The natural fiber posses light weight, low cost and easily available. The stiffness and strength is high for the given weight. In this work caryota fiber reinforced composites were prepared by compression molding machine the chopped fiber varying length varying fiber loading ,the hardener used for the composites 10:1. The SEM analysis has conducted after the fractured specimen to found mode of failure of fractured specimen.

Keywords:*Reinforced polyester, composites, bio caryota fiber.*

I. INTRODUCTION

Recent scenario the natural fiber composites have been used in many applications such as automotive, aircraft house hold things, sports good etc.The natural fiber mainly focus on many filed ,it can be biodegradable,eco-friendly,easily available and low density.The natural fiber has high strength and stiffness for given light weight material.The natural fiber reinforced composites can be easily processing,cost reduction, increase the productivity and low environment pollution.This test can be conducted for valuable information about the toughness of material, which can be used in an engineering critical assessment. The design consideration the fracture toughness is important parameter to manufacturing the components.Santhanamet al.[1]. Banana fiber and glass fiber with varying volume fraction and 10mm chopped fiber and polyster resin used prepare the composites by hand lay- upprocess,they have reported mode one fracture toughness banana fiber reinforced polymer composites is in closeness for the glass fiber reinforced polymer composites and also banana fiber better alternative for future application.ParweenaliKhudhur et al. [2]investigated different orientation of treated and untreated sugar palm fiber reinforced epoxy composite fabricated ,they have found fracture toughness sea water treated better performance than untreated fiber.Silva et al.[3]reported fabricated the treated and untreated polyurethane composites,they have studied treated sisal fiber best performance tan the untreated composites.Venkateshwaranetal.[4] fabricated banana epoxy reinforced composites in three pattern weaving , found the tensile,flexural and impact properties plain weave pattern higher performance than other two pattern,also studied the dynamic characteristic of weaving pattern composites.Vasumathi[5] fabricated the hybrid laminate with natural fiber and with out natural

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Sustainable drilling performance optimization for Nano SiC reinforced Al matrix composites

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ABSTRACT

Metal Matrix Composites (MMC) reinforced by nanoparticles are competent materials, appropriate for functional and structural applications. Green manufacturing is a style for mechanized that minimizes dissipate and contamination. The pollution prevention resolves in manufacturing industries to expand and execute various environmentally-friendly strategies. The primary purpose of green machining is to hold up future generations by attaining process sustainability. In the present investigation, cryogenic machining (CM) of Nanoscaled SiC reinforced Aluminum (Al) matrix composites gives experimental outcomes and also the correlation of its performance with dry machining (DM) and Minimum Quantity Lubrication (MQL). The drilling tests are organized using a vertical machining center (VMC), which is directed by computer numeric control (CNC) employing carbide drills of 10 mm dia with cutting point angles of 90, 118, and 135 degrees. Experiments have planned as per the response surface methodology (RSM) based on Box-Behnken design (BBD). Teaching–Learning-Based Optimization (TLBO) is implemented to optimize the drilling criteria such as the speed of the spindle, feed rate, weight % of nano SiC, and cutting angle. Subsequently, Scanning Electron Microscope (SEM) is utilized to inspect the subsurface of the machined specimen.

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KEYWORDS
Nano SiC particles; drilling; Box Behnken design (BBD): cryogenic; LN_2; MQL; surface roughness; TLBO

Introduction

The Metal Matrix Nano Composites (MMNCs) has been exceptionally attentive over many of the years, primarily because of their broader functional and structural characteristics.[1] MMNC have high mechanical strength with higher resistance to distortion, production from these advanced class of materials with the desired dimensional, and efficient quality and performance seem to be a significant challenge.[2] Machining the ceramic reinforced composites' consequences in the generation of the substantial amount of heat and consumptions of energy. Traditional cooling agents and their practices were not adequately active enough to boost the machining efficiency of MMC .[3] Hence, researchers have been conducting the feasibility of green machining of MMNCs, to decrease the undesirable influence of machining on the environment and to reduce the pollution initiated from the machining processes.[4] The potency of conventional machining processes is highly reliant on the existence of cutting fluids to decrease cutting temperatures and cutting forces. These cutting fluids have a high impact on the environment and health issues. For overcoming these effects, a handful of researches have been explored with environmental conscious machining such as MQL, vegetable oil-based cutting, nano-filled cutting fluids, etc.[5]

Cryogenic Machining (CM) is a modern method of providing cooling in the specimen-tool interface, to decrease the tool wears, to modify the features of the material, consequently which develop machining performance and product excellence. High abrasive materials, super alloys, and novel machine tools have utilized cryogenic machining for safe and environmental-friendly method.[6] The majority of CM studies have been observed in turning. However, there were applications in other machining activities such as grinding, drilling, and turning.[7] Investigators have made an experimental investigation to recognize the effect of liquid nitrogen spray (LN_2) in atomized condition, and LN_2 assisted machining on the wear of tool while performing turning operation on Al-TiCp composites. Experimental results have proved that liquid nitrogen-based CM is the technically feasible substitute for the traditional machining approach.[8] Wang et al.[9] had explored the role of a fully submerged cryogenic machining environment on the machining performance of the component. Liquid nitrogen is used to immerse the cutting area for facilitating natural energy dissipation and work hardening. The grains get refined, thereby improving the mechanical properties of the workpiece.

Vegetable-based bio-oils are professed to be a substitute for synthetic oils as a lubricant. They posses the natural properties like, higher flash point, higher viscosity index, higher lubricating ability, lower evaporative loss and biodegradability.[10] Shankar et al.[11] have studied the performances of four different vegetable-based cutting fluids (VBCF) by performing milling operation on 7075-T6 Al hybrid MMC employing a tool of carbides. They have measured various responses, such as cutting force and vibration signals. They have

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Evaluation of mechanical properties of coconut flower cover fibre-reinforced polymer composites for industrial applications

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Abstract

In recent times, polymer composites have played an epochal role in transforming material science. Some of their properties such as toughness, strength, flexibility and rigidity have helped them supplant conventional materials such as iron, steel, and aluminium on several occasions. Apart from this, they are light in weight and more cost-efficient, which make them a viable alternative. They have found their application in several fields such as automobile industry, aerospace industry, construction and pipeline industry. Owing to its excellent impact strength, tensile and hardness, natural fibres serve as an excellent replacement. Natural fibres are an environmental friendly, biodegradable and are readily available. The present investigation uses a new fibre for manufacturing the eco-friendly composite material. Mechanical properties such as tensile strength, shear stress, flexural rigidity, impact strength and hardness of a coconut fibre-reinforced polymer composite material are evaluated as per respective ASTM standards. A surface analysis of the material using a scanning electron microscope is also performed. The results are categorized and tabulated accordingly. The values obtained appear to fall in line with the experimental data and hence can be espoused as an alternative material especially in the automotive sector.

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Measurement and analysis of thrust force and delamination in drilling glass fiber reinforced polypropylene composites using different drills

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Delamination measurement

ABSTRACT

Fiber Reinforced Plastic (FRP) composites are widely used in various engineering fields and applications. FRPs were initially fabricated using thermoset polymers owing to ease of manufacturing. Of late, FRP based thermoplastics is gaining importance due to various factors such as impact resistance, recycling, and an absence of any chemical reaction. In the present investigation, Glass Fiber Reinforced Plastic (GFRP) laminates of woven glass fabric reinforcements with Polypropylene (PP) thermoplastic matrix is manufactured using film stacking technique. To analyze the performance in machining, drilling studies are carried out using a 6 mm diameter twist drill of High Speed Steel (HSS) drill, tipped carbide and solid carbide drill. The drilling experiments are conducted on a CNC Vertical Machining Centre (VMC) to measure and assess the drilling induced thrust force and the respective exit delamination. The drill spindle speed and feed rate are considered as process parameters. To correlate the process parameters with responses, the regression models are developed. The results indicate that the most significant control parameter for process responses and also it shows the developed regression models are highly reliable. The influence of drill materials on the performance of the responses is also discussed in detail.

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1. Introduction

In recent years, FRP composite materials in engineering fields have applications in automotive, aircraft, chemical industry and many other related sectors due to their superior properties. Drilling process is the frequently used machining process for the fastening of the mechanical components used in structures. The measurement of drilling associated delamination accounts for the rejection during an assembly of composite parts. In machining, the defects associated are: material degradation, peel up delamination, push out delamination, thermal damage, and matrix cracking. These defects can be reduced by the appropriate selection of drilling process variables and associated conditions.

Kumar and Singh [1] have highlighted the various conventional and unconventional machining procedures for composite materials. Ali Faraz and others [2] have measured the cutting loads and damage mechanism with respect to control factors on hole making of FRPs. Rajesh Mathivanan et al. [3] have measured the machining force and its effects on process parameters in machining of carbon and glass fiber laminates and thereby concluded that cutting force gradually increases with an increase of spindle speed. Latha et al. [4] have measured the exit delamination in machining of composite materials and found the most significant control parameters. Palanikumar and others [5] have observed the increase of delamination with rise of induced thrust force. Kumar et al. [6] have measured and analysed the machinability on vinyl ester/fiber glass and concluded that the point angle is the top most factor which produce the better hole quality. Rajamurugan et al. [7] have measured the drilling induced delamination in GFR-polyester composites using a cemented carbide drill of 4, 6, 8, 10, and 12 mm diameter. It is observed that 6 mm diameter drill performs better than the other drill. Srinivasan et al. [8] have measured the thrust force and concluded that the drill travel speed and diameter are highly influences the machining performances. Vinodkumar and Venkateswarlu Ganta [9] have measured circularity error in drilling of GFRP and concluded that chisel edge width and spindle rotation are most significant control factors compared to feed rate and drill tool point angle for circularity error.

Eneyew et al. [10] have measured the delamination and found the effect of control parameter in drilling of CFRP and concluded that the drill tool feed rate is highly affects the machining characteristics. Kumar and Singh [11] have reported that solid

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Optimization and sensitivity analysis of drilling parameters for sustainable machining of carbon fiber–reinforced polypropylene composites

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Abstract

Machining processes face two major challenges: sustainability and cleaner production. However, the effective utilization of tool and methods of lubrication system in sustainable machining have been dealt in depth in earlier investigations. This work aims to optimize sustainable machining parameters in drilling process for recyclable carbon fiber-reinforced polypropylene (CFR-PP) composites. This work is focused on modeling and optimization of drilling parameters for sustainable machining with respect to thrust force and torque for CFR-PP composites. The response surface method based on D-optimal design of experiments is used for modeling and optimization with variables such as drill spindle speed and drill feed rate as numerical factors, which includes different drill material as the categorical factor. The influences of tool materials on the sustainable machining are also discussed in detail. Further, the sensitivity analysis is applied to compare the relative impact of control parameters (spindle speed, feed rate, and drill materials) on thrust force and torque. The scanning electron microscope images are used for analyzing the morphologies of drilled surfaces.

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Original Article

Strength and hardness studies of C44300 tube to AA7075-T651 tube plate threaded and unthreaded dissimilar joints fabricated by friction welding process

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ABSTRACT

Friction welding is an important process used nowadays especially for joining dissimilar metals in engineering and allied industries. The joining of dissimilar materials is different from the conventional materials and needs proper care and technology advancement. The objective of the present research is to investigate the strength of friction welded joints in the absence of backing block. Two conditions of tube and tube plates with thread pair and without thread pairs are considered for the experimentation. The effect of process parameters on the strength has been arrived. Microstructure at the weld joint interface indicates the high level of refinement at the weld zone. Scanning Electron Microscopic (SEM) images are used for investigating the intermolecular bonding of the tube and tube plate. Micro cracks are observed at the interface. Absence of backing block is the cause for the defect. Energy Dispersive Analysis (EDX) and X-Ray Diffraction (XRD) test are used for analyzing the material properties and quantification of crystalline phases.

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1. Introduction

Industrial sectors like power plant equipment manufacturers are involved with welding fabrication process. Different welding techniques like arc welding and gas welding are being employed to join the components. Though these techniques are highly versatile, there are some limitations like restricted suitability, limited process parameters, non-economic and process hazard. These noticeable limitations restrict wider applications. Conventional welding processes are not suitable to join similar/dissimilar non-ferrous metals at higher production levels. To overcome these difficulties, friction welding process is placed in the front line to take a prime role in fabrication. Friction Welding of Tube–Tube Plate using External Tool (FWTPET) is an economical, eco-friendly and a wider input variant method. FWTPET is a superior process to make a joint

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Influence of mica particles as secondary reinforcement on the mechanical and wear properties of Al/B_4C/mica composites

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ABSTRACT

The present investigation is to study the influence of Mica as secondary reinforcement particles on ultimate tensile strength, yield strength and elongation of Al/B_4C/mica hybrid composites of 1 and 3 weight% of mica. It also focuses on microstructure of Al/B_4C and Al/B_4C/mica hybrid composites. The investigation reveals that the mica particles improve the yield strength by 5.85% and ultimate tensile strength by 3.9% on Al/12%B_4C/3%mica hybrid composite consequently reducing its elongation by 11.62%. The scanning electron microscope (SEM) microstructure reveals that the mica particles improve the interface between the matrix and B_4C particles. Also this study focuses on the wear characteristics such as wear rate and coefficient of friction on Al6061/8%B_4C and Al6061/8%B_4C/mica hybrid composites. A dry sliding wear test was carried out at varying process parameters namely load and wt.% of secondary reinforcement. The pin-on-disc wear test was carried out at the load of 9.81 N, 19.62 N and 29.43 N on a specimen prepared by stir cast technique. The size of the reinforcement particle is 40–60 μm and 3–10 μm for B_4C and mica respectively. A study was carried out on the worn surface of the composites using SEM. Moreover, the worn surface profiles of the composites were studied by atomic force microscope (AFM). The investigation reveals that Al6061/8%B_4C/3%mica hybrid composites cause a reduction in wear rate up to 35.4% in comparison with Al6061/B_4C composites at 9.81 N load. The coefficient of friction diminishes up to 5.55% at 19.62 N loads. Mica reinforced worn surface reveals that there is an improvement in the recasting of wear debris and smoothening of the surface.

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Keywords: Metal-Matrix Composite, B_4C Particles, Mica Particles: Mechanical Properties, Sliding Wear, Surface Analysis, SEM, AFM.

Article

1. INTRODUCTION

Particles made of ceramics act as load carrying medium for composite materials. In aluminium matrix composites, if more than one element is added either as particles or as fibres, the composite becomes hybrid. Silicon carbide (SiC), aluminium oxide (Al_2O_3) and boron carbide (B_4C) are some of the familiar reinforcements normally added in the matrix material.[1–3] Among the above reinforcements, B_4C is a superior material, owing to its high stiffness, excellent hardness, high elastic modulus, low density, and better chemical stability. Hence, the B_4C particle is well suited for resisting the wear in

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International Conference on Advances in Materials, Manufacturing and Applied Sciences (ICAMMAS17)

Editorial Preface: A Special issue on Advances in Materials, Manufacturing and Applied Sciences

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Abstract

The contributions to this special issue are from young researchers to experts in their relative areas from across the world and represents a current and up to date research overview on materials and manufacturing. Participants from educational institutions, research organizations and industries presented their research work and latest developments. A Pre-conference workshop was organized on 29th March, 2017 with four sessions in area of Automotive materials and live demonstrations also given to the participants. Totally we received around 220 Articles and Selected 154 Articles for Conference presentation and for publication. The papers were peer reviewed and selected papers are recommended for publication in this special issue.

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***Keywords**:* Automotive materials, Manufacturing, Materials, demonstration

1. About the Conference

International Conference on Advances in Materials, Manufacturing and Applied Sciences (ICAMMAS'17) is organized by the Department of Mechanical Engineering of Sri Sai Ram Institute of Technology in association with the Department of Science & Humanities of Sri Sai Ram Institute of Technology. The conference will be held on 30th and 31st March, 2017 at Sri Sai Ram Institute of Technology, Sai Leo Nagar, West Tambaram, Chennai-600044, Tamil Nadu, India.

2. About the Organisers

2.1 Sri Sai Ram Institute of Technology, Chennai

Sri Sai Ram Institute of Technology, Chennai, established in the year 2008 by MJF.Ln.Leo Muthu, Chairman of Sapthagiri Educational Trust, is non-profitable, and non-minority institution. The College is functioning at Sai Leo Nagar near the well-known fascinating Theme Park, "Kishkinta". The college buildings are architecturally designed as per AICTE . The college buildings are architecturally designed as per AICTE norms. Imbibed with the message of Sri Shirdi Sai Baba, our Chairman ventured into the realm of providing quality technical education to both urban and rural students from Tamil Nadu as well as other states.

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Analysis of Toughness in Multi-walled Carbon Nano Tubes for Resin and Resin Glass Fiber Composites

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Abstract

By adding of carbon nano-particle to composite material improves the Mechanical properties of the material leading to many more applications of these composite mixtures in various fields. Carbon nano-tubes (CNTs) are being used to enhance the performance of polymer composite materials. The two different combinations of composite polymers are manufactured with correct proportions with CNTs for better mechanical efficiency. The following two combinations of CNT's -based composites are resin carbon nano-tube and resin-glass fiber carbon nano-tube. For future studies is to create structured composites in which each composition contributes a unique function to yield a mechanically integrated, multifunctional material.

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Keywords: *Carbon Nano Tube, Polymer Composites, Glass Fibers, Mechanical properties*

Introduction

Polymer nano composites represented a new alternative to conventionally filled polymers. Because of their nanometer sizes, filler dispersion nano composites exhibit markedly improved properties when compared to the pure polymers or their traditional composites.

These include increased modulus and strength, outstanding barrier properties, improved solvent and heat resistance and decreased flammability[1]. In comparison with other commercial polymers, ultrahigh-molecular weight polyethylene (UHMWPE) exhibits increase in mechanical properties, such as high wear resistance, low density and high impact strength. Consequently, UHMWPE is widely used as a wear-resistant material in gears, seals, and bearings.

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Mechanical Characteristics and Terminological Behavior Study on Natural Fiber Nano reinforced Polymer Composite – A Review

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Abstract

In recent years, natural fibers with nano polymer composites are useful in the field of research, Engineering and Science as well it is used as an alternative reinforcement for conventional composite. Natural fibers are not only strong and light weight, but also relatively cheap and have properties like high specific strength, low weight, non-abrasive, eco-friendly and biodegradable. Generally used natural fibers like Jute, Sisal, Banana, Hemp, etc…, The reuse of waste natural fiber reinforcement of polymer is a sustainable option for the environment. The polymeric matrix materials along with suitable and proper filler and better filler/matrix create strong interaction between advanced and new methods or approaches. This enable to develop polymeric composites which shows great prospective applications in the construction of buildings, automotive, aerospace and packaging industries. Nano polymer composite shows considerable applications in different fields because of larger surface area, and greater aspect ratio, with fascinating properties. Being environmentally friendly, applications of nano polymer composites offer new technology and business opportunities for several sectors, such as aerospace, automotive, electronics, and biotechnology industries. Hybrid nano-polymer composites exploit the synergy between natural fibers in a nano-reinforced polymer-based composites. This leads to improve the properties along with the environmental appeal. The mechanical properties of a natural fiber reinforced nano polymer composite depend on parameters like fiber strength, fiber length, chemical treatment and orientation in addition to fiber-matrix interfacial bond strength. This review article aims at the clarification of the research and development in the improvement of mechanical properties of natural fiber reinforced polymer composites along with end applications.

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Keywords: Natural Fibers, nano fillers, natural fibers, polymers, nano composites and hybrid composites

1. Introduction

Natural fibers with Nano reinforced composites have been proven as an alternative to synthetic fiber in transportation such as wind turbine blades, prosthetics, smart memory, ship structures, bridge construction, automobiles, railway coaches and aerospace. Other applications include military, building, packaging, consumer products and construction industries for ceiling paneling, partition boards. Vogelesang and Vlot [1] have reported that the natural fiber nano reinforced composite is widely increased in both industrial and domestic applications and also fundamental research. They are renewable, cheap, completely or partially recyclable, biodegradable and non hazardous material.

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Some Studies on Waste Animal Tallow Biodiesel Produced by Modified Transesterification Method Using Heterogeneous Catalyst

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Abstract

This research work deals with production of biodiesel from tallow waste through the transesterification process by miniature reactor with heterogeneous catalyst. The production of biodiesel and biomass are solid waste removing process from odor environment. Now a days the biodiesel extraction from the various seeds and animal wastes are in progress to balance the fossil fuels demands. The heterogeneous catalyst are diluted sodium hydroxide (NaOH) and potassium hydroxide (KOH) with Methanol (CH3OH) as an alcohol used in transesterification reaction. In biodiesel production experimental and optimized process parameters are rated temperature at 600C, reaction time 90 mins and agitation speed 400 rpm. The functionality process parameters are 6.5:1 molar ratio, 2.5 wt% catalyst concentration. Finally the Tallow biodiesel has been yielded 62% with (NaOH) catalyst and 10% higher than potassium hydroxide (KOH) (grade-1) and also physicochemical properties are studied and compared as per the ASTM standards.

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Keywords: CH3OH, Tallow fats, Molar ratio, Transesterification, NaOH, KOH.

1. Introduction

Biodiesel is a clean and green, renewable energy source and is an alternative for fossil fuel. Many researchers have attempted to produce biodiesel because of its high advantages such as emissions characteristics, renewable and low cost comparing with the commercial fossil fuels. The micro emulsion, pyrolysis and transesterification are the common methods to produce the biodiesel [1-2] from fatty oils, new vegetable species and animal fats [3–13].

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Pitting corrosion studies on Ti6Al4V alloy weldments in marine environment

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Titanium and its alloys are widely used owing to their high strength-to-weight ratio, good tensile strength, and resistance to corrosion. The Ti6Al4V alloy is called the workhorse among the titanium alloys owing to its wide application. Even though the Ti6Al4V alloy is immune to corrosion, improper welding conditions lead to contamination, making the weldments prone to stress corrosion cracking (SCC). These weldments are susceptible to SCC if they show sensitivity to pitting. This study examines the effect of welding conditions on the pitting corrosion behavior of 3 mm thick plates of Ti6Al4V alloy. The Ti6Al4V weldments were fabricated using fusion welding methods, namely, the gas tungsten arc welding (GTAW) and laser beam welding (LBW) techniques. The pitting corrosion studies were carried out by a potentiodynamic polarization technique, using non-deaerated 3.5% NaCl solution of pH 7, to create a marine corrosion environment. The pitting corrosion studies yielded good results as there was corrosion resistance in weldments fabricated under controlled conditions.

[**Keywords:** Ti6Al4V; Pitting corrosion; Marine; Stress cracking corrosion; Weldment]

Introduction

Titanium is widely used in a variety of applications, such as aerospace, marine, offshore, surgical implants, racer cars, armaments, and chemical processing equipment. The Ti6Al4V titanium alloy designated as ASTM B265 Grade5 is the most commonly used among the 39 grades of titanium alloys[1,4]. Ti6Al4V is considered the military grade of titanium. Titanium has good corrosion resistance due to the spontaneous formation of a passive oxide film of TiO_2 at room temperature. The oxide film is very stable, continuous, and highly adherent. The oxide film may comprise a mixture of titanium oxides, such as TiO_2, Ti_2O_3, and TiO[5]. Pitting corrosion is localized corrosion resulting in the appearance of holes on the metal surface. Even though pitting causes minimal loss of metal, pitting leads to perforation, causing loss of functionality and reliability of the equipment and components. Therefore pitting corrosion has been studied in this investigation[6].

Inspite of its good weldability, Ti6Al4V is prone to contamination by the atmospheric gases, leading to hydrogen embrittlement and poor mechanical properties. Traditionally, the gas tungsten arc welding (GTAW) technique is used to weld Ti6Al4V. Owing to high heat input for a longer duration, GTAW produces a broader heat affected zone (HAZ). In critical applications, the high-energy beam technique of laser beam welding (LBW) is preferred to GTAW since it produces a smaller HAZ[7]. In this investigation, both GTAW and LBW were studied to determine the effect of these processes on the pitting corrosion of Ti6Al4V alloy. The objective of this study is to evaluate the quality of the weld and explore the feasibility of welded titanium components in marine applications.

Materials and Welding Process

The square butt joints were autogenously fabricated from cold-rolled, annealed plates of Ti6Al4V of size 50 mm × 125 mm × 3 mm along the rolling direction. The composition of the base metal was determined using a vacuum optical emission spectrometer (SPECTRO-LAB, Germany) (Table 1).

The GTAW was done manually by a highly skilled welder, using Easy Weld SSR 400/600, 3 phase, 415 V ± 10%, 50 Hz AC equipment. The GTAW was done with a root gap of 1.6 mm, while LBW was done with no root gap, since any gap between the plates allows the laser beam to pass through without any welding taking place. Proper care was taken to prevent contamination, distortions, and embrittlement, by using 99.9% pure argon with top and bottom purging and suitable clamping. The frequency of the GTAW was kept constant at 6 Hz. The laser beam-welding machine used for this experiment was a transverse-flow, carbon dioxide LASER. The LBW was done by conduction method, which is used for low-power heat

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Mechanical Property Evaluation of Hybrid Reinforced Epoxy Composite

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Abstract

Fibre reinforced polymer composites has been used in a variety of applications because of there many advantages such as relatively low cost of production, easy to fabricate, and superior strength. The use of natural fibre as reinforcement in polymer has gained importance in recent years due to the eco-friendly nature. Past studies show that only artificial fibres such as glass, carbon fibre, etc have been used in fibre reinforced plastic. Glass and other synthetic fibre reinforced plastic poses high specific strength. But their fields of application are very limited due to their inherent higher cost of production. In this study the chemical treatment of natural fibres are done with one percentage of NaOH and one percentage of sodium lauryl sulphate (SLS). The composites are developed with bamboo fibre / glass fibre /epoxy resin, caryota fibre / glass fibre/ epoxy resin , bamboo fibre + caryota fibre / glass fibre / epoxy resin, the property evaluated are tensile strength flexural strength, impact strength and water absorption. It was observed that the material treated with 1% of SLS possess high flexural strength and material treat with 1% NaOH possess high tensile strength. NaOH treated Bamboo caryota glass fibre mix offer better impact strength. The surface morphology study of the specimen has done after testing with help of scanning electron microscopy (SEM).

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Keywords: Natural Fibre , Bmbooa Fibre , Caryota Fibre ,Hybrid Composite, SEM

1. Main Text

Now a days green composites mainly focused on research and development,but green composites have medium strength used for medium load application. This paper works hybridization of two natural fibres and one glass fibre.This composites are mainly used for replacement of synthetic fibre composites. The hybridization of fibres and stacking sequence of laminates to increase the strength of composites. Because of their numerous advantages they are widely used in the aerospace industry, commercial mechanical engineering applications, like machine components, automobiles, combustion engines, mechanical components like drive shafts, tanks ,brakes, pressure vessels and flywheels, thermal control and electronic packaging, railway coaches and aircraft structuresThere are a number of investigations have already been carried out on several type of natural fibres such hemp, flax, bamboo, jute, banana and coirRaghavendra et.al.[1] studies the physical and abrasive wear behaviour of glass bamboo composite .He find out that the wear increases with increasing in load and the maximum wear occurs at 15 N subhakar et.al [2] investigate the physical, mechanical, and thermal properties of jute and bamboo fibre reinforced epoxy resin and find out that Bamboo fibre reinforced epoxy had higher tensile strength ; while jute fibre reinforced epoxy composites had higher young's modulus.

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Experimental Investigation and Surface Roughness analysis on Hard Turning of AISI D2 Steel using Polycrystalline Cubic Boron Nitride (PCBN)

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Abstract

The performance of polycrystalline cubic boron nitride (PCBN) was studied to investigate surface roughness analysis at various machining parameters. The PCBN tools were used in tool steel AISI D2 steel with hardness of 64 HRC. Machining test was performed with dry cutting condition at different cutting speed, feed and depth of cut. In order to obtain desired surface quality by machining, proper machining parameter selection is very essential. This can be achieved by higher quality and productivity in metal cutting industry. The aim of the present work is to investigate effect of process parameter on surface finish and material removal rate (MRR) to obtain the optimal setting of the process parameters. It influences the cutting parameters during machining L_{27} experimental will run based on an orthogonal array method. During the experimental process parameters such as speed, feed and depth of cut are used to explore their effect on the surface roughness (R_a) of the work piece. Chip morphology study indicates different types of chips operating under different cutting conditions.

Keywords: Machining parameter; AISI D2 steel; Surface finish; Material removal rate; Chip morphology

1. Introduction

The hard turning is nothing but the process of single point cutting of part pieces that have hardness value over 45HRC. The approach of machining hardened steel depends on degree of hardness and its depth. Hard turning is best accomplished with the cutting inserts such as Cubic boron nitride (CBN), Poly crystalline cubic boron nitride, ceramics and carbide.

Since hard turning is single point cutting, it has significant benefits to produce counters and produce intricate shapes with the inherent motion of the machine tools. For much application CBN tooling will be dominant choice. However PCBN, ceramic and carbide also have roles with this process [1]. PCBN inserts offer benefits to holds better surface finish due to fine microstructure, excellent toughness during interrupted cutting, excellent hardness provides higher edge wear, chips take heat away from the part and tool. It offers many advantages, including that lower equipment cost, shorter setup time, high accuracy, lesser process steps, higher geometry flexibility and without cutting fluid when machining hardened steel.

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ICAMMAS17

Comparison & Multiresponse optimisation of drilling characteristics of bovine bones with varying density

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Abstract

Drilling in human bone is an inevitable joining process during any fracture surgery. Excessive temperatures and durations during drilling process can result in the necrosis (death) of bone, a phenomenon termed osteonecrosis, or the impairment of osteogenic capability. This work aims to check the temperature and thrust force variation in drilling process with bones of varied densities. Bovine bone is used for experimental work as it is closest to human bone. Experiments have been performed under different conditions deploying the Taguchi design of experiments. The operation parameters such as speed, feed, and density of bone and material of drill bit have been considered during drilling operation and the output responses - temperature and the thrust force acting on the bone during drilling were measured. It was found that bone with lesser density dissipated the heat generated quickly and developed lesser thrust when compared to the high-density bone. Grey Relation Analysis (GRA) is used to optimize the thrust force and temperature in drilling of bone.

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Keywords: Bone Drilling; Taguchi technique; Multi-response; Thrust force; Temperature; Grey relation analysis (GRA); Optimization; Density

1. Introduction

Bone fracture is a regular feature of everyday life. Bone fracture treatment involves restoring the fractured bones to its initial position and immobilizing them until the repair, reconstruction occurs [1]. Drilling of bone is one of the most rudimentary operations which is mostly used in bone fracture treatment to make holes for screw insertion to fixate the fractured parts. Previously, authors have studied the process of bone drilling and its effect on fracture healing [1–6], yet the problem of heat affected zone, micro level crack formation and surface finish of the drilled hole remains unsolved. Heat affected zone and the micro cracks results in damage to the bone cells which can result in their death or may extend the process of healing whereas the improper surface finish affects the proper alignment of the screws with the bone surrounding the drill site and can lead to the misalignment of the fixation.

Augustin et al [5] elaborates on the process of drilling of bone and reports that various elements of the cutting tip behave differently as the cutting progresses. The cutting lip of the drill bit creates plastic deformation across its shearing plane.

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Implementation of Effective Fuel Saving Methodology for Turbines using Air Drag in Vehicles

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Abstract

The hike of fuel price is causing an immediate threat to the economic wealth of the world. The fuels will sooner become obsolete and it is imperative to search for new technologies to save and optimize the utilization of the fuel. Innovative approaches that can be readily implemented will prove beneficial in contributing to the sustainable solution. Fuel consumption in the automobiles linearly increase with the increase in the number of fuel utilizing vehicles on road. Hence, decreasing the fuel consumed by each vehicle on road will eventually result in substantial sustaining of fuel availability. This paper focuses on decreasing the consumption of fuel by an automobile at its higher speeds. Turbines which forms the ultimate part in producing conventional energy is innovatively used in automobiles to rotate the crankshaft of the engine by utilizing the air drag against the vehicle. Vehicles (two- wheelers or four wheelers) experiences infinite amount of air drag while travelling at higher speeds. This air drag is fed to turbines and is being converted into useful form of energy. Feasibility of this system is experimented and torque along with power output is calculated and proved to be practically possible solution.

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Keywords: *innovative approaches; sustainable solution; turbines; air drag; feasibility*

1. Main text

The costs of petrol and diesel are increasing day by day due to the shortage of supply and oil companies have started to shoot out the prices. India is forecast to become the world's fourth largest oil consumer by 2025 [1].And hence the current situation needs an alternative to reduce the fuel consumption rates. The trend is now moving towards full and efficient use of available conventional energy source such as solar energy, wind energy, hydro-electric energy, etc. In order to contribute to the current trend of saving fuel, new innovative approaches have to be undertaken. The

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Some Studies on Tribological Behavior of Friction Welded Hybrid Metal Matrix NanoComposites

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Abstract

In this research work, a systematic study was made on the tribological behavior of friction welded dual Nanoparticulates reinforced aluminum alloy. The Nano Metal Matrix Composites with the reinforcements of SiCNP as 10% and Al2O3 as 5% was fabricated using the stir casting technique. Then the MMNCs were joined using a solid state friction welding process in order to achieve high strength in the weldment. Then the dry sliding wear behavior of the FW composites were examined using a pin-on-disc wear tester and to compare it with the parent metal. The wear resistance of the friction welded composites were found to be higher than the MMNCs which is attained due to the increase in hardness of the joints. Then the worn surface morphology was carried out using advanced characterization techniques to understand its nature.

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Keywords: Nanoparticles; Stir casting; Friction welding; Worn surface morphology; Characterization.

1. Introduction

The usage of aluminum alloy and its products are increasing day by day due to its availability and high performance which revolutionized the industrial sectors being the most used metal overcoming the cast iron and its products. The important aspect in the aluminum alloys are its high strength to weight ratio which attracts researchers to indulge in aluminum rather than focusing on others but with the increasing demand in the market, the slight improvement is needed in achieving good combination of strength, stiffness, toughness and density [1-3]. To overcome these shortcomings and to meet the ever increasing demand of modern day technology, composites are most promising materials of recent interest. It has many features and has been attaining the rapid growth in many sectors especially in automotive and aerospace sectors due to its light weight and high strength [4].

The production of such composites are very challenging since during pouring, air envelopes may form between particles, which can alter the interface properties between particles and the melt, retarding the wettability between them. The stir casting technique proved to be a promising technique for fabricating the composites because homogeneity in particulate distribution would be achieved due to the continuous stirring action occurred during the process [5-6]. The MMNCs are widely adopted and are used in each and every sectors but they are not utilized completely because the joining of composites are very difficult which alters the grain structures and leads to uneven settlement between the matrix and the reinforcement because of high heat generated during the joining process [7].

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ICAMMAS17

Developing an Empirical Relationship to Predict Maximum Strength on Friction Stir Welded (Mg+ CNT) Nanocomposites.

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Abstract

Now-a-days, most of the investigating research works are focused on developing the material that can substitute the metal that are excellent building materials because of their high toughness, high strength, high melting temperature and chemical reactivity and for this reason, metal is preferred for constructional applications. So far, in this research work a magnesium based new Nanocomposite (MgAZ91D+CNT) were produced by the emerging stir casting method. And also the produced Nanocomposite has been welded by the Friction Stir Welding (FSW) process in order to understand its strength of the joints. Finally, the empirical relationship was developed to predict the maximum strength of the FSW joints of produced Nanocomposite using Design of Expert.

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Keywords: Mg AZ91D grade Magnesium alloy; Carbon Nano Tubes; TIG Welding; Microstructure.

1. Introduction

The need for lightweight, high strength materials has been recognized since the invention of the airplane. As the strength and stiffness of a material increases, the dimensions, and consequently, the mass, of the material required for a certain load bearing application is reduced. This leads to several advantages in the case of aircraft and automobiles such as increase in payload and improvement of the fuel efficiency. With global oil resources on a decline, increase in the fuel efficiency of engines has become highly desirable. The inadequacy of metals and alloys in providing both strength and stiffness to a structure has led to the development of metal matrix composites (MMCs), whereupon the strength and ductility is provided by the metal matrix and the strength and/or stiffness is provided by the reinforcement that is either a ceramic or high stiffness metal based particulate or fiber.

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ICAMMAS17

A novel approach for Joining Armor Grade AA7075 Metal Matrix Nano Composites using Various Welding Processes

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Abstract

In this research work, the dual reinforcement of SiC (10%) and Al2O3 (5%) Nanoparticulates were added with the AA7075 aluminum alloy for fabricating the Hybrid Metal Matrix NanoComposite (HMMNC) rods with the help of advanced stir casting technique. The produced composite rods were joined using fusion and solid state welding processes with an aim to understand the suitable welding process that contributes to better performance on the joints with reduced defects. Finally, the integrity of the joints were evaluated using advanced characterization techniques.

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Keywords: AA7075 – T651 aluminum alloy; Metal Matrix Nano Composites; Fusion welding; Solid state welding; Characterization.

1. Introduction

The composites are offering excellent contribution in defense, automotive and aeronautical industries which offers enhancement in properties due to addition of reinforcing ceramics in which the Nano composites are exceptional due to their better bonding between the matrix and reinforcement which forms uniform and compact grain boundaries [1-2]. Stir casting was found to be the most promising and emerging route for fabricating metal matrix composites because the mechanical stirrer action would ensure the hard ceramics to be uniformly distributed throughout the surface upon adding. Also, the composites fabricated through stir casting technique are possessing unique qualities which is the reason for its superior properties compared to other casting processes [3-5]. Though the composites are extensively used in every sectors, yet it has not been fully utilized in the field of joining which is a major concern.

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Sensitivity Analysis of Friction Stir Welded Aluminum Based High Strength Metal Matrix Composite Joints

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Abstract

The metal matrix composite materials are a class of materials which are finding applications in automobile, aeronautical and defense sectors. Friction Stir Welding (FSW) is an emerging solid state welding process which is capable to weld a wide variety of metals. In this research work, an attempt was made to identify the sensitivity of tensile strength for the dominating parameters such as Rotation speed (N), Transverse speed (V) and Downward force (F) respectively during the welding process. Also the nature of the joint efficiency was evaluated using OM, SEM at different zones of the weldment.

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Keywords: AA6061 Aluminum alloy; MMC; Friction Stir Welding; Sensitivity.

1. Introduction

Friction Stir Welding (FSW) became a widely researched topic around the globe since its invention by The Welding Institute, UK during 1991 [1-2]. FSW is categorized under solid state metal joining processes. It has the benefit of producing less defective joints which were otherwise not possible by conventional fusion welding techniques. Extensive research activities on FSW around the globe resulted in this technique to become able to join wide verities of metals, alloys and composite materials. The capability of FSW to join aluminium alloys and also composite materials containing aluminium alloys is a major milestone in the history of FSW [3]. Aluminium alloys and its composites are used for many industrial and scientific applications such as automobile wheels, space vehicles, aero structures and building materials [4].

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ICAMMAS17

Enhancing the Fatigue Properties of Friction Welded AISI 1020 Grade Steel Joints using Post Weld Heat Treatment Process in Optimized Condition

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Abstract

Fatigue life is the most important criteria in each and every areas subjected to loading. The prediction of fatigue life is essential in the field of engineering sciences and it only defines the quality and life time of the materials subjected to loading. Therefore, the ultimate aim of this research work article is to predict the fatigue life of friction welded AISI 1020 grade low carbon steel joints before and after Post Weld Heat Treatment (PWHT) process for which the welding parameters have been optimized by Response Surface Methodology (RSM) as per ANOVA design matrix in order to obtain the maximum strength in the joints. The different size of the grains encountered due to the variation of temperature, pressure and solidification at various zones during the process before and after the post weld heat treatment in As-welded and post welded conditions were analyzed using an optical microscope. The microstructural features and the fracture surfaces of friction welded AISI 1020 grade steel joint using optimized parameters with parent metal microstructure are compared and analyzed.

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Keywords: AISI 1020 grade steel; Friction welding; Post weld heat treatment; Fatigue.

1. Introduction

Carbon steels are alloys of iron and carbon, with carbon as the major strengthening agent. They are used in mass production products such as automobiles and appliances but they also play a major role in machine design for base plates, housings, chutes, structural members and countless machine components. But in fusion welding process there had been lots of defects like porosity, incomplete fusion, undercut and cracking occurs. Also cracking is the most serious defect and in steel it is almost invariably caused by hydrogen.

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ICAMMAS17

Assay of Machining attributes in Drilling of Natural Hybrid Fiber Reinforced Polymer Composite

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Abstract

In the accelerated competitive manufacturing world, the vital objectives of the manufacturer are to generate high quality products at least cost and in fewer time. The utilization of composite materials is mounting at a fast rate, because these materials have many constituents and each has its own unique characteristics like environment friendliness and light weight, with high precise properties. The above requirements are inculcated by incorporating the natural fibers namely kenaf, sisal and aloe vera fibers as reinforcing material in the polymer resin matrix in hybrid manner. The drilling of composite materials is intricate when compared to metals, because the tool has to go by the matrix and reinforcement alternately, which have dissimilar properties. The aspiration of this work is to highlight the drilling characteristics of four different types of fiber plates namely polyvinyl chloride reinforced hybrid composite, polyvinyl chloride reinforced hybrid with boron carbide compound, vinyl ester reinforced hybrid composite and vinyl ester reinforced hybrid with boron carbide composite by varying the cutting speed and feed rate.The drilling process is carried out on a radial drilling machine using HSS drill.The fabricated composites are subjected to drilling in order to identify the extent of delamination. The delamination in drilling is higher for the poly vinyl chloride polymer when compared to vinyl ester polymer, showing that vinyl ester is better suited as resin for the hybrid (kenaf, sisal, aloe vera) fibers. The study of thrust force, torque, and temperature developed during drilling reveals that HSS is better suited to drill vinyl ester reinforced with hybrid fiber at lower speed.

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Keywords: Hybrid composites, Thrust force, Torque, Delamination

1. Introduction:

The material that has more than one constituent within it to combine different physical or chemical properties of those individual components is known to be a composite material. Their properties like high strength to weight ratio in comparision with conventional metals make it preferable to be used parts where weight reduction is required.This makes them to be used in in the aerospace, defence and automotive industries, due to their higher specific strength, stiffness and fatigue characteristics.

The employment of natural fiber in reinforced composites is in rapid growth, owing to their intrinsic properties of light weight, easy availability, and environment friendliness.Because of low density, less cost, non-abrasiveness and high modulus, Natural fibers are implemented in many application compared to synthetic fibers. Composite components are joined by mechanical fasteners; and accurate, precise high quality holes need to be drilled to ensure proper and durable assemblies. The drilling in composite materials may cause de lamination, fiber-pull out, edge chipping, uncut fibers, and others. It causes poor assemblage and tolerance, reduces the structural

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Comparative analysis of cashew and canola oil biodiesel with homogeneous catalyst by transesterification method

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Abstract

This research work deals with cashew and canola non-edible oil biodiesel with an aim to identify the maximum yield and physiochemical properties at minimum cost by newly formulated segment process of transesterification method. The diluted sodium hydroxide (NaOH) were used as a catalyst because of its enhancing nature on yielding the biodiesel from oil. The predominating factor such as catalyst, molar ratio, temperature, agitation speed and reaction time are consider as a process parameter to yield the maximum biodiesel with optimum physiochemical properties. The canola oil has been yielded 85% of biodiesel and also it is 30% higher than the cashew oil biodiesel. The optimized parameter obtained to yield the canola oil biodiesel which is transesterification temperature at 700C, time at 120 mins and agitation speed up to 550 rpm. © 2016 Elsevier Ltd. All rights reserved.
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Keywords: Cashew nut oil and canola oil Bio-diesel, methanol, NaOH, molar ratio.

1. Introduction

Biodiesel is the alternate fuel, its try to replace the fossil fuels like diesel, petrol. The need of biodiesel is to reduce the usage of fossil fuels, because this fossil fuels emits toxic gases such as carbon monoxide (CO), Nitres oxide (NOX), sulfur dioxide (SO2) and Carbon dioxide (CO2) which will create the pollution and affect the human cycle environment.

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Empirical Modeling of Roughness Parameters in Drilling Composites- A Response Surface Approach

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Abstract

Particle composite panels are alternative to traditional wood because of their superior advantages in furniture industry. The present study describes the development of mathematical models to predict the surface roughness in drilling particleboard composite using forstner carbide drill bits. Plain Particleboard panel of IS 3087 grade was selected as work material to conduct experiment. Experiments were planned as per Taguchi L_{12} orthogonal array. Experiments were conducted under different drilling input parameters of spindle speed, feed rate and drill diameter. A mathematical model on surface roughness has been developed in terms of input parameters. Residual plots were constructed to analyze the variation between the experimental values and predicted values. Analysis of Variance (ANOVA) was employed to find the effect of various drilling parameters on surface roughness. It showed a high coefficient of determination (R^2) value, which ensures perfect fit of the second order regression model with experimental data.

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Keywords: Analysis of variance (ANOVA); contour plots; drilling; Forstner drills; particleboard; Regression equation; Surface Roughness.

1. INTRODUCTION

The demand and need for wood composites from waste wood products has been increasing as timber resources in natural forests decline. Out of the many wood composites in use, particle board has found typical applications as flooring, wall and ceiling panels, office cabinets, furniture, counter tops and desk tops [1].

The particle panel is a product manufactured by pressurizing the particles of wood or other lignocellulose material with an adhesive. This has been widely used around the world for furniture manufacturing, house construction, including flooring [2]. More recently the need for the particleboard has continued to increase for house construction and furniture industries [3].

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ICAMMAS17

Investigation of Glass Fiber influence on Mechanical characteristics and resistance to Water absorption of Natural fiber reinforced polyester composites

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Abstract

Composites have a greater influence in recent development of materials with high strength to weight ratio. In the present scenario an effort is on to identify the different and specific properties which are to be possessed by the same material to attain the possibility of using it in various applications. The composite materials play a major role in achieving that requirement. Most of the natural fiber composite materials possess good mechanical properties but it is now becoming necessary that it should possess other properties as well like resistance to water absorption, fire proof, etc,. Here in this investigation an attempt has been made to study mechanical properties and the resistance to water absorption in Kenaf, Aloe-vera and Sisal Fibers reinforced by addition of Glass fiber.

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Keywords: Natural fiber reinforced composites, Polymer matrix, Mechanical properties

1.Introduction

A composite material is the combination of two or more materials that results in better properties than those of the individual components used alone. The constituents of a composite are commonly referred to as reinforcement and a matrix. The major advantages of composite materials are their high strength and stiffness, combined with low density allowing for a weight reduction in finished part. The strength and stiffness is contributed to a large extent by the reinforcing phase. [1-7]

Glass fiber, also called fiberglass, is made from extremely fine fiber of glass. Fiberglass is very light in weight, extremely strong robust material. Its bulk modulus and weight properties are also very favorable when compared to metals, and it can be easily formed using molding processes. [8-11]

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ICAMMAS17

Assessment and Analysis of Roundness Error in Drilling GFRP-Armour Steel Sandwich Composites

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Abstract

The use of composite metal stacks has been increasing and in this work, armour steel, sandwiched between two GFRP panels, is drilled with Tungsten Nitride coated drills and the roundness error in the top panel and the bottom panel are measured with the help of CMM. The effects of the input parameters on the roundness error are analyzed separately for the top and bottom panels. The values of roundness error are very less for the bottom GFRP panel and this is because of less vibration experienced by the drill due to the guided action of the middle metal panel.

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Key Words Drill Diameter;Spindle Speed; Delamination;Armour Steel;Design of Experiments

1. Inroduction

Composites have been finding new avenues of application in aerospace and automobile industries mainly due to their superior properties like good specific strength, low cost, light weight etc. Armour steel, finds an extensive application in defense industries especially in the manufacture of battle tanks, armoured vehicles and in the construction of underground shelters. In this present work armour, steel is sandwiched between two GFRP laminates. Normally these materials are joined by drilling of holes and fixing with screws. Drilling of composite material poses a serious problem and drilling it with armour steel necessitates special cutting conditions and parameters that will satisfy the requirements of drilling of both the dissimilar materials. Many researchers have done lengthy work in drilling composites [1,2] but very few have done work on drilling metal-composites stacks [3,4].

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ICAMMAS 17

Study on Drilling of Woven Sisal and Aloevera Natural Fibre Polymer Composite

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Abstract

Natural fibre reinforced polymer composites are the materials formed by a matrix and a reinforcement of natural fibre. Natural fibre reinforced polymer composites are light in weight, economical, low density, high specific strength, modulus relative no abrasiveness, ease of fibre surface modifications wide availability and are available in variety of forms. They have low densities, comparable material properties, and high moulding flexibility and are environmental friendly. By modifying either the resin system or the natural fibre, natural fibre composites can be designed for different applications ranging from products of commodity to aerospace applications. In this work composite laminate was prepared with natural fibre such as sisal and aloevera with epoxy resin using hand layup technique. The present investigation is an attempt to study the factors that influence the delamination of drilled sisal and aloevera natural fibre reinforced composites using (ϕ 6mm, ϕ 8mm, ϕ 10mm) carbide tip drill bit. Surface roughness test and delamination is carried out on drilled natural fibre composites.

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Keywords: Sisal, aloevera, drilling, delamination and surface roughness.

1. Introduction

Fibre reinforced composites are being used widely today, owing their use to superior mechanical properties like high strength to weight ratio, high stiffness to weight ratio and design flexibility. Increased use of composites has meant there is demand for joining of some of the parts together. Adhesive bonding is the method used most often for joining most composites. On the other hand, mechanical joints can be assembled and disassembled as many times as wanted. Numerous methods have been used, but conventional drilling still remains the un-avoidable process for making holes in composite laminates.

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ICAMMAS17

Role of Calcium Carbonate($CaCO_3$) in improving wear resistance of Polypropylene(PP) components used in automobiles

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Abstract:

Compounds of Polypropylene (PP) will continue to play as an important materials for automotive applications because of its good mechanical properties including mold ability combined with excellent appearance, colorability ,environmental suitability and high performance at low cost. PP compounds are used in automotive interior parts, instrumental panels, door panels, pillars, Loading platform for light pick-up trucks, battery boxes, indoor carpets. These parts easily porn to wear because of its frequent usage. In this work calcium carbonate($CaCO_3$) has been blended with PP in different proportions using twin screw extruder machine and tested it in Pin-on-Disc machine for varying load, speed and sliding distance to study its wear characteristics. The wear phenomenon has been investigated and discussed based on wear loss of the material and microstructure of worn surfaces.

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Keywords: Polypropylene (PP); Calcium Carbonate ($CaCO_3$) ;Twin screw extruder; Pin-on-Disc; Wear loss; microstructure.

1.Introduction

Automobile industry requires materials having high fluidity and thin-wall molding is demand nowadays to reduce the weight of the vehicle . In response to that demand, the use of polymeric materials is constantly increasing and this trend is expected to continue because of its low density,greater freedom in design,lower production costs compared to ferrous materials and most importantly increased possibility of compounding with additives . Such enhancements can be done in PP. Because of these enhancements, the engineering plastics which finds its usage in the automobile currently be replaced by PP compounds. As a result of this improvement , PP-based material automotive applications has continued to increase.

PP is used in loading platform of a light pick-up truck, for the manufacture of the protection for the bottom floor in the car, for internal lining and coating of electric cables in the vehicle because of its good absorbent of impacts and vibrations.[1]

Fuel tank in automobiles of irregular shape using polymeric materials (PP, PE) can be achieved by extrusion blow molding process and the same is the complicated process made up of ferrous materials.[2]

polybutylene-terephthalate (PBT) and polyester (PES) composites possesses good resistance to temperature (up to 240° C), abrasion resistance and low absorption of humidity; makes perfect choice for manufacture of automobile bumpers, radiator grilles, door-handles.[3]

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ICAMMAS17

Optimizing the Plasma Arc Welding Process Parameters to Attain the Minimum Corrosion Rate in the AISI 409M grade Ferritic Stainless Steel Autogenous Joints

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Abstract

The combination with good mechanical properties and manufacturing characteristics, makes stainless steel an indispensable tool for the designer. Stainless steels become susceptible to localized intergranular corrosion when chromium carbides form at the grain boundaries during high temperature exposure. This depletion of chromium at the grain boundaries is termed 'sensitization', because the alloys become more sensitive to localized attack in corrosive environments. Stainless steels like AISI 409M grade, which are having low chromium content (approximately 11%), are susceptible to localized corrosion. The susceptibility of these alloys are strongly affected by welding processes and filler metals, which change the microstructure of the alloy in order to have optimum mechanical properties. Hence, the present investigation has been carried out to understand the effect of Plasma Arc Welding (PAW) process on pitting corrosion behavior of AISI 409M grade stainless steel joints. Also, the PAW process parameter such as welding speed, voltage, heat input were optimized with help of Response Surface Methodology (RSM) to attain the maximum tensile strength and minimum corrosion rate in the welded joints.

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Keywords: PAW; AISI 409M SS; Pitting Corrosion; Optimization; Tensile strength.

1. Introduction

The stainless steels are sensitive to small metallurgical variables and their applications put significant demands on the mechanical and corrosion behavior of the weldments. The AISI 409M is one of the typically utilized ferritic stainless steel alloy which has a titanium addition for its usage in automotive exhaust system, quenching racks, tanks for agricultural sprays and cases of transformer.

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ICAMMAS17

Nano Indendation Hardness Testing Of PP-CNT Composites

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Abstract

Hardness is an important mechanical property which determines the applicability of polymer composites. Carbon Nano Tubes (CNT) invented by Iijima by arc-discharge technique. It possess some unique properties like Young's modulus the values varies from 0.42 to 4.15 TPa,tensile strength of 1 TPa, density varies between 1.3 -3 g/cm^3 comparatively lower than commercial carbon fibers. CNTs have thermal stability up to 2800°C in vacuum. CNT present in Polypropylene (PP) has good impact on the hardness properties of the composites. Montmorillonite (MMT), a layered silicate clay, has been the focus of extended research for the preparation of polymer nanocomposites.Nano indentation hardness testing had been used to measure the hardness of the PP-CNT, PP-MMT system.

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Keywords: Polypropylene(PP); Carbon nano tube(CNT);Montmorillonite (MMT); hardness,Nano indendation.

1. Introduction

The discovery of nanotubes paved the path for numerous researches in their co-related composites [1].Carbon nanotubes (CNT) are sheets of grphite hollow cylinders and it is used as the most promising modifiers of the conventional polymers. This causes the material matrix system to increase its multifunctional properties. Carbon nanotube has been well recognized as one of the ultra-strong materials in the World [2]. It can be embedded into any type of light weight and soft materials as reinforcements to form strong and light nanocomposites because of its extremely small size. Dispersibility of the multi-walled carbon nanotubes the key in enhancing the mecanical properties of the composites [3]. Grimmer and Dharan [4] discovered the cyclic delamination crack propagation rates significantly minimized by the little fraction addition of CNTs, with an related increase in both critical and subcritical inter-laminar fracture toughness, because of shift in the fracture behavior of CNTs. Ashok Gandhi et al [5, 6] has proved that inclusion of nano materials increases the wear resistance of the whole system. Wear and hardness are interrelated. To have a wear resistant material then it should posses better hardenability. Its observed that the good functionality of these materials were affected by poor dispensability of CNTs in most of solvents and low stability of

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Delamination Analysis in Drilling of Carbon Fiber Reinforced Polypropylene (CFR-PP) Composite Materials

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Abstract

Carbon Fiber Reinforced Polymeric (CFRP) composite materials are widely used in the fabrication of major structural parts in aerospace engineering application owing to their specific stiffness and high strength to weight ratio. The drilling process is often used machining operation in order to assemble the parts made by Fiber Reinforced Polymeric (FRP) composite materials. In this work the effect of drilling process variables such as spindle speed and drill feed rate on the drilling induced delamination at exit during drilling of Carbon Fiber Reinforced Polypropylene (CFR-PP) thermoplastic composite is studied in detail. For this study, CFR-PP laminates are fabricated using hot compression molding machine with film stacking technique. The fabricated laminates are tested for physical and various mechanical properties as per the relevant ASTM standards. To analyze the machining performances, the drilling experiments are conducted on a CNC Vertical Machining Center (VMC) using three type of twist drill made with high speed steel (HSS), tipped carbide (TC) and solid carbide (SC) of 6mm diameter. The main objective of this work is to analyze the influence of spindle speed and drill feed rate with respect to drilling induced delamination of drilled hole in CFR-PP composite materials. The empirical relation between machining variables and process responses are developed to predict the process outcome. The observations indicted that the developed regression model is highly suitable to predict the process responses during drilling of CFR-PP composite material. The developed mathematical model may be helpful to reduce the delamination damage which is the most significant undesirable failure during the drilling of CFR-PP material. The influence of machining parameters and their interactions are examined. The significance role of tool materials on the machining characteristic is also discussed in detail.

Keywords: Film stacking; compression moulding; thermoplastics; polypropylene; carbon fiber; delamination;

1. Introduction

The applications of FRP composites are finding in various fields of engineering like automotive, aerospace, machine elements, chemical industry and many other areas. Machining of FRP composite material differs with conventional machining due to their non-homogeneous and anisotropic property. Drilling is the most commonly used machining process for assembly of the components used in main structure. The induced force along the direction of drill axis during the drilling process is called thrust force. The thrust force induced delamination is the

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Effect of Carbon Nano Tubes (CNT) on Hardness of Polypropylene Matrix

R. Ashok Gandhi, V. Jayaseelan, K. Palani Kumar, B. K. Raghunath and S. Krishnaraj

Abstract Hardness is an important mechanical property which determines the applicability of polymer composites. Carbon Nanotubes (CNTs) invented by Iijima by arc-discharge technique. It possesses some unique properties like Young's modulus, the values varies from 0.42 to 4.15 TPa, tensile strength of 1 TPa, density varies between 1.3 and 3 g/cm^3 which is comparatively lower than commercial carbon fibers. This makes CNT as a potential reinforcement with metal and polymers for enhancement of properties. This work describes about preparation of PP-CNT composites with different ratios. Hardness of the composites were measured using Nanoindentation method and found that hardness of the PP-CNT system increases significantly with the increase of CNT proportion in the PP matrix.

Keywords Hardness · Corbon Nano Tubes (CNT) · Poly Propylene (PP) Nanoindentation

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Influence of Primary B_4C Particles and Secondary Mica Particles on the Wear Performance of Al6061/B_4C/Mica Hybrid Composites

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Abstract
The present investigation is carried out on the wear properties of particle-reinforced Al6061/B_4C/Mica hybrid composites in comparison with Al6061/B_4C composites and Al6061 aluminium-based alloy. The dry sliding wear test is used to evaluate the wear rate and coefficient of friction for the specimen. The pin-on-disc wear tester is used at a load of 10 N, 20 N and 30 N. The specimens are prepared by stir cast method. B_4C particles of 70 µm and mica particles of 3–10 µm are used for the experimentation. The worn surfaces of the specimen are studied by using scanning electron microscope. Further, the surface profile is studied by using atomic force microscope images. The analysis shows that, Al6061/B_4C/Mica hybrid composites cause a reduction of wear rate up to 36.23%, a coefficient of friction up to 11.73%, average surface roughness (R_a) up to 46.57% in comparison with Al6061/B_4C composites.

Keywords Metal–matrix composite · B_4C particles · Mica particles · Sliding wear · Wear testing · Surface analysis · AFM

1 Introduction

Aluminium is one of the important matrix materials found suitable in many engineering applications like automotive, aerospace, marine engineering and construction due to its low density, castability and formability. Veeresh Kumar et al. [1] have observed that Al6061 is an excellent series because of its high corrosion resistance and moderate strength.

Wear resistance has a highly inevitable behaviour for components subjected to friction. Hence, many authors have investigated wear and friction behaviour on Aluminium Matrix Composites (AMC) reinforced with Al_2O_3, SiC, B_4C, CNT, TiB_2, Fly ash, Sb_2S_3 (Stibnite), cemented carbide, granite dust, Mica, kaolinite, rice husk ash and Gr, TiO_2, etc. [1–10]. Among these, Al_2O_3, SiC and B_4C are predominant abrasive-reinforced composites. Recently, many researchers have found that Boron Carbide (B_4C) possesses many appreciable characteristics like high hardness (next to diamond and boron nitride), high elastic modulus, low density and better chemical stability. Alizadeh et al. [2] have indicated that, addition of B_4C particles in the composite increases its resistance to wear and the presence of CNT causes delamination in the composite. Yuan et al. [3] have reported that, wear and mechanical properties are improved in Al/AlB_2 composites in comparison with the base metal. Elango et al. [10] have exposed that, Boron Carbide (B_4C) is suitable to be applied to materials subjected to wear and neutron absorption. Dou et al. [11] have observed that, the increase of the load and wear time increases the wear loss on Al/B_4C composites at varying load, sliding time, slide speed and heat treatment parameters. Lashgari et al. [12] have conducted experiments on Al/B_4C composites with a varying load of 20 N, 40 N and 60 N and they have observed that, increase of the load increases the wear. A marginal benefit is recorded for the addition of strontium in the composites.

Recently, many researchers have shown an interest in exploring incremental tribological benefits in reinforcing with the secondary materials. Kaushik and Rao [13] found that hybrid metal matrix composite (HMMC) yields better wear characteristics on reinforcing softer and harder abrasives on the soft matrix material. Graphite is one of the leading secondary reinforcements used in the composites.

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Article Detail

Design and Fabrication of Intelligent Gas Stove for Indian Women Safety

Author: G.SHANMUGASUNDAR , R.YOKESH, S.YUVARANJITH, R.BARATH, S.BALASUBRAMANIAN

Abstract: The Primary aim of the stove is to minimize the ill effects and accidents in every kitchen. This project is economical to produce & assemble, which may be readily available. This Fabrication system can be used in school and college canteens, homes, and hospitals. Our work consists of MQ2 gas Sensor, Arduino board, DC gear motor along with gas stove. Gas monitoring sensor detects the leakage of the percentage of the gas and properly sends signal / Feed back to the attached high accuracy Arduino / electronics board. The Arduino board is programmed to actuate the DC motor which runs the gas knob off so we have to monitor that leakage of the gas is to be prevented and gas accidents are reduced. It also adds ease to cooking zone which helps to reduce concentration on cooking zone. Features to avoid milk spilling, cooker whistle counting and timer are added to enhance the ease of cooking. It makes every activity related to stove with more ease and highly safe. These modes are activated with the help of temperature sensor and limit-switches. This paper deals about the Design and Fabrication of Intelligent Gas Stove for Indian women safety.

Keyword: Gas Leak, Whistle Count, Milk Spilling, Timer, Arduino.

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DESIGN, FABRICATION AND ANALYSIS OF PERSONAL VACUUM ASSISTED CLIMBER

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Abstract—There are various instances where a human as to climb the walls of a high-rise building. Some of them are inspection of high pipes and wall, fire rescue operations, painting and repairs. Unlike the traditional method of using grappling hooks used for wall climbing, this device uses the principle of vacuum to scale the walls. The major motive of this project is to make the manufacturing and usage of this device simple. The suction is produced using the vacuum motor setup and a release valve mechanism is used to help the climber take successive steps. The suction force produced by suction pads is designed by considering both the external conditions and the loads of working equipment. In this research work we have performed a basic experiment on the vacuum suction force of suction pads attached to a vertical wall under various load conditions

Keywords—suction pad, vacuum pump

1. INTRODUCTION

It has been a dream for man to scale heights. In order to make this dream come true, mankind as invented equipment such as Rope, Carabiners, Quick draws, Harnesses, Ascenders, Sling etc.., But still this equipment may not be handy for day to day usage in domestic and industrial purposes. These could only be used if there is a strong support at the elevated destination and also needs immense training to master the usage of this equipment. This makes the activity of climbing walls a problem to those who lack the effective training.Vacuum assisted wall climber will assist climbing vertical surfaces against gravity. It is equipment which uses its vacuum pumps to produce a grip against the wall surface. The assembly is enclosed in a backpack, which helps us to climb heights over the flat surface. So we came up with the idea of vacuum assisted wall climber, which consist of two suction pads and household vacuum pump. To have an air tight seal we used rubber material so that lip of the suction pad creates a friction against the wall surface. The larger the suction pad more weight it can hold. This could also be used as a lifting device to carry the things which are heavy with ease. But the object which we are lifting needs to have flat surface and it should be within the suction limit. If the air inside the cup is removed thus creating a perfect vacuum seal inside the cup whose pressure is very much lesser than atmospheric pressure. The method of using concept of vacuum to climb the walls is technique that has been developed in recent years. It is mainly designed to meet the stated requirements.

2. APPLICATIONS

A. Military Applications

Military applications could include fighting environments where climbing over large obstructions was necessary. Stealthy operations might also be used for Covert Operations.

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ARCHIVES

Design and Fabrication of Solar Powered Multi-Purpose Agricultural Vehicle with IOT Control

G. Shanmugasundar, G. Fenneth Moses, S. Jayachandran, V.D. Rathnavel Subramanian and R. Rajagopalan

Abstract

Agriculture allows to satisfy the primary needs of human and its civilization by giving shelter, food, recreation, clothing and in pharmaceutical industry. Therefore, the most significant organization in the world is agriculture. It is an efficient occupation in which the freebies of nature viz - land, air, rainwater, light, temperature, etc. are co-joint into a single group quintessential for human beings. Animals which is also an important productive unit next to agriculture feast on these primary units and yield products like milk, eggs, silk, wool and meat. The aim of this project is to develop a machine to carry out the agricultural procedures with the least human effort.

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ICAMMAS17

Friction factor, Load and Displacement Studies of AA6063 in forward Extrusion process with Equal Channel Angular Pressing (ECAP) Preprocess

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Abstract

Friction between the die and work piece plays a major role in metal forming process. The Effect of Friction factor, Load and Displacement were studied and analyzed in forward extrusion of AA6063. The Effect of grain size on friction factor during forward extrusion process were also studied and compared. Friction factor values vary much in high area reduction when compared with minimum area reduction . In this work AA6063 Specimens were extruded for a reduction ratio of 4:2. Specimens are also processed through Equal Channel Angular pressing (ECAP) process before extrusion and results are compared without ECAP Processing. Specimens are heated in a muffle furnace with 350°C. Friction factor between the die and work piece was calculated. Extruded specimen, microstructure was also compared with and without ECAP preprocessing.

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Keywords: Load; Friction factor; ECAP; Displacement; ANSYS.

1. Introduction

Extrusion is the process by which a block of material is reduced in cross section by forcing it to flow through a die orifice under pressure. In general extrusion is used to produce cylindrical bars or hollow tubes, but shapes of irregular cross section may be produced from the more readily extrudable metals like aluminum, lead, tin etc., because of the large forces involved, most metals are extruded under hot conditions where the deformation resistance of the metal is low. However cold extrusion is possible for many metals and has become an important commercial process.

Aluminum Alloys AA6xxx series are commonly used for automobile and engineering applications. Some examples of products include Frames, rails, mullions, heat sink (electronic devices). Moreover aluminum alloys are used for aerospace and aircraft applications because of its light weight. It is necessary to study the friction factor and deformation characteristics for determining the extrusion force and also to reduce the power required for the machine tool. Reduction of friction factor leads to the following advantages in extrusion process.

- Reduction of tool and die wear at the tool and die interface.
-Reduction of extrusion force.

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Effects of Fly Ash, Calcium Carbonate Fillers on Mechanical, Moisture Absorption Properties in Poly Vinyl Chloride Resin

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Abstract

In recent years the demand and applications of synthetic resin (PVC) has got increased manifold. This study is aimed at the enhancing the properties of PVC by adding fillers like fly ash and calcium carbonate with it. There after the synthesized composite has been tested for moisture absorption property, compression property, hardness and hygrothermal ageing. The moisture content test is conducted as per ASTM D570 standard, where the specimen under study has been heat treated and cooled in desiccators. Then the weight of the specimen is measured and thereby calculating the moisture absorption characteristic of the material. The test setup for compression a follows the ASTM D790 standards in which the load with standing property is conferred by means of UTM (Universal Testing Machine). Hardenability of specimen is evaluated (as per ASTM D2240 standards) by shore D hardness test in durometer scales . The hygrothermal test procedure is similar to that of moisture content test where the ability of the specimen to transfer heat is measured . The results from the test indicate that the PVC resin with 33.05 percent fly ash is the most suitable for practical applications.

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Keywords: Fly Ash ; ASTM Standard ; PVC resin ; Calcium Carbonate

1. Introduction

Ferry L[1] studied the hygrothermal ageing of glass fibre reinforced polyethylene terephtalene(PET) composites and found that due to interfacial debonding that induces osmotic pressure in area , there is water uptake for long ageing times. The study also showed chemical degradation step of composites occurs immediately and it follows random chain mechanism. Daniel Saida [2] conducted a study on the influence of hygrothermal ageing on damage mechanisms of flax fibre reinforced epoxy composite and found that hygrothermal ageing influenced mechanical properties and damage behavior .The tensile strength and young's modulus decreased with water absorption. Results showed that the hygrothermal ageing mainly damaged the matrix. Robert L[3] investigated on the water immersion effect on swelling and compression properties of PVC foam and balsa wood which are core materials in sandwich structures for weight critical applications. The three core materials were subjected to water immersion test in both tap water as well as sea water and their resistance to change in property were determined .The result showed that Eco-core is a good PVC foam in resisting swelling, water absorption and changes in compression. Sireerat Charuchinda [4] prepared a PVC film filled with microcrystalline cellulose from cotton fabric waste and studied their biodegradability and mechanical property. The results from tests like XRD , TC shows that the MCC has a fibrous structure with average particle size of 40 μm that is blend with PVC in amount of 5-30 parts per hundreds of resin and rolled tensile

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Review of Friction Stir Processing of Aluminium Alloys

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Abstract

An advancement to the principles of friction stir welding is the friction stir processing, a technique for modifying the surface, which involves the modification of the local microstructure by refining the microstructure and through localized plastic deformation of the specimen material. The tool that is involved in the process consists of a rotating tool which has a shoulder and pin inserted into the single piece of material. The area which needs to be examined with this process is traversed by this tool in a desired direction. When the shoulder of the tool and the workpiece comes into contact with each other, with the tool traversing at a particular travelling speed and an optimal rotational speed, friction is developed between the two surfaces. This in turn increases the heat of the material to a limit where the material undergoes plastic deformation. Hence when such an exposure occurs localized plastic deformation and the thermal property increase leads to a drastic change in the local microstructure. Various properties have been examined when the material undergoes friction stir processing which involves the production of nanograin, the surface hardness increases followed by the the fatigue strength, wear property and tensile strength of the material. This review paper focuses mainly on the change in microstructure and mechanical properties of Aluminium alloys and their composites and the effect of FSP process through the study of the current trend and the development of FSP to various parameters.

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Keywords: Friction stir processing; Microstructure; Parameters; Aluminium alloys;

1. Introduction

Friction stir processing was created to enhance the change in surface according to the welding technique in strong state. A rotating tool which is non- consumable is used. The material is softened by the rubbing action which produces adequate heat and also gives sufficient load. Due to the stirring activity, the tool pin is inserted into the material therefore delivering refined microstructure. This paper primarily focuses on the various process parameters and the tools used in the friction stir processing or friction stir welding of the various grades of aluminium alloys.

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ELEMENTAL ANALYSIS OF BRAKE PAD USING NATURAL FIBRES

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Abstract:
Brakes have been advanced in the recent years through many developments. Previously all these years brake pads were made of asbestos fiber which are very harmful in many ways. When vehicles apply brake, the asbestos gets wear down and releases asbestos dust into the ambience and surrounding. This asbestos dust also gets entrapped inside the brake housing which is also a vital problem to be considered. Hence when there is requirement to open the brake housing, the asbestos dust is released into the air and the workers may accidentally inhale it without consciousness. It also posed a risk during manufacturing in industries as the workers are exposed to asbestos risk when they knowingly or unknowingly come into contact with asbestos. Thus a new development is introduced with certain natural fibers such as jute, KENAF and aloe vera along with additives such as epoxy resin and hardener. All these fibers are used to make brake pad material which posses certain properties and the results of various analysis done have been obtained to make a good use for manufacturing brake pads in the upcoming future.

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Keywords: Brake Pad, Asbestos Fiber, Asbestos Dust, Asbestos Risk, Natural Fibers, Additives

1. Introduction

1.1 Composite Materials

A composite is formed by the combination of two materials. One material is in the form of particles, fibers or sheets called the reinforcing phase and the other is called the matrix phase onto which the reinforced phase is embedded. All these combinations of the matrix phase and the reinforced phase can be made into a polymer, metal or ceramic. Generally fibers are the main load carrying members in the composites which have a particle phase which is more stiffer and stronger in relation to continuous matrix phase.

The fiber composites are classified to their types accordingly as natural fibers and synthetic fibers. The natural fibers are considered for many applications due to their features of bio- degradability, cheap, renewable and partial recyclability. The natural fibers are used as an alternative to glass, manmade fibers due to their well defined properties and are more environmental friendly where they are used for many application such as building industries, transportation etc. They are usually obtained from various mineral sources, animals as well as plants. They have been used in the automotive industry to make the parts more environment sustainable.

Synthetic fibers are another form of fibers which is an improved result of the plant fibers as well as the animal fibers. These came into existence when fibers were manufactured using polymers and plastics formed into threads through various methods. The matrix material is classified for the composites into three types namely metal matrix composites(MMC), Cermaic matric composites (CMC) and Polymer matrix composites(PMC). The metal matrix composites have properties and featuressuch as higher strength, stiffness and fracture toughness. They can also be able to withstand high temperatures better than polymer composites in a corrosive environment. These are primarily used in aircraft application and the most commonly used type of matrix metals are aluminium, magnesium and titanium. Ceramic fibers on the other hand offer greater toughness and stiffness than metal matrix composites. The polymer matrix composites have lesser strength and stiffness in comparison to ceramics and metals. But these can be overridden through reinforcing the polymers with other metals. The manufacturing of polymer matrix composites are simpler when compared to others.

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Optimization of Process Parameters in TIG Welded Joints of AISI 304L -Austenitic Stainless Steel using Taguchi's Experimental Design Method

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Abstract

Tungsten inert gas (TIG) welding is a fusion welding process having side range of applications in current industry. The TIG welding process parameters plays a very significant role in estimating the quality of a welded joint. So appropriate selection of welding process parameters is very much necessary to attain weld joint with increased tensile strength value. In the work, experiments were carried out on Austenitic Stainless Steel (AISI 304L) using Tungsten inert gas (TIG) welding process. In this study Butt welded joints have been made by using three levels of current, gas flow rate and nozzle to work piece distance. The quality of the weld has been estimated in terms of ultimate tensile strength of the welded specimens L9 orthogonal array of Taguchi`s experimental design method was utilized for optimization of welding current, gas flow rate and nozzle to work piece distance on welded joints.

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Keywords: AISI 304L Austenitic stainless steel , Tungsten inert gas (TIG) welding , Taguchi`s experimental design method , ANOVA.

1. Introduction

1.1. AISI 304L Austenitic stainless steel

Austenitic stainless steels have been invented in the beginning of the 20th century. They were been developed in Germany, who now characterize more than 3/4 of the total production of Stainless Steel in world. These austenitic stainless steels are widely used in almost all types of important in industries. Stainless Steel are used in typical areas such as piping systems, heat exchangers, tanks and process/Pressure vessels for the food, chemical, pharmaceutical, pulp and paper and other process industries [1,2] . The most important characteristics of AISI 304L corrosion resistance, good weldability, formability, toughness, ductility and strength, which is an austenitic Chromium-Nickel stainless steel. The process of TIG welding (also called the gas tungsten arc welding (GTAW)) being used in austenitic stainless steel is one of the most important area where an extensive number of researches have been carried out, in order to control the process of welding in a precise manner to improve the acceptance and quality of weld in an efficient way.

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ICAMMAS17

Mechanical behaviour of Natural and Glass fiber reinforced with polymer matrix composite

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Abstract

Natural fibres are renewable resources in many developing countries of the world. The interests in natural fibre-reinforced composite materials are rapidly growing due to their industrial applications and fundamental research. Such composites are termed as green Composites, by using sisal. Banana, bamboo, coir, pineapple leaf fibre, etc. Research revealed that the behavior of hybrid composites appears to be simply a weighted sum of the individual components in which there is a more favorable balance between the advantages and disadvantages inherent in any composite material. It is generally accepted that the properties of hybrid composite are controlled by factors such as nature of matrix; nature, length and relative composition of the reinforcements; fibre–matrix interface; and hybrid design.

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Keywords - Composite Materials, Natural Fiber, Glass fibre, Orientations, Mechanical properties, ASTM Standards.

1.Introduction

Generally fibre reinforced plastics are classified as glass fibre reinforced and carbon fibre reinforced plastics. When it comes to matrix, the composite materials are further classified as, Long fibre thermoplastics and Short fibre thermoplastics. There are certain high performance polymers known as shape memory polymer composites. These types of composites exhibit different characteristics based on temperature fluctuations. At low temperatures they show good stiffness and hardness where as when treated at higher temperatures they show a special property of regaining its shape before treatment. The different types of natural fibers are shown in fig 1. Vijaya Ramnath et al fabricated Abaca-Jute fiber reinforced Epoxy composites and evaluated its mechanical properties. The fabricated was done by hand layup technique. The percentage elongation of the individual fiber during the tensile testing is low when compared to that of the hybrid fiber indicating that the hybrid composite withstands more strain before failure in tensile testing than the individual fiber composite. The Abaca fiber and Jute fiber having the superior mechanical properties and it can be used in the future to get excellent results[1].

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Experimental evaluation on Mechanical Properties of Natural Fiber Polymer Composites with Human Hair

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Abstract

In this experimental work, Bamboo fiber, Sisal fiber, Hemp fiber and is used as the reinforcing material in the composite and Epoxy resin with a suitable hardener is used as the matrix. The composite material is fabricated by hand layup technique. The fabricated composite material is tested for its mechanical properties such as Tensile Strength, Flexural Strength and Impact Strength. The composite specimens for the above mentioned test are prepared as per the ASTM standards.

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Keywords - Composite Materials, Natural Fiber, hair (men and women), Mechanical properties, ASTM Standards.

1. Introduction

The composite materials are used in widespread application in defense industries, automobile industries, aerospace and marine. Since composite materials are having low fabrication cost, good mechanical properties been researches on the use of natural fibres as reinforcements in composites for various applications over the conventional materials. The majority of the research has been directed towards sisal, jute, hemp and pineapple. Composite is a sum of matrix and reinforcement matrix, is a thermo set property and includes vinyl ester, epoxy and polyester. It is an eco-friendly fibers as bio-degradability, economical, easy processing makes natural fiber a popular reinforcing material among the researchers as well as engineers working in the field of composites.

COMPOSITE = MATRIX + REINFORCEMENT

Those advanced composites are used in many industries like aerospace, automotive, energy, important sports/recreation and just about everywhere low weight and other special properties are needed. They are rapidly becoming a way of achieving high structural performance at a low cost. They are found in most of the cars we drive, in all busses and trains, boats, and recreation and sports equipment such as skis or canoes we use on the weekends. As the natural fiber is easily available and having greater mechanical properties more research work are going on it. The polymer fiber composite has better properties than the other composite material it is widely used in large number of applications.

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Review of Friction Stir Processing of Magnesium Alloys

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Abstract

The paper is entitled to see the factors affecting the magnesium alloy during friction stir processing(FSP).The factors included in this are affect of tool material, tool rotational speed, tool profiles effect on material during Submerged friction stir processing(SFSP),design of tool. The factors such as tool material, rotational speed and design of tool have been carried out with different materials, different speeds and different design

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Keywords: Friction stir processing; Microstructure; Parameters; Magnesium alloys;

1. Introduction

Friction stir processing is the process of carrying out intense plastic deformation for changing the properties of the material. By other means changing the confined characteristics of the material. It can be performed on various metals and metal matrix composites. FSP is preferred because the fine grain structure can be achieved without changing the thickness of the sheet[1].The FSP process consist of non consumable rotating tool with shoulder and pin in order to provide a plasticised region. Some of the materials on FSP are carried out are Aluminium, Magnesium it's related alloys etc. Magnesium Alloys are preferred in this review. Preference of magnesium is due to their light weight material, they are fancied in auto industries because they minimize fuel consumption and enrich the performance of the automobile. FSP removes welding defects such as cracks, porosity, evaporative loss are eliminated. Solidification problems are eliminated [2].No fillers material is used so problems related to metallurgy are eliminated. Weld quality depends on the shoulder pin design. Geometrical configuration of the tool is major link in process development [3].The plasticised material is obstructed from the weld region by the shoulder. FSP is highly energy saving and promotes green environment [4]. Preparation of fine grain material can be done by combining FSP with rapid cooling. It can be achieved by joining Al 6061 in submerged condition.FSP is a intense plastic thermo mechanical process[5].Grain refinement helps to boost the strength and ductility of magnesium alloys [6].

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Study of Damage Mechanism on OMT Nanoclay Polymer Hybrid Sandwich Laminates

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Abstract

In this paper, the effect of modified (OMt) nanoclay polyester resin on low velocity impact damage area and damage tolerance capability of untreated woven jute and glass fabric hybrid sandwich laminates have been investigated experimentally. The Hybrid Sandwich Laminates are prepared by hand lay-up manufacturing technique (HL) for investigation with a total of 10 layers. For comparison of the composite with hybrid composite, jute fiber reinforced composite laminate is also fabricated. Low velocity impact and Compression After Impact (CAI) tests are carried out on all the fabricated laminates to evaluate damage area and damage tolerance capability respectively. X-ray Diffraction (XRD) results have been obtained from the samples, where the nanoclay has indicated that intergallery spacing of the layered clay increases with matrix. The results of the study show that the damage tolerance capability of the nano polyester hybrid sandwich has been greatly increased and the damage area is decreased at 4% of nanoclay loading.

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Keywords: Nanocomposites**;** sandwich composite**;** Damage tolerance;

1. Introduction

In recent years, there has been a keen interest in hybridization of natural fibers with synthetic fibers as reinforcement in composite materials. These hybrid composite materials provide high specific stiffness, strength and lightweight which make them as an attractive material for secondary load bearing applications [1]. The properties of composites are significantly related to the properties of composite constituents, i.e., fiber, matrix and the interphase between fibre &matrix [2]. The utilization of nanoclay as fillers in polymer composites has attracted considerable attention of researchers due to the improved static, dynamic, thermal, flame retardant and gas barrier properties of the resulting composites. Since natural fibres offer significant cost advantages and benefits associated with processing when compared to the synthetic fibres such as glass, nylon, carbon, etc, during the last few years, a series of work has been done to replace the conventional synthetic fibre with natural fibre composites [3,4]. It has been already proved that, the hybridation of glass fiber with jute fiber in polymer matrix leads to an enhancement in the static properties of resulting jute–glass hybrid composites [5]. Sabeel Ahmed et al [6] have explored the effects of hybridization of glass fiber on low velocity impact behavior and also the damage tolerance capability of woven jute fabric composite.

The results of the study indicate that, the jute laminates have better impact energy along with absorption capacity than the jute–glass hybrid laminates; however their damage tolerance capability is less than jute–glass hybrid laminates. Incorporation of nano particles (clays, carbon nanotubes, etc.) in the matrix system for fiber reinforced composites has been recently studied by several groups [7,8] to improve the static and the dynamic properties.

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Enhancement of Heat Transfer in Double Pipe Heat Exchanger

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Abstract:
The point of this present work is to improve warm execution attributes in a warmth exchanger tube by contemplating: (i) curved tapes in various courses of action; (ii) Cu-nanoparticles with various fixations as the working liquid. The tube embedded the turned tapes indicated prevalent warm execution consider when contrasted with plain tube due with persistent different whirling stream and multi-longitudinal vortices stream along the test tube. The higher number of curved tape embeds prompted an upgrade of warm execution that come about because of expanding contact surface territory, living arrangement time, whirl power and liquid blending with multi-longitudinal vortices stream. Additionally, game plan of contorted tapes in counter current was unrivaled vitality sparing gadgets for the commonsense utilize, especially at low Reynolds number. This was particularly the case for fourfold counter tapes in the cross bearings where warm exchange upgrade with generally low contact misfortune punishment was merited. . Utilizing water with Cu-nanoparticle as a working liquid yielded a higher warm execution than utilizing unadulterated water. It is watched that the most elevated general warmth exchange coefficient is accomplished by Cu nanofluids, which is 1705.686 W/m2K in 3% nanoparticle fixation at 5000 and 4000 Reynolds number for coolant and air individually contrasted with 992.649 W/m2K for the basefluid.

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Keywords: thermal performance, twisted tapes, Cu-nanoparticles, Reynolds number, base fluid.

Introduction

A warmth exchanger is a gadget used to exchange warm between a strong protest and a liquid, or between at least two liquids. The liquids might be isolated by a strong divider to counteract blending or they might be in direct contact. They are generally utilized as a part of space warming, refrigeration, ventilating, control stations, compound plants, petrochemical plants, oil refineries, petroleum gas handling, and sewage treatment.
The exemplary case of a warmth exchanger is found in an interior burning motor in which a circling liquid known as motor coolant moves through radiator loops and wind currents past the curls, which cools the coolant and warms the approaching air. Another illustration is the warmth sink, which is a latent warmth exchanger that exchanges the warmth produced by an electronic or a mechanical gadget to a liquid medium, frequently air or a fluid coolant.

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Mechanical Characterization of Natural Fiber Polymer Composites

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Abstract

In this experimental work, Bamboo fiber, Sisal fiber, Hemp fiber and Sugar tree fiber is used as the reinforcing material in the composite and Epoxy resin with a suitable resin is used as the matrix. The composite material is fabricated by hand layup technique. The fabricated composite material is tested for its mechanical properties such as Tensile Strength, Flexural Strength and Impact Strength. The composite specimens for the above mentioned test are prepared as per the ASTM standards.

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Keywords - Composite Materials, Natural Fiber, Bamboo fiber, Sisal fiber, Hemp fiber, Sugar tree fiber, Mechanical properties, ASTM Standards.

1. Introduction

Composite materials are materials in which two or more different materials are combined together. Composite is defined as the sum of matrix and reinforcement matrix, is a thermo set property and includes vinyl ester, epoxy and polyester. Reinforcement is the fiber like glass, aramid, carbon and graphite. Aerospace industry and Automobile Industry are the major users of composite materials. This is due to the fact that composite materials are light in weight and also possess mechanical properties which are in par with the properties of the conventionally used materials. Many researchers have begun to show interest in the field of natural fiber composite. Features such as bio-degradability, economical, easy processing makes natural fiber a popular reinforcing material among the researchers as well as engineers working in the field of composites.

Though there are several merits in favor of natural fibers, an equal amount of limitation do exist. These limitations should be overcome to explore the full potential of natural fiber composite. At first proper fiber surface treatment should be developed and implemented at industrial scale. Secondly, the use of mats should be investigated and the hybridization of mats with different textile further improved by analyzing the effects of different layup and manufacturing techniques. Finally, the use of advanced textile based on twisted yarn should be developed further by optimizing the yarn manufacturing and realizing 3D architectures which are still missing from the market. In comparison with the mechanical properties of Jute-Epoxy composite and Jute-Polyester composites

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Experimental Analysis of Vapour Absorption Generator integrated with Thermal Energy Storage system

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Abstract:
A vapour absorption Air-conditioning system can run replacing the compressor by a pump, absorber and a generator. The generator can be operated by the low thermal energy like solar, exhaust heat of IC engines etc. But all the period this heat energy will not be available. In this present research the generator part alone considered for experiment. A new model of generator heater is designed and fabricated. The heat transfer capacity and the thermal energy charging and discharging were calculated for analysis. The suitable capacity of generator is integrated with Phase change material is designed to operate a vapour absorption system in the capacity of 3.5 KW. The generator design is modified for Phase change material containment. The average temperature of the heat energy available will be around 60°C to 80°C. In this temperature range suitable Phase change material is selected for thermal energy storage tank. The experiment is conducted on this storage tank for thermal energy charging and discharging by varying the material composition.

Keywords: Generator, Charging and Discharging, Storage tank, Phase Change Materials,etc

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Introduction

Day by day the demand in power consumption, we all are responsible to find the alternate source of power. The one of the major power consumption is refrigeration and air conditioning. In order to reduce the power consumption on refrigeration and air conditioning, one of the best choices is vapour absorption refrigeration system. To run the vapour absorption system the generator maximum input temperature has to be 70° C to 90° C, it depends upon the capacity and stages of generator. The sources of thermal energy available are waste heat recovery systems like IC engine exhaust, low thermal energy like solar system etc. even though the coefficient of performance is low compared to vapour compressor system; the power consumption is very less to all [1].

The only disadvantage is the waste heat thermal energy we are depending is the intermittent type of energy. We cannot achieve it by continuously. To rectify this problem the phase change materials can be added as latent heat thermal energy storage system. If the generator and the latent heat thermal energy storage tank are connected separately means, the design will be too complicated [2]. So a suitable design of generator integrated with latent heat storage system is designed.The experiment will be conducted for the generator setup.

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Structural Optimization of an Five Degrees of Freedom (T-3R-T) Robot Manipultor Using Finite Element Analysis

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Abstract

5-DOF (Five degrees of freedom) palletizing robot is widely used in India, which is playing a more and more important role in all manufacturing and automation industry. The important selection parameter of five degrees of freedom robot arm for welding application includes Reach, strength, stiffness, robot weight, which mainly depends on the structural optimization design of desired robot. So it is of importance to study on the structural optimization design by means of conventional finite element analysis (FEA) using ANSYS. In this paper, the framework of structural optimization design is proposed. Secondly, taking welding robot as research object, its structure is described and the finite element (FE) model of the robot is developed for the finite element analysis. The results show that structural optimization design can reduce the total mass of robot manipulator by using the finite element analysis.

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Keywords: Topology optimization, FEA , Design procedures of robot arm, Static analysis, T-3R-T configuration.

1. Introduction

Industrial robots are the most widely manufactured and utilized type of robots, whose design process if improved would lead to a further development in robotic industries as well as other industries were robots are been used would be benefited. And hence, Efforts are been put to develop a design proving the effectiveness and reliability, for which studies of various field is required. The design of a robot should be in such a way that the robot framework made should be simulated to ensure the performance of the robot with the help of various tools that are been available in the Engineering software, which are been used for dynamic simulation, optimization control, structural analysis [1,2].

The main goal of this work is to investigate the static stability of the robot arm with modified topology design of robot arm from different material usage, with a view to obtain an optimized as well as a better robot design. The time consumption for the process of design can also be optimized by using Meta modelling. In this method the finite element analysis with the tools have proved to be a good work with the optimization of the design process. A holistic framework for design of robots with several degrees of freedom is introduced at the end.

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Playing Games in Computers without Physical Interaction Using Electroencephalography for Differently abled

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Abstract. Mind Controlled gaming for the Differently Abled aims to open up the arena of gaming entertainment to those that has special needs. The project is modelled in such a way that it facilitates playing games without the need for physical interaction with the game itself such as operating a keyboard. The project uses the capability of the human brain to facilitate this kind of physical interaction less gaming. It uses the principle of Electroencephalography, an electrophysiological observing technique to record electrical movement of the brain. We utilize noninvasive situation of electrodes along the scalp. EEG estimates voltage variances coming about because of ionic current inside the neurons of the brain which are then mapped to certain activities that can be performed within the games.

INTRODUCTION

Electroencephalography is a method for recording and deciphering the electrical action of the brain [1]. The nerve cells of the brain create electrical motivations that vary musically in particular examples. In 1929 German researcher Hans Berger published the results of the first study to employ an electroencephalograph, an instrument that measures and records these brain-wave designs. The account created by such an instrument is called an electroencephalogram, generally abridged EEG.

To record the electrical action of the brain, 8 to 16 sets of electrodes are connected to the scalp. Each match of electrodes transmits signals to one of a few account channels of the electroencephalograph. This signals consists of the distinction in the voltage between the match. The cadenced change of this potential contrast is appeared as pinnacles and troughs on a line graph by the account channel.

The EEG of a typical grown-up in a completely cognizant however loosened up state is comprised of normally repeating wavering waves known as alpha waves. At the point when an individual is energized or startled, the alpha waves are supplanted by low-voltage quick unpredictable waves. Amid rest, the brain waves turn out to be amazingly moderate. Such is likewise the situation when an individual is in profound extreme lethargies. Other strange conditions are related with specific EEG designs. For examples, unpredictable moderate waves known as delta waves emerge from the region of a limited territory of brain damage.

Electroencephalography gives a methods for concentrate how the brain functions and of following associations between one a player in the focal sensory system and another [1]. In any case, its viability as an exploration instrument is restricted, in light of the fact that it records just a little example of electrical movement from the outside of the brain. A considerable lot of the more perplexing functions of the brain, for example, those that underlie feelings and thought, can't be connected near EEG patterns. Moreover, the EEG is of no utilization in diagnosing mental sickness. Electroencephalography has demonstrated increasingly helpful as an indicative guide in instances of genuine head injuries, brain tumors, cerebral infections, sleep disorders, epilepsy, and various degenerative diseases of the sensory system.

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Predicting the Severity of Blood Vessel Tissue Damage in Retinal Images Using Support Vector Machine Classifier

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Abstract. In recent years many of the people are suffering from diabetics which may result damaging the human eye sights by damaging the blood vessels of the retinal by form exudates around the optic disc. In this paper, we intend to build retinal exudates from fundus image to predict the severity of diabetics resulting in blood vessels tissue damages. In order to analysis the blood vessels damage and diabetic severity initially we use appropriate image pre-processing techniques to remove any noise from the retinal funds image, to remove the noise in this paper we use wavelet transform and first order Gaussian derivative and matched filter to segment the fundus image by rotating the original image by certain angle. The filtered data is stored in the matched filter bank, then by applying k-NN clustering technique to identify minimum value in each filter bank and marking such minimum value center of k- nearest neighbor value. Further, Support vector machine a supervised learning algorithm is applied to the identified k-nearest neighbor values thereby predicting the severity of blood vessel tissue damage from the fundus image.

INTRODUCTION

With the recent advancement in the technology there are many computer aided diagnosis systems are available to analysis the diabetic retinopathy one such diagnosis system is the Computer-aided diagnosis (CADx) used to analysis the retinal fundus image. Such system is used by ophthalmologists to identify various retinal diseases caused by increase in sugar level in the body such as diabetics. The ophthalmologist can analysis the fundus image by extracting blood vessels, the optic disc, and macula. Fig .1 shows the retinal fundus image showing various diseases such as diabetic retinopathy, glaucoma, micro aneurysms and hypertension. Such disease may cause blind vision if unnoticed.

Generally, non-invasive tool is used by ophthalmologist to analysis the retinal fundus imaging to analysis various diabetic retinopathy diseases as shown in Fig. 1. In order to analysis the diseases proper image pre-processing technique must be applied to the retinal fundus image to extract the curved blood vessels so as to identity the any exudates are projected near the retinal fundus image. Such pre-processing may involve various filtering techniques such as median, mean and Gaussian filters. Further, the extract of blood vessels is analyzed based on the curves of the blood vessels and its histogram values.

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Smart Scrutinizing System to Detect Trespassers and Alarm Ascendancy

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Abstract

Nowadays, where everyone needs to protect their valuables safe and secure, bank is the place that indicates higher security level for common people. So the locker room in the banking industry needs to be monitored continuously. Thus our smart scrutinizing system is specially designed to detect the illicit entrance of the intruders in the locker room of the bank that mostly happens during robberies. The major drawback of present system is that the CCTV cameras in the bank locker room are needed to be continuously monitored by a human being to find the illicit intruder which is a very difficult task. The video that are recorded using the webcam which consumes large amount of storage space and are also used only as the evidence to find the robbers after the robberies, though it cannot prevent thievery. To trounce this problem, we have come up with a new idea of smart scrutinizing system. Our system is mainly builded to ensure safety of the bank locker rooms in an better way by recognizing and monitoring illicit action in the bank locker room. In our system, webcam can continuously capture a frames for references instead of taking videos. It captures the frame and compares it with foreground frames using absolute differential method .As soon as any motion was found, system can instinctively activate the alarm to notify the alert the bank authorities. The system will communicate the image data continuously to the Data Processing Officers (DPO) and it send the alert short message service (SMS) to the user using Firebase Cloud Messaging(FSM) technique. So the user will feel more delighted and secure and be able to respond earlier when illicit entry is detected in locker room of the Banking Sectors. Using this system, user is able to recognize and capture the intruder red-handed.

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Keywords: *Cauchy Distributive Function, Absolute Differential Method, Firebase Cloud Messaging.*

I. INTRODUCTION

In day to day life, bank refers to the place which requires a high level of security and we do banking transactions daily nowadays. For example, to secure jewellery, documents or cash, we use bank locker rooms, which has become an important part in our day to day life. So these banking sectors should provide high level of security. As we know that variety of branches are opened daily and they need high security. So there required a more number of camera surveillance system. At present we would have seen that all the branches are under the control of CCTV cameras, alarm, emergency buttons, etc., In this CCTV cameras are used to observe any unauthorized activity. In general it has to be monitored by the person continuously which is a very difficult task, mainly in nights. The alarm or emergency button needs to be pressed personally, which requires a lot of man power. The main drawback is manual monitoring, storage required is more and high consumption of power. To address all these problems, we arise with an automated smart surveillance system. The main goal of our system is to monitor the intruders mainly in more secured place. The intruders are detected using the method Cauchy Distribution and Absolute Differential Estimation. The incoming video frame is compared with the foreground frame using Absolute Differential Estimation to identify whether any

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A HYBRID INTRUSION DETECTION SYSTEM FOR MOBILE ADHOC NETWORKS USING FBID PROTOCOL

D. RAJALAKSHMI *AND K. MEENA †

Abstract. A Security in a mobile ad hoc networks is more vulnerable and susceptible to the environment, because in this network no centralized environment for monitoring individual nodes activity during communication. The intruders are hacked the networks either locally and globally. Now a day's mobile ad hoc network is an emerging area of research due to its unique characteristics. It's more vulnerable to detect malicious activities, and error prone in nature due to their dynamic topology configuration. Based on their difficulties of intrusion detection system, in this paper proposed a novel approach for mobile ad hoc network is Fuzzy Based Intrusion Detection (FBID) protocol, to identify, analyze and detect a malicious node in different circumstances. This protocol it improves the efficiency of the system and does not degrade the system performance in real time. This FBID system is more efficient and the performance is compared with AODV, Fuzzy Cognitive Mapping with the following performance metrics: Throughput, Packet Delivery Ratio, Packets Dropped, Routing overhead, Propagation delay and shortest path for delivering packets from one node to another node. The System is robust. It produces the crisp output to the benefit of end users. It provides an integrated solution capable of detecting the majority of security attacks occurring in MANETs.

Key words: Security, Intrusion detection, AODV, MANET, Fuzzy, Cognitive Map

AMS subject classifications. 68M15

1. Introduction.

A Mobile adhoc network is a complex wireless network, it consist of collection of mobile nodes, which forms a spontaneous network without the physical infrastructure, it allows individual, group of members and organizational members work together and communicate without the stable infrastructure [1]. Limitation of mobile adhoc networks are bandwidth and energy consumption.

A mobile adhoc network is shown in cf. Fig.1.1. It's an infrastructure less network because the mobile nodes in the network dynamically change the paths with other nodes and transmit the data packets provisionally. In a MANET, nodes within the region or specified boundary means, it communicates with other nodes directly, otherwise it needs to rely on some other nodes to relay the messages from source to destination. The major security goals that need to be addressed in order to maintain a reliable and secure ad-hoc network environment. There are confidentiality, availability, non-repudiation, authentication and integrity. The security attacks in MANET can be roughly classified in two types: 1) Active Attacks and 2) Passive Attacks.

Hosts may misbehave or try to compromise security at all layers of the protocol stack. In Transport layer to provide secure end-to-end communication [2]. For that need to know keys to be used for secure communication, then it anonymity the communication. In Network layer, the misbehaving hosts may create the hazards; in terms of it disrupt the route discovery and maintenance. Due to that hazard, Delay, drop, corrupt and misroute the packets. It degrades the networking performance. In MAC layer, the misbehaving nodes may not cooperate to each other. Because disobey the protocol specifications for selfish gains.

Mobile Ad hoc networks are collections of mobile nodes that may enter and leave the network dynamically. No centralized controller and infrastructure. A major issue in Mobile ad-hoc network is security. This also aims of the work in MANET. To detection of malicious nodes forms a very essential one of the part an approach to security [3]. The main objective of this work is to detect the intrusions through Fuzzy logic that prevents the network from denying the active session or extract the confidential information that is being shared. The

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Comparative Analysis of Mechanical Properties in Aluminium Based Metal Matrix Composite

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Abstract

Composites are focused on introducing a product made up of lightweight material which could replace conventional ferrous and non-ferrous alloys. Aluminium is one of the most commonly used metals for the production of metal matrix composites. Aluminium-based metal matrix composites are sought over other matrix-based composites in the field of aerospace, automotive and marine application due to its valuable mechanical properties. The usage of Aluminium lowers the density, coefficient of thermal expansion, Improves the corrosion and wear resistance as compared to the conventional counterparts. Al-Zr system is used to form a thermally stable strengthening phase in high-temperature aluminium-based casting alloys. These alloys have good strength at elevated temperatures. Zirconium strengthens the alloy by a precipitation hardening mechanism and chromium further enhances the strength of the alloy. Different specimens are fabricated with varying the composition of Zirconium to achieve optimum performance of the alloy for the required application. A comparison of properties between the different alloys is performed by various testing methods and analysing the results with mathematical values of the standard component.

Keywords; *Metal matrix composites, thermal expansion, Al-Zr, precipitation hardening.*

I. INTRODUCTION

A composite is made up of two or more different materials which are unique in physically and as well as chemically. The formed composite will have superior physical and chemical properties when compared to that of the parent component. As a solution to modern material requirements composites are more preferred over traditional monolithic components. There are many ways to form a composite, the individual constituent's materials combine to form a composite. The matrix materials are the base materials, the reinforcement are the materials which lie between the matrix materials. The matrix so formed is termed as Metal Matrix Composites. The metal matrix composites are preferred for performing research and new products are developed throughout the globe which has a diversified area of application. The composite so formed will have high strength, energy absorbing capacity, and good wear resistance compared to reinforced alloys. The recent trends in MMCs is the particle reinforced type of composites The composite where aluminium is used as the matrix material and reinforces with other suitable materials for enhancing the property of aluminium. Aluminium is preferred for its properties like availability, low cost, castability and its property to combine with other materials to form a composite. Aluminium based MMCs which are reinforced with particulate matter have superior properties than

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Detection of flood disaster system based on IoT, big data and convolutional deep neural network

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Abstract

Natural disasters could be defined as a blend of natural risks and vulnerabilities. Each year, natural as well as human-instigated disasters, bring about infrastructural damages, distresses, revenue losses, injuries in addition to huge death roll. Researchers around the globe are trying to find a unique solution to gather, store and analyse Big Data (BD) in order to predict results related to flood based prediction system. This paper has proposed the ideas and methods for the detection of flood disaster based on IoT, BD, and convolutional deep neural network (CDNN) to overcome such difficulties. First, the input data is taken from the flood BD. Next, the repeated data are reduced by using HDFS map-reduce (). After removal of

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Classification of Gene Expression Data with Optimized Feature Selection

T.Ragunthar, S.Selvakumar

Abstract*—There are different types of fatal diseases that could possibly outspread to various parts of the body. It thus becomes obligatory to predict the existence of such anomalies, in order to prune the extent of their spread. Examining the characteristics of genes provides a deep intuition about the disease classification, as they play a vital role in influencing how an organism appears, behaves and survives in an environment. The detection of the abnormal genes could be efficiently modelled using statistical methods and machine learning approaches. Gene expression data derived from a microarray could act as an aid for this statistical computation. Microarray being a recent leap in molecular biology, provides a scope for hybridization of DNA samples that can be interpreted as values based on the gene expression level that the genome possesses. We propose an idea to select a subset of features from the huge number of samples retrieved from the gene expression profiles using Boruta feature selection algorithm. A comparative study with various supervised classification algorithms is made to categorize this subset to a normal and deviant gene. This serves to discover the most appropriate algorithm to classify the gene expression data. Hence assorting the abnormal genes in future could be accelerated with ease.

KEYWORDS- Boruta algorithm, DNA samples, Feature selection, Gene expression data, Kernel, Machine learning, Microarray, Random forest, SVM.

I. INTRODUCTION

A. Gene Expression Data And Microarray Technology

Diseases are caused because of division of cells or uncontrolled growth due to cellular changes. In order to form new cells usually cells receive information to die. On the other hand, the cancer cells would lack the component which would instruct them to stop dividing and instead die. As a result, they can form tumors, impairing the immune system. Genetic factors can contribute to various deadly diseases, as it is a person's genetic code that instructs if a cell has to divide or expire. Every cell in our body consists of same no. of genes as well as similar type of genes.

It is the gene expression of each cell that distinguishes between normal and affected cells. Based on the environment, the gene expression varies. To check the gene expression the two-phenomenon involved are i) Produce microarray ii) Measure transcriptome. There are many technologies such as microarray, illumine bead array, nylon membrane, serial analysis of gene expression (SAGE), high-densities oligonucleotide arrays etc. used to express the level of genes.

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The varying gene expression can be efficiently analyzed using microarray where all the genes of a particular organism are placed in different grooves on a slide. Microarrays are group of DNA spots on a solid surface, like glass or silicon in which hybridization of DNA samples can be made ordered arrangement of samples done using base pairing rules wherein matching familiar and unfamiliar DNA samples is followed, forms the microarray. Each microarray consists of thousands of pores known as probes. The two key terms for microarray synthesis are the blocking agent and the mask. The blocking agent prevents the binding of a nucleotide with some other nucleotide. This blocking agent can be removed using a laser. Masking leaves behind gapes in the microarray spots while the rest of places are masked and never be bind. On observing the colour of each probes in microarray using analyzer, the attributes of gene expression data are determined. Biological interpretation of gene expression data can be made using heatmaps. The heatmap can be combined with clustering techniques for grouping similar genes. Identifying similarly regulated genes can thus become easier.

B. Classification Of Genome Profiles Using Statistical Methods

The gene expression data usually has got very high dimensionality due to which biologists find it difficult to handle them [1]. Hence classification of such microarray data can be cumbersome. Also, there might be noisy data present in the gene expression dataset along with some irrelevant features. Statistical approaches could be an optimal solution to this problem[2]. In recent years, there have many statistical approaches with various level of complexity to analyze genotype data and detect variations in gene. In order to avoid the manual computation difficulties and errors that are likely to occur in such huge datasets it is advisable to automate the statistical computation. Such an approach can be obtained with the help of machine learning. This method would make the system learn through experience and later make the predictions based on the learning.

Machine learning is mainly classified into three algorithms namely supervised, reinforcement and unsupervised learning. Supervised learning is helpful in predicting the target resultant variable based on the input independent variables. Unsupervised learning does not have such target variable instead they form clusters to group similar data together. Past experience is used to predict the future based on trial and error approach in reinforcement learning. Firstly, before handling the gene expression dataset for classification or clustering it is mandatory to reduce the dimensionality. There might be many irrelevant attributes present in the dataset along with noise and disturbances. Thus, pre-processing becomes mandatory.

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An optimization algorithm-based resource allocation for cooperative cognitive radio networks

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Abstract

In cooperative cognitive radio networks (CCRNs), resource allocation can be viewed as a multi-objective optimization issue in terms of channel capacity as well as, among numerous others, the transmitted power, and the QoS limitations. Many researchers have been undertaken to overcome individual problems, not multi-objective problems. In this paper, we investigate multi-objective problems, such as energy consumption, queuing problems, priority levels of traffic classes, fairness, throughput, and user quality requirements. We propose a hybrid optimization algorithm for CCRNs (HCCRN), which enhances the resource allocation. The first contribution of this paper is to propose the load balance enhanced particle swarm optimization algorithm for energy-efficient cluster formation, which overcomes queuing problems. In the second contribution, we consider multiple factors as the input of a multi-factor differential evolution optimization algorithm for prioritizing the traffic levels. The third contribution is that the fair routing path is computed by a modified gravitational search algorithm that enhances resource allocation throughput. For testing purpose, the proposed HCCRN algorithm applied to IEEE 802.11 WLANs. Simulation results show that the users achieve required resources via the proposed HCCRN, thus providing energy efficiency, fairness, throughput, and QoS.

Keywords Multi-objective problems · Hybrid optimization algorithm · Cooperative cognitive radio networks (CCRNs) · Modified particle swarm optimization · Multi-input differential evolution optimization algorithm · Modified gravitational search algorithm

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SPECIAL ISSUE PAPER

WILEY

An efficient scheme for secure feature location using data fusion and data mining in internet of things environment

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Summary

Feature location (FL) is performed to find the relationships between domain concepts and other software artifacts. One major problem in maintaining a software system is to understand how many functional features exist in a system and how these features are implemented. Also, poor security is the prime problem in the FL system. However, the existing recent FL techniques use a textual and dynamic approach, which is not found to be secure, keeping in view the changes in the description of security attacks. To overcome this drawback, this work proposed a novel secure approach for FL utilizing data fusion as well as data mining for the internet of things environment. Firstly, the repeated test cases (TC) are eradicated as of the labeled TC. Next, important attributes are selected using the artificial flora optimization algorithm from the removed labeled TC. Then, association rule mining is performed to ascertain closed attributes. Subsequently, encrypt the closed attributes utilizing Caesar Cipher-Rivest, Shamirs, as well as Adelman algorithm. After that, the score value of the closed attributes counts was found utilizing entropy calculation. Finally, the score value is given as input to the normalized-K-Means (N-[K-Means]) algorithm, where the score value is normalized utilizing min-max normalization and then grouped utilizing K-Means algorithm (KMA). It proffers better results for FL in the source code. The proposed N-(K-Means) performance is found better in comparison to the KMA and latent semantic indexing methods. The proposed system proffered better FL results in comparison to the other prevailing methods.

KEYWORDS

artificial flora optimization, latent semantic indexing, normalized K-means, Caesar Cipher-Rivest; Data mining, association rule mining

1 | INTRODUCTION

In software systems, a feature represents functionality that is defined by requirements. Software maintenance as well as evolution includes giving new features to programs, enhancing existing functionalities, and eradicating bugs that are analogous to eradicate unnecessary functionalities.[1] For instance, location in source code (SC), it is associated with other fields of research, like, fault localization, traceability link recovery between software artifacts, etc. The request for maintenance is commenced by the person (user) with the help of a software interface which has many features associated. All the features in the domain are utilized in line with the knowledge of the user where it is seen as an operational outcome

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A Security Model for Web-Based Fuzzy-Logic Direct Torque Control of Induction Motor Drive

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ABSTRACT

A web-based fuzzy-logic direct torque control of induction motor (IM) simulation program in a distributed client/server architecture and its implementation steps are discussed in this paper. The client program is a web page developed in java software, which accesses remotely simulated IM dynamics program by executing it in the server through the internet. The proposed IM simulation program offers a convenient remotely accessible which can work on any computer platform and simulation environment, implemented in a distributed client/server architecture, for a standalone motor simulation programs. This architecture has two major parts: graphical user interface (GUI) program in the client side and simulation engine in the server side. In the client side, the GUI program is developed in java software typically run in any computer platforms in client, allowing us to access the simulation program in the server using any browser and to send the data's to the server, and to retrieve/exhibit the outputs from the server using different sets of parameters and configurations.

KEYWORDS

Client–server systems; Graphical user interfaces; Rijndael algorithm; Security model; Simulator; Torque control

1. INTRODUCTION

The direct torque control (DTC) method offers a very fast, accurate, reliable speed control and torque responses of an induction motor (IM) drive by calculating the motor's magnetic flux and the torque by using the voltage and current sensors [1]. The DTC method operates in the stationary reference frame and acts directly on the inverter switches to produce the necessary stator voltages. Hysteresis controllers are used to constrain the electrical torque and stator flux magnitude within certain bounds. The presence of ripples is the major problem in a DTC-based motor drive in the motor-developed torque and stator flux. However, there are two key techniques to reduce the torque ripples, one is multilevel inverter and the second is the Space vector modulation. The multilevel inverter will provide more precise control of motor torque and flux though the complexity and cost of the controller increase comparably. Fuzzy logic based DTC of IM is based on the non-linear approach, an attractive choice which can accommodate the parameter variations of the induction machine. In the fuzzy logic controller, an accurate mathematical model of IM is not required as in the case of classical controllers in achieving the desired dynamic response. The simulation engine (MATLAB/SIMULINK) is in the server computer and the graphical user interface is in the client computer which sends a code to run the simulation program and to access the output from the server. The work is towards the development of a security model for sending the code between the client/server machine securely using Symmetric-key algorithms, vulnerable to plaintext attack and to avoid insecure communication between the client/server and to return the result as static data with the image tag. Figure 1 shows the web-based distributed DTC-IM dynamics simulation setup was developed in java software in the client side and MATLAB/SIMULINK for simulation in the server side.

A java applet is a java class which runs on the client's Java Virtual Machine (JVM) via a browser plug-in. A java servlet runs on the server-side in a servlet container, like apache server and the client receives the results in the form of plain HTML. To simulate IM dynamics with simulation parameters, the client sends input parameters to the web server through the internet and receive the simulation output data after finishing the simulation, to the client computer and it can be visualized graphically. For this control, the client runs a java applet and sends the data to a webserver that runs the MATLAB simulation program. In addition to this, the server computer has more sophisticated software programs as listed below:

(1) Executable FL-DTC-IM simulation program
(2) Data transfer handler
(3) Database
(4) DTC- IM dynamics model

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A Modified Static Gain
SEPIC Converter Renewable Applications

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Abstract. A high static gain venture up dc– dc converters dependent on the adjusted SEPIC Converter is introduced in this paper. The proposed topologies present low conversion voltage and high effectiveness for low info voltage and high Output voltage applications. The arrangements with attractive coupling and without attractive coupling are introduced and examined. The attractive coupling permits the expansion of the static gain keeping up a decreased switch voltage. The hypothetical examination and trial results demonstrate that the structure is reasonable for high static gain applications as an inexhaustible power sources with low dc output voltage. The test models were produced with an info voltage equivalent to 15 V and a Output control equivalent to 100 W. The effectiveness at ostensible power became with the model without attractive coupling was equivalent to 91.9% with a Output voltage of 150 V and with attractive coupling working with a Output voltage equivalent to 300 V, presents proficiency equivalent to 92.2%. In private applications, most research is centered around the module-coordinated converters where the vitality created by a single PV module. A portion of the fundamental points of interest of this PV stage structure are the measured quality, permitting a simple increment of the introduced power, the individual MPPT and decrease of the halfway shading and board confusing impacts, accordingly enhancing the vitality reaping capacity.

INTRODUCTION

Power hardware is the field of electrical building identified with the utilization of semiconductor gadgets to change over power from the shape accessible from a source to that required by a heap. The heap might be AC or DC, single-stage or three-stage, and could conceivably require segregation from the power source. The power source can be a DC source or an AC source (single-stage or three-stage with line recurrence of 50 or 60 Hz), an electric battery, a sun oriented board, an electric generator or a business control supply.DC-DC converters are electronic gadgets utilized at whatever point we need to change DC electrical power proficiently starting with one voltage level then onto the next. They are required in light of the fact that dissimilar to AC, DC can't just be ventured up or down utilizing a transformer. From numerous points of view, a DC-DC converter is what could be compared to a transformer. DC-DC converters changes over unregulated DC input voltage into directed DC Output voltage. In a DC-DC converter, a transistor or MOSFET works as an electronic switch: either totally on or totally off. Power consumed by a perfect switch ought to be zero. By and by, misfortunes will happen in a genuine change because of exchanging and conduction misfortunes. Proficiency of a DC-DC converter is very high contrasted with a direct controller. A few sorts of DC-DC converters are: buck converter, support converter, buck-help converter and single finished essential inductance (SEPIC) converter.

Another exploration incline in the private age structure is to utilize the PV parallel-associated arrangement instead of the arrangement associated design to fulfill the wellbeing prerequisites and to make full utilization of the PV produced control. The most effective method to accomplish high-advance up, ease, and high-productivity dc/dc change is the significant thought because of the low PV Output voltage with the parallel-associated structure. The confinements of the ordinary lift converters in these applications [1] .This survey centers around inverter innovations for interfacing photovoltaic (PV) modules to a solitary stage lattice. The inverters are ordered into four groupings [2] .An appropriate for air conditioning module applications. So as to analyze the most possible arrangements of the inspected topologies, a benchmark is set. This benchmark depends on a normal air conditioning module application thinking about the necessities for the sun oriented boards and the grid.[3] .An sepic single

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Design of a Simplified 7 Level Inverter

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Abstract— In this paper a multi-stage inverter new configuration to growth the quantity of tiers switching voltage the usage of less studied. The proposed inverter includes H-bridge cells in conjunction with an active rectifier and switches. Using PWM modulation technique and collective enter dc supply capacitor series. The validity of the inverter is projected completed using MATLAB software program simulation tools and additionally the applicable theoretical evaluation executed. Capacitor voltage imbalance conquer by way of presenting a modified switching method.

Keywords Multi-stage, voltage unbalance, THD.

I. INTRODUCTION

General study of a multilevel converter is to utilize the electricity semiconductor switches are connected to the low dc voltage source to compensate for the voltage waveform stair case close. High first-rate output voltage, reduced voltage stress at the switching device power and higher performance. More currently, this dc-ac kind of multilevel acquired wonderful attention from business use electric home equipment that lead look at thought inverter. Secondary converter concept is to supply the identical output voltage of sinusoidal kinds. Output voltage degree of great this is green, which defines the deformation of harmonics (THD) and coffee-voltage exchange with respective times of strain and measurement minutes from the clear out output.

H-bridge cellular, which has lots of variety of switches and freelance ++ enter dc voltage supply. In one exceeds the one in every of the solutions to scale back the amount of parts in CHB is to apply asymmetric dc voltage supply [8], [9]. After a dc voltage is scaled in 3 watts, it'll maximize the amount volt output stage. However, they'll boom the direct contemporary voltage supply is casual to come up with the output voltage stage is better. The disadvantage to finish the electrical converter tool structure using energy flows brought in [10]. It also uses a aggregate of normal volt supply to make the shape of the output voltage. Mostadvantageous action inside the future is that it simplest employs one dc voltage supply. However, the electrical device flows create huge structures as a result of the operation at very low frequencies. To alleviate these drawbacks, the exploitation of four power converter shape watt balanced deliver changed into delivered in [11]. This device is usually tailored and evolved from the CHB. In [12], packed gadget U-available cellular. However, increasetransfer losses when growing any voltage degree for passing a cutting-edge of 3 rotating switching element in an man or woman stage.Moreover, massive ripple volts produced across the capacitor, however the capacitor 5000 uF ranked. The device uses a two-way switch with a capacitor collection connected. Mathematically, they are able to produce a variety of greater than the output voltage stage of more than a hundred twenty five stages with fewer additives.However, every capacitor mutual want dc-dc converter to gain a dc voltage supply. It has the characteristics of accurate; thus, it is simple to extend the excessive voltage degree.

II. PROPOSED LEVEL SEVEN SIMPLE PWM INVERTER

Picture. 1 shows the real circuit configuration 7- Pulse Width Modulation stage converter. Having a single dc voltage source, that is divided into three capacitors connected in series. Imagine all of the additives are best. Each capacitor voltage is VDC / three. Then, we will acquire a seven-degree output voltage waveform, 2VDC / three, VDC / 3, 0, -Vdc / 3, -2Vdc / three, and -Vdc. Switch in cells H-bridge (S1 to S4) are working to determine the polarity of the out-put volt with a most voltage level, ie Vdc (or -Vdc). Other voltages evolved with the aid of S5, S6, and S7.

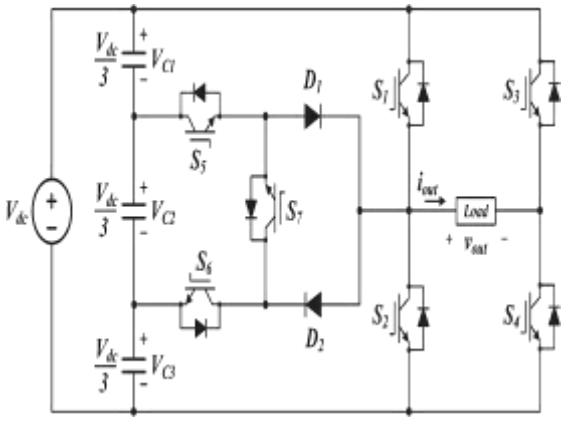

Fig. 1. Circuit configuration of the proposed seven-level PWM inverter.

A. Modes Of Operation

Level Vdc:

An electron path when the output voltage i

Vdc. 3 capacitors coupled in series give energy to the load.It discharges from S1 to *S*4. For inductive load, current direction is reversed, it is from DS1 to DS4, energises capacitor stack.

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Design of 31-level Asymmetric Inverter with Optimal Number of Switches

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Abstract— In this paper, 31-level asymmetric inverter is designed using optimal number of switches which produces higher output voltage levels with low harmonic distortion. The voltage sources used in this multilevel inverter is asymmetric in nature to generate output voltage with reduced distortion. By using six asymmetric voltage sources and 10 switches, 31-level inverter is simulated and the results of the inverter topology are studied in view of reduced harmonic components.

Keywords— Asymmetric structure, reduction in switch count, Voltage sources and Total harmonic reduction.

I. INTRODUCTION

DC-AC control transformation is famous in each part of electrical design because of the more degrees of opportunity in controlling all parameters such as voltage, current and frequency. Such DC-AC converters are having an important role in variable frequency drive systems, uninterruptible power supply, HVDC frameworks, sustainable power source (sun oriented, wind and energy component), FACTS and some more. The inverters were invented by Toshiba and Samuel Grels Barnes in 1997. Inverters are power electronic circuits which are capable of converting DC voltages to AC voltages. Inverters do not generate any power; they rather utilize the power given by DC sources. The output waveforms are generally sine wave, square wave or quasi square wave [1].

Presently, multilevel inverters are getting to be prominent in view of their various applications in high-power and high voltage applications. If there should be an occurrence of multilevel inverters, the favored yield voltage is delivered by suitable blend of a few low voltage dc sources associated at the supply side. Multilevel inverters offers various points of interest, for example, improved yield voltage, lower pressure voltage over the switches, lower electromagnetic impedance, more power handling capacity. Multilevel inverters utilize controlled semi-conductor switches in the inverter to choose at least one of various dc voltage sources to make a staircase output voltage waveform. Condenser and sustainable power sources can be utilized as the different dc voltage sources [2].

Cascaded multilevel inverters have pulled in more consideration mostly in light of straightforward structure and effectively of reaching out to more number of voltage levels. Symmetric inverter with same abundance of voltage source and asymmetric inverters with various amplitudes of dc sources are the two distinct designs of this sort. While utilizing asymmetric design, yield voltage with more advances will diminish the harmonic distortion [3].

In light of the advantages [4]-[6], MLI pulls in many research academic and industry for advancement. The recent topologies of multilevel inverters find application in grid-connected photovoltaic system, smart grid operation, high-frequency AC micro grids, enhanced drive train operation and adjustable speed drives [7] – [14].

This paper is informed with the accompanying areas; in section II the topology of 31 level MLI with its structure is explained also elaborates the switching of MLI. The simulation circuit and results are discussed in section III. Conclusion is given in section IV.

II. 31 LEVEL MULTILEVEL INVERTER

The multilevel inverter topology [15] shown in the fig.1 consists of 6 DC voltage sources and 10 power electronic switches. The voltage sources are selected as variable in nature to obtain maximum number of voltage levels at the output with minimum number of circuit components. This decreases the circuit intricacy and expense of the inverter. A framework is obtained to find the amplitude of voltage sources.

In the fig 1, Switches S_X, S_Y, T_1, T_2, T_3 and T_4 are unidirectional, where the conduction of this switches are in one direction. Switches S_1, S_2, S_3 and S_4 are bidirectional where the conduction of this switches are in both the direction.

The selection of variable DC sources plays a vital role. Lower values of variable DC voltage sources are used in designing the circuit.

A. Design Aspects

A framework is given to define the value for V_{dx} (x = 1 to 6) and obtained as follows,

$$V_{d1} = V_{dc} \quad (1)$$

The voltage sources V_{d2} and V_{d3} selected same as V_{d1} ie.,

$$V_{d1} = V_{d2} = V_{d3} = V_{\mathrm{dc}} \quad (2)$$

The voltage sources V_{d4}, V_{d5} and V_{d6} are calculated as follows,

$$V_{d4} = (ni) * V_{dc} \quad (3)$$

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Novel Control Scheme for Z-Source Inverter based Wind Energy Conversion Systems

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Abstract

Z-source inverter (ZSI) based wind energy conversion systemprovides both the DC link voltage boost and DC-AC inversion in single stage with added features. Traditional maximum power point tracking (MPPT) control algorithm generates the required shoot-through interval to output maximum power to the Z-network. At this instant, the voltage across Z-source capacitor is equal to the MPP voltage of DC link voltage. The capacitor voltage cannot be further increased if it is demanded by the load. This paper presents an improved MPPT control algorithm along with modified MPPT algorithm to achieve both the MPPT as well as capacitor voltage control at the same time. Development and implementation of the proposed algorithm has been carried out by MATLAB/Simulink software and the results are provided.

Keywords:

Z-source inverter (ZSI);Wind Energy conversion system (WECS); pulse width modulation (PWM); maximum power point tracking (MPPT); capacitor voltage control (CVC)

I.Introduction

With India's electricity demand increasing exponentially every year, demand for the renewable energy sources are also increases drastically. Wind, a free and clean energy sources is increasingly competitive with other energy sources in India in the coastal and southern states of India.In one of the southern states of India, Tamilnadu, the installed capacity of windmill is 8,344 MW, which is 35% of the total installed capacity in that state. Whereas the total installed capacity of windmill in India is 28,214 MW, which is around 8.5% of totalinstalled capacity. but the available potential is double the time of installed capacity now and, due to the lack of proper technology all the potentials are not properly tapped. The wind energy conversion system (1) is in general costly and is a vital way of electricity generation only if it can produce the maximum possible output for all weather conditions.

Two level converters were used to boost the DC link voltage to the desired level and convert DC into AC for controlling the AC loads. The number of switching components, total volume of the system and overall cost of the system are increased while adapting the two-stage converter based WECS. Z-source inverter (ZSI) has been proposed to overcome the disadvantages of the traditional inverters with unique impedance network [1]. A ZSIbased shown in Figure 1 created a center of attention for researchers since it offers DC boost and DC-AC inversion in one single stage. Due to its unique features and advantages, it is much suitable for various applications which are much sensitive for supply voltage sags/fluctuations [2-5].

Operating principle of ZSI based and their advantages over the traditional two stage converters have been discussed in [9]. Simple power feedback method is used to achieve MPPT in [9]. The same study has been extended for grid connected WE system in [10]. A simple control method for two-stage utility grid-connected is proposed in [10]. This approach enables maximum power point tracking (MPPT) control with post-stage inverter current information, which significantly simplifies the controller and the sensor. A power conversion circuit for a

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Analysis Of Various Pwm Schemes For The Design Of Asymmetric Single Phase 31 Level Cascaded Mli

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Abstract

Multilevel inverter is most fashionable due to bargain switching losses, low costs, minimum harmonic distortion and high voltage capacity while compared with conventional PWM converters. A latest family of multilevel inverters that are emerged with less number of isolated DC input sources is asymmetric multilevel inverter. This work comprises of design and analysis of various PWM modulation schemes available for thirty one level asymmetric multilevel inverters. The relative case study is offered to authenticate the tested modulation scheme through harmonic spectrum analysis, total harmonic distortion (THD), and distortion factor (DF). The chosen single phase ternary DC source based multilevel inverter is demonstrated via MATLAB simulation. Finally the experimental result shows that APOD PWM offers relatively distortion-less AC output. It is also realized that the COPWM strategy output waveforms as it delivers fundamental rms AC output voltage with high magnitude.

Keywords*—Single phase multilevel inverter, Multi carriers, Sixty Degree PWM, Twenty seven levels, Cascaded multilevel inverter, and Distortion Factor.*

I. INTRODUCTION

Renewable energy sources are noticed as a fast developing power generation system because of the availability in wide range. Electricity generation by PV systems causes no environmental pollution, no material depletion and has no rotating or moving parts[1,2]. The output characteristics of PV system depend on the ambient temperature and the solar irradiance. Moreover, the PV system output provides single operating point, when the irradiance is uniform and the generated power is high [3-5]. Also the output power is affected by shading due to clouds, buildings, birds, plants and dusts. Hence the conversion efficiency and reliability are decreased [6-9]. So as to boosts the conversion efficiency, various tracking techniques are developed to extract maximum power from the solar panels. Few of the most popular methods are P&O incremental conductance and hill climbing method [10-13].

The simple, low cost and easy implementation of the conventional methods made them suitable for practical applications. But during power tracking process, there is a delay in reaching extract tracking direction. Therefore PV voltage and current are measured after a single sampling time using these methods. Also the change in atmospheric parameters will produce incorrect tracking direction before the tracking path is reached [14]. Artificial intelligence (AI) methods and optimization algorithms are developed to overcome the drawbacks of conventional methods. AI technique uses FLC and ANN individually or as a hybrid method [15]. The exact operating point is obtained by these techniques without exact mathematical model. These techniques work depending on the system behavior and the PV characteristics. The operating point in the complete operating region is stable using these techniques [16]. The PV panel power characteristics are affected under partially shaded operating condition. In order to optimize the global maxima evolutionary algorithms like P&0, INC, HC are used. The tracking efficiency is reduced considerably due to the use of random variables in these algorithms. The uncertainty of solution is increased and hence the desired operating point cannot be reached. The power converter control variables such as voltage, current and duty cycle performance

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DIRECT AC/DC POWER CONVERTER USING AUXILIARY CIRCUITS

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Abstract

The Direct AC to DC power converter is proposed for energy harvesting from low voltage supply. The conventional power converters uses diode bridge rectifiers and they are inefficient in operating at high switching frequency. The modified power converter avoids the use of bridge rectifier and directly converts ac input to the required dc output. The operation of the converter is based on Discontinuous conduction mode which increases the efficiency. The auxiliary circuit is added with the proposed converter to store the charges. The advantages of the converter are ripples are minimized, maintain the unity power factor and can effectively reduce the energy storage capacitance.

1. INTRODUCTION:

AC/DC Converter serves as rectifiers. They convert AC to DC in a number of industrial, domestic, agricultural and other applications [1, 2]. Rectifiers are used as standalone units feeding single and multiple DC loads and as input stages of AC systems because of their virtually unlimited power and controllability [3, 4]. Our objective is to develop the power converter working in high switching frequency with minimum switching losses. The conventional power converter uses the diode bridge rectifier and results more switching losses operating at high switching frequency [5-7]. For example the output of micro-generator is in milli watts. The power converter process the low voltage supply is two stages: Firstly the low voltage supply may not feasible for rectification. Secondly the large forward voltage drop occurs at diodes causes high voltage losses. The output voltage may not feasible to work on any equipment [8-10]. This paper concentrates to process of low voltage supply conversion. The proposed converter maintains the unity power factor, thus the losses are minimized.

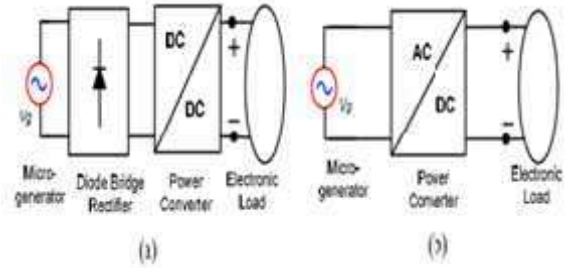

Figure 1 (a) block diagram of conventional two-stage power conversion considering diode-bridge rectifier (b) direct ac-dc power conversion

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PERFORMANCE ANALYSIS OF PV BASED DC-AC CONVERTER FOR DIELECTRIC HEATING

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ABSTRACT: This paper proposes a new PV based DC/AC converter for a dielectric application which consists of a solar panel, SEPIC DC/DC converter, resonant inverter and a dielectric application such as dielectric heating. The output of the solar panel is low voltage hence SEPIC DC/DC converter is used to boost the voltage which is later fed to the resonant inverter to converter the DC/AC and the converted AC voltage is utilized for dielectric heating. This system is used for high power applications and provides a better performance in terms of rise, time settling. The comparison between open loop with and closed loop system along with and without disturbance is presented in this paper.

KEYWORDS: Dielectric heating, PV source, resonant inverter and SEPIC converter.

I. INTRODUCTION

Solar energy is considered has one of the most effective and promising source of energy due to its infinite power and availability. Even though fossil fuels as been the primary source of energy, their availability is limited on earth. Also, they deplete the environment. When it comes to cleanliness and safety solar energy is always the right choice. Now-a-days, most of the applications use AC power. Hence power conversion interface has become a basic need as solar panel that generates DC power output. Here, the generated solar power is utilized for the dielectric heating which is a high frequency load. Over the years many power circuits were proposed for these PV based configurations. Jinn chang wu et al[1] proposed a solar generation system which consists of solar cell array, DC-DC boost converter, transformer to split the boosted dc voltage which is then fed to capacitor section where the voltage is converted to three level voltage. This voltage is applied to full inverter circuit where it is converted to seven level. Soft switching is not available in this system hence the switching losses is more also this system not suitable for high frequency applications. Surya Kumari et al [2] proposed a PV energy conversion system with MPPT to track the maximum power point in which total harmonic distortion is measured. Samer Alsadi et al[3] proposed a MPPT simulation for PV based system using perturb and observe under different climatic conditions to verify the accuracy. It is observed that the maximum power point varies slightly with respect to the climatic condition which reduces the performance of the system. Shen et al[4] proposed grid connected power converter with negative grounding of PV generation system without transformer. More number of electronic switches is used and hence switching losses are high. Lekshmy Rajan et al[5] proposed a PV based system with cuk and PWM inverter using MPPT algorithm. This system also consists of high switching losses and has low efficiency.

Sowmya Smitha Raj et al[6] proposed a MPPT based zeta converter fed from PV cell array with a PWM inverter. The number of cycles used in PWM inverter to control the voltage is more so the performance of the system is affected. Mastramauro et al[7] proposed a PV system with power quality conditioner functionality with maximum power point tracking to control the phase of the PV inverter voltage. This system cannot be used for high power applications. Kumaresh et al[8] proposed a literature review on solar MPPT system which clearly explains the importance of MPPT in solar based system. Esram et al. [9] proposed incremental conductance method based MPPT technique to get the maximum power poin at all conditions. Jitty Abraham et al [10] proposed a pwm modulated and power factor correction of zeta converter for open loop and closed loop. It is to be noted that the performance of open loop system is poor compared to closed to system. Christo shijith et al[11] proposed speed control and power factor correction of BLDC motor using zeta converter. Swati et al.

Implementation of Twenty seven level and Fifty one level Inverter using constant voltage sources

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Abstract—**A inverter to produce more output voltage levels using constant voltage sources fed to a resistive-inductive load is presented. Cascaded multilevel inverter structure is modeled and studied for various levels of voltages by implementing proper turn on and turn off states. Simulation for fifty one level inverter design structure is carried out using MATrix LABoratory and percentage of harmonic content in the load voltage is examined. Further, real time development of twenty seven level cascaded inverter structures is implemented and the results are obtained using digital storage oscilloscope. A 15V, 500mA transformers are used to step down the voltage from 230V to 15V and further rectifiers are used to convert AC to DC voltage and used as source for multilevel inverter structure and field programmable gated array.**

Keywords — **Inverter structure, Field Programmable Gated Array (FPGA), Voltage sources and Harmonic content.**

I. Introduction

A power inverter, or inverter, is an electrical power converter that changes direct current (DC) into alternating current (AC). Solid-state inverters have no moving parts and are used in a wide range of applications, from small switching power supplies in computers, to large utility high applications that transport bulk power [3] – [6]. Inverters are commonly used to supply AC power from DC sources such as solar panels or batteries. But in normal inverters the THD is much higher.

Electrostatic capacitor, energy bank and sustainable power generators are utilized as the various dc voltage sources. The easy commutation of the power switches make addition of multiple DC sources possible to achieve high voltage at the output. A multilevel converter has a few focal points over a traditional converter that utilizations pulse width modulation (PWM) with high time period. The attractive features of a multilevel converter can be summarized as follows.

- Stair-step plot condition: Staggered converters not exclusively can create the yield voltages with low bending, yet in addition can decrease the dv/dt values; accordingly electromagnetic similarity (EMC) issues can be diminished.
- Common-mode voltage: Multilevel converters produce smaller CM voltage; therefore, the stress in the bearings of a motor connected to a multilevel motor drive can be reduced. Furthermore, CM voltage can be eliminated by using advanced modulation strategies.
- Input current: Multilevel converters can draw input current with low distortion.

The idea of staggered inverters was first presented in late 19's. The term staggered started with the three-level inverter. In this way, a few staggered inverter topologies have been created [1] - [2]. Up to now, several topologies of multi-level inverter system have been proposed. Recently, several multilevel DC-AC converter designs were introduced [7] – [9].

The constraints of staggered arrangements over the two-level inverter design are, the expansion in the quantity of design parameters required and the circuit multifaceted nature, which requires complex control conspires that include its expense and diminishes the dependability of the converter. This may lead the general framework to be progressively intricate. Consequently, for the experimentation, lessening the quantity of switches and driver circuits plays a vital role. Design of constant source inverter is investigated in this paper.

This study is categorized with the various areas; in area II the design structure of nine level inverter with various output states are explained. Design work of fifty one level inverter structure is discussed in area III. Real time development of twenty-seven level inverter with the results is elaborated in area IV. Summarized the paper in area V.

II. Nine Level Inverter Structure

In this chapter the design explanation of cascaded multilevel inverter is presented. Various states of operations for nine level design structures shown in fig. 1 are discussed.

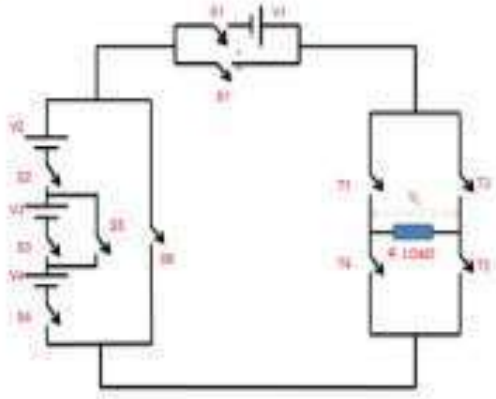

Fig. 1. Nine level inverter structure [10].

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Fire Detection using Artificial Intelligence for Fire-Fighting Robots

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***Abstract*— Fire-fighting robots are used in indoor environments to detect fires and extinguish them. Sensors such as flame sensors are currently used to detect fire in fire-fighting robots. The disadvantage of using sensors is that fire beyond a threshold distance cannot be detected. Using artificial intelligence techniques, fire can be detected in a wider range. *Haar Cascade Classifier* is a machine-learning algorithm that was initially used for object detection. The results obtained using *Haar Cascade Classifier* were not very accurate, especially when multiple fires had to be detected. Transfer learning from a pretrained YOLOv3 model was then used to train the model for fire detection to improve accuracy. The benefits and drawbacks of using deep learning for object detection over machine learning are highlighted. The algorithm used to obtain the target location the robot must move to use bounding box coordinates is also discussed in this paper.**

Keywords*— *Fire detection, Machine Learning, Deep Learning, Location finding

I. INTRODUCTION

Fire accidents cost lives and damage property. Having an autonomous fire-fighting robot that can detect fire and extinguish it will be extremely helpful in such situations. Most of the fire-fighting robots constructed in the past used sensors such as flame sensors [1] to detect fire. Fire-fighting robots also had ultrasonic sensors to detect obstacles in its path. The time taken for the pulse emitted by the sensor to travel from the object back to the sensor was used to determine the distance of the obstacle from the robot [1]. This distance was compared to a threshold value. If the distance was less than the threshold value, the robot turned in the direction of the least obstacle path and continued to move forward towards the fire.

IoT has been included in these robots [2] to communicate to the authorities about the incident. A water-based extinguisher is used for ordinary combustible material such as paper or wood and a carbon-dioxide based extinguisher is used for fires in flammable liquids such as petrol. Fire-fighting robots have been designed to have both types of extinguishers so that an appropriate type of extinguisher can be used [2][5].

Whether the sensors detect fire or not depends upon the distance between the sensor and the fire. Sensors cannot detect fire when it is beyond a certain threshold distance. Using artificial intelligence techniques, fire can be detected at a wider range which is the motivation behind exploring object detection using machine learning and deep learning techniques for fire detection. Object detection is used to find whether the object of interest is present, the location of the object, the number of objects of interest detected and the relative size of the objects.

Haar Cascade Classifier is a machine learning algorithm proposed by Paul Viola and Michael Jones that can be used to detect objects from images, video and camera feed [4]. *Haar Cascade Classifiers* have three important stages- *Integral image*, *AdaBoost* and Cascading Classifiers. The classifier is initially trained with a lot of positive and negative images. Haar features such as the two-rectangular, three-rectangular and four-rectangular features are identified for the particular object to be detected. The use of *Integral image* makes fast feature evaluation of these features possible. *AdaBoost* is then used to select the most important features from a large number of features extracted since all of the features are not useful. The use of *integral image* and *AdaBoost* ensures that the *Haar Cascade Classifier* works efficiently.

The Cascade Classifier has several stages. Different stages of the classifier are responsible for detecting different features. A strong classifier is formed combining the results of the weak classifiers. A window is slid over the image to identify positive regions containing the object using the features of the object it has been trained to recognize previously. If that particular region fails a stage, the window slides to the next region of the image and this region is no longer considered. In this manner, the *Haar Cascade Classifier* can be used to detect objects.

Deep learning-based algorithms can also be used for image classification to detect objects. *Convolutional Neural Network (CNN)* is a type of deep learning neural network [5]. Filters or kernels are applied to an input image. The purpose of each filter is to determine a particular characteristic such as the shape of eyes, ears etc.

The sliding kernel matrix is convoluted with each input matrix obtained from the image to produce an output kernel map. Several filters are used to obtain all the important features which are essential for classification. Different feature maps obtained due to the different convolution operations are combined to obtain the output. It is essential to add padding or zeros around the original matrix image accordingly to ensure that the size of the output feature map is the same as the size of the input image.

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In *CNN*, a large number of regions are needed to find whether the object is present. This is because the object may have different spatial locations within the image. This increases the computational time. *R-CNN*, *Fast R-CNN*, *Faster R-CNN* and *You Look Only Once (YOLO)* were subsequently developed to reduce the testing time. *YOLO* [6] is the fastest algorithm compared to the other algorithms and is hence widely used for real-time detection. Although *YOLO* is fast, it isn't accurate as *Faster R-CNN*. The *YOLO* algorithm was developed in subsequent years to improve its accuracy. The latest development, *YOLOv3* shows substantial improvement in accuracy especially in small environment of fire detection affected the accuracy of measurements obtained.

Shen *et al* [9] had researched and performed deep learning for object detection. Deep learning was used rather than colour-based, motion-based or shape-based models alone as different flames may have different properties. Deep learning could be used to identify all these properties instead of a single property alone for fire detection. YOLO was used to perform flame detection. YOLO created an *n by n* grid where each grid was responsible for obtaining the probability and bounding box for the object that was present in it. The training procedure was divided into pre-training

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Military Support and Rescue Robot

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***Abstract*— In this era of a politically unstable world, there is a growing demand for the use of military robots to aid the soldiers to perform perilous missions. This paper focuses on the design and build of a semi-autonomous, unmanned robotic system used for various military and rescue operations. Dangerous tasks such as bomb disposal, enemy territory surveillance, search and rescue can be efficiently carried out by the *MSRR*, Military Support and Rescue Robot. This reduces the risk of losing the lives of both soldiers and civilians. With the help of live feed from the wireless camera and data analysis of environmental composition by various sensors, of the area under surveillance, the soldiers can better prepare for their missions. Using Arduino and Zigbee technology, the above-mentioned tasks can be achieved. The different sensors and the robotic arm are connected to the Arduino mega which in turn is connected to the Zigbee. Data transmission and receiving are through Zigbee technology. This prototype design overcomes the weakness of the existing models and thus provides better support for military operations.**

Keywords*— *Military robot, Semi-Autonomous, Search and Rescue, Pick and Place Arm, Arduino, Zigbee.

I. INTRODUCTION

In today's technologically proficient world, technology plays an important role in drastically changing warfare tactics. More than advancement in weaponry, the advancement in technology gives a country superiority and the capability to counter an enemy attack in the most effective manner. Nowadays, robots are used in places which are dangerous for humans and thus, carry out the missions more effectively and obediently than human soldiers.

The military support and Rescue robot help to locate survivors in hazardous conditions unfavorable to human rescue teams. This reduces casualties and helps plan the rescue more effectively by using the data provided. The utilization of military robots for this very purpose is used by many countries around the world. The robots are robust, daring, obedient and have no fear of death. These robots may not be humanoids and need not carry lethal weapons, they are just machines instilled with advanced technology to aid the military.

The many advantages of military robots are driving all militaries around the world to opt for the use of robotic technology. *MarketsandMarkets* conducted an analysis which concludes that the military robot industry is expected to reach USD 30.83 billion by 2022, at a CAGR of 12.92% from 2017 to 2022 [1].

Military robots can be affected due to hardware and software malfunctions. Even though the military robots are built for adverse conditions the robotic system might face challenges due to adverse climate, software malfunction, components breakdown and much more. These types of robots are either fully human controlled, semi-autonomous or fully autonomous. Autonomous robots face more challenge under moral grounds for use in the military. A fully autonomous robot is considered as a killing machine under many country laws. The use of automated machines has a lot of restrictions due to the lack of human feelings and emotions. Hence, it is preferable to use semi-automated robots for certain safety precautions [2].

The *MSRR*, Military Support and Rescue Robot can be used for many different applications in the military. Among which a few are discussed in this paper, such as Intelligence, Surveillance and Reconnaissance (ISR), Search and Rescue, Mine Clearance and Bomb Disposal.

(i) Intelligence, Surveillance and Reconnaissance

This is the most important task bestowed upon military robots. The robots used for surveillance and reconnaissance are usually small and invisible to the enemy. The robot takes pictures, records conversations and sends videos back to the ground stations from areas that are difficult to access for the soldiers.

(ii) Search and Rescue Robots

Another important role that is carried out by military robots is search and rescue. There are a lot of restrictions for a human to enter a rescue area after a calamity. Robots can rescue victims from radioactive, biological and chemical environments. Robots don't have limitations like humans and hence can help in reducing the response time by saving maximum lives. Usually these robots are controlled by humans at base, but sometimes can work autonomously.

(iii) Explosive Ordnance Disposal (EOD)

Millions of lives of soldiers are lost while diffusing a bomb or disposing a mine, to avoid which, robots are used instead of humans to diffuse these explosives. The robots can be controlled from base or can be programmed to identify an explosive. This feature instilled in military robots has reduced the loss of lives of soldiers and civilians to a great extent [3].

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MSRR is a semi-autonomous, unmanned ground vehicle developed with the most important features required for use in the military. The robot is instilled with a wireless camera used for reconnaissance and surveillance missions, a pick and place arm used for explosive disposal and a sensory circuit for data collection of the environmental gas composition of the area under inspection. The data collected by the sensory circuit and wireless camera are transmitted to the PC, Personal Computer at the base. The controls for the motion of the entire robot as well as the pick and place arm are given by the GUI, Graphical User Interphase on the PC. Arduino and Zigbee technology are used for data receiving and transmission.

This paper has been organized into sections. Section 2

The robot can only identify a human being but cannot help them without a rescue worker.

Nirout and *Zhang* [6] used a USAR abbreviate application to perform a very important task of exploring the uncluttered area and going to the aid of people. This model uses deep reinforcement machine learning that allows the robot to autonomously explore the unknown cluttered environment. The robot uses frontier-based exploration along with the memory of the places visited before and is known to cover more area at a given time than robots working only based on random exploration technique. The objective of this model is to maximize the information gained to allow the robot to find trapped victims as quickly as possible. The testing of the robot

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SOLAR ENERGY BASED LAPTOP CHARGER USING QUADRATIC BOOST CONVERTER

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Abstract

A quadratic boost converter is designed to get the Laptop charger rating 63.5W in this research. This converter is energized with solar energy as the input source. The output of the solar has been given to the quadratic boost converter (QBC). The energy from the quadratic boost converter is stored in the battery. When the laptop is going to be charged, the energy from the battery is stepped down using the Buck converter. The voltage regulation of the converter is obtained using inner current control loop and outer voltage control loop method. The simulation results are presented for the quadratic boost converter.

Key words: *Quadratic Boost Converter (QBC), Two loop control method, Buck converter, Battery.*

I. INTRODUCTION

In recent year's different types of dc to dc converter topologies are designed which plays a major role in different applications with renewable energy as the source. In this system, the DC-DC converter topology of high gain is implemented with low output characteristics. In PV array and fuel cells the dc output voltage should be maintained as per the desired output voltage. But voltage stress can be increased through the transient period of the switches. The converter used in Photovoltaic arrays and grid applications are chosen based on the Zero voltage crossing with high output voltage with wide variation in low input voltage. The wide variation in duty cycle ratio can be limited by choosing the different values of passive components. Hence the QBC provides the high voltage output with low voltage stress and more efficiency [1-2]. QBC operates with high gain conversion ratio compared to normal boost converter. The single stage converter is better choice than two stage converters in most of the renewable energy applications. The QBC has more switching components with equal switching stress by the way of boost converter. But the QBC gives high output voltage than the normal boost converter on same duty ratio [3-5]. This increased gain makes this converter to be more suitable to be a part of the power system which integrates Photovoltaic systems and wind energy systems and in micro grid applications. To reduce the high voltage stress and to enhance the voltage gain, normal inductors are replaced by coupled inductor, in QBC. To improve the total power efficiency, passive clamping circuits are used to scale back the high voltage stresses caused by leakage inductance of the coupled inductor [6-8]. Hence, in this paper QBC is selected to get the desired voltage rating of the Laptop charger with solar as input energy. The output voltage produced from the QBC is stored in the 60W battery. The buck converter are used to step down the voltage based on the Laptop voltage rating as 19.5V.

This research work is organized in six section as follows: Section 1 reviews the advantages of QBC, the operation of the converter is discussed in Section 2. In section 3 gives the design of the QBC converter, section 4 reviews' the simulation results of open loop and closed loop circuit. The hardware results are offered in section 5 and conclusion is presented in section 6.

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Investigations on On-Board Charger with Simultaneous Charging of Low Voltage Battery for Electrical Vehicles

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***Abstract*:**

In this research, electrical vehicles (xEVs) are incorporated with on-board battery charger (OBC) and a low voltage dc/dc converter (LDC) for charging the low voltage (LV) battery. The OBC-LDC power unit (OLPU) step-down the number and size of the circuit components and increases the overall power density. Besides, in the unified OLPU, internal wiring of the xEVs is improved by sharing common apparatus of the two portions, to rule out the price of high-voltage cables. The unified OLPU fulfils the performance of standard on-board battery charger and LDCs for charging the batteries (both propulsion and LV), in three operating modes. In addition, this work describes the characteristics and design considerations for the integrated circuit structure along with possible solutions for the complications in the circuit. The simulation results of the electrical vehicle charger with the proposed power unit are presented.

Keywords **:** *High frequency transformer (HFTR), charging mode, electric vehicle (xEVs), on-board charger (OBC), dc/dc converter.*

I. INTRODUCTION

In recent years, eco-friendly vehicles with significant potential to meet the market demand of reducing fossil-fuel consumption, co_2 emissions are electric vehicles (xEVs) and plug-in hybrid electric vehicles (PHEVs). These EVs are driven by an electric motor, instead of an internal combustion engine (ICE), and the batteries supplies power to the motor to run. EVs are installed with an on-board charger and a rechargeable battery pack. The rechargeable batteries are charged through the ac power outlet and the charger is installed in the EVs, it should have long-life, light-weight and small in size. The battery charger performance is assessed by the power conversion efficiency and power quality. The on- board charger has to attain a high-power density and thus to achieve the high-efficiency power conversion. Since the battery charger is mounted on the EV itself, the charger should be small in size, light in weight, and long in lifespan. EVs are recognized as zero emissions vehicles (ZEVs) and are eco-friendly than LPG powered or ICE-driven vehicles. EVs are far more energy efficient than gasoline engines, since there is very fewer moving part and silent operation. The batteries have to be charged frequently by plugging into the mains. Eco-friendly vehicles such as, electric vehicles (xEVs), battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs) are by large effectively developed. Several investigation on batteries, on-board chargers, dc/dc converters, motors, etc., on xEVs aspired to improve the electric vehicle technologies. For the performance improvement of the on-board chargers and LDC, the component of xEVs which are focused are the batteries. The on-board battery charger use ac grid as source, to charge the High Voltage (propulsion) battery, over a wide range of ac/dc transformation. At present, almost all xEVs transfer energy between the ac source and the battery by the principle of induction, the converters are accomplished by the isolated topology. Henceforth, LDCs with isolated transformers use propulsion battery /supply power to charge the LV battery through the electronic devices in electric vehicle.

A single-phase OBC for PHEV functioning in different operating modes [1] [2], PHEV using ac power for battery charging [3], Reactive power compensation in Vehicle to grid (V2G) [4], using the PEV propulsion machine and its traction converter [5] are studied. An onboard charger for PHEV with cascade structure of a high-frequency resonant converter for charge control [6], dual cascaded control strategy [7] for the two-stage three-phase integrated onboard charger. A modified PWM-LLC with reduced magnetic component size [8], A three-phase onboard charger of a PHEV with power factor correction and battery voltage/current regulation integrated with PMSM [9] and a phase-shift

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Energy Efficient Light Monitoring and Control Architecture Using Embedded System

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Abstract--- In this paper, we propose an energy efficient RF-based outdoor light monitoring and control system that can monitor and handle outdoor lights more efficiently as compared to the conventional systems. The proposed system uses the RF-based wireless devices which allow more efficient lamps management. The designed system uses sensors to control and guarantee the optimal system parameters. To realize effectiveness of the proposed system, the prototype has been installed inside the University, where the experimental results proved that the proposed system saves around 70.8% energy for the outdoor street environment because of using sensors, LED lamps, and RF based communication network. To implement wireless control system of lights, several comparable architectures have been applied for outdoor lighting. In the design of the intelligent lighting system by considering the system cost as the main factor beside the energy saving. In, the author tries to reduce the number of sensors on each lighting nodes, but this reduction will result in less accuracy of the system due to more packet loss and hence will result in performance degradation. Furthermore, the authors in and designed the energy efficient lighting controls system by utilizing the WIMAX and GPRS as backbone technology, respectively, to communicate with the control center. One of the drawbacks of utilizing WIMAX and GPRS is the utilization of licensed spectrum, which will result in interference with the existing WIMAX and GPRS users. Hence, the lighting system will also require efficient interference avoiding algorithms to cope with interference, but this is not suitable for the lighting systems. These systems also have no capability to change the light intensity according to the users' requirement because they statically control the energy consumption and do not consider the user requirements in the sense of light intensity and the user's presence while dimming or turning off the lamps. In order to fill this research hole, we design the energy efficient RF TRANSRECEIVER-based outdoor light monitoring and control system. In addition to all these things ,an additional led is given as backup light, which will be used during main led light failure or when the operating temperature of main led exceeds the optimum range.

Index Terms--- WSN (Wireless sensor Network), MSD (Mass Storage Device), HID (Human Interface Device), LDR (Light Depended Resistor).

I. INTRODUCTION

Energy efficiency is one of the key factor while designing indoor or outdoor lighting systems. The street lights consume almost 30-40% of the entire city power consumption. Thus, control system able to efficiently manage the lighting is absolutely advisable. For this aim, because of its design based on the old lighting standards and inefficient instruments and devices, the traditional lighting systems are not suitable resulting in energy losses, frequent replacement of devices. Moreover these traditional systems suffer from the lack of pervasive and effective communications, monitoring, automation, and fault diagnostics problems.

To address these challenges, many technologies has been utilized in the literature to save energy such as: the utilization of the light emitting diode (LED) instead of metal halide (MH) lamps. But the systems based on these technologies need further improvement to increase the energy efficiency.

To further reduce the energy consumptions and to simplify the wiring structure, numerous lighting control systems have been proposed to solve that problem such as: occupancy sensing approach, light level tuning, and power line communication (PLC). Despite of reducing the wiring structure in PLC based designs presented in, occasional drops may occur in PLC networks operating on low voltage power lines.

These drops are caused by noise and attenuation, and can last from a few minutes to few tens of minutes. Due to carrier signal attenuation, there may be high latency or communication failure in PLC based design. On the contrary, deploying communication infrastructure based on wireless sensor networks (WSNs), such as low power ZigBee or RF, eliminates wiring overheads and save lots of energy.

To implement wireless control system of lights, several comparable architectures have been applied for outdoor lighting. In the design of the intelligent lighting system by considering the system cost as the main factor beside the energy saving. In this, the author tries to reduce the number of sensors on each lighting nodes, but this reduction will result in less accuracy of the system due to more packet loss and hence will result in performance degradation. Furthermore, the authors in and designed the energy efficient lighting control system by utilizing the WIMAX and GPRS as a backbone technologies, respectively, to communicate with the control center. One of the drawback of utilizing WIMAX and GPRS is the utilization of licensed spectrum, which will result in interference with the existing WIMAX and GPRS users. Hence, the lighting system will also require efficient interference avoiding algorithms to cope with interference, but this is not suitable for the lighting systems.

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PV Powered Standardised Irrigation System Using Soil Moisture Sensor

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***Abstract*— This system proposes a solar powered soil irrigation system and it reduce the wastage of watering during wet weather condition. Water scarcity is more and more increasing in day to day life. This system creates a revolution in modern agriculture to deterrent the barriers in agriculturist. A photovoltaic power generation system become more popular in today's world. Also its enormous growth has not left agriculture. During fair weather condition the soil moisture sensor senses the moisture content in soil and determines whether it is acceptable rate or not. Depending upon the moisture content the motor feed crops. A continuous power generation from the PV panel energise the battery during day-time. If it fails, the action is completely performed by distributed power supply.**

Keywords— Photo-Voltaic(PV); Motor; Irrigation system.

I. INTRODUCTION

Essentiality of water is an emerging problem in agriculture. There are lot of ways suggested by central and state government toovercome the necessity of water. But there is no improvement in it. Because,the weather condition and human behavioural activities may demolish the water level. After the analysis of water scarcity, they framed an irrigation system to impart and regulate the level of water pumping to the agricultural land.Few decades ago irrigation becoming more popular due to its level of using water is to be low. At the same time it fulfils the need. Plants and other organisms absorb nutrients via root nodes. It needs water to dissolve nutrients and minerals before they reach the node. For every stage the water is more essential. After understanding the requirement of water the irrigation system more popular. Irrigation system is ancient. Even though no other system can replace irrigation system.

Lot of techniques in day to day life takes irrigation system into another step. The manmade process is completely turned over into machine made process.According to the survey,embedded system rules the reforms of agriculture and it works independently.It cannot study how to supply water to the crop and field. Action of the system found moisture level before supplying water. Thus soil moisture sensor examines the moisture and nature of soil.

We introduce a PV powered soil moisture sensor to know the water level in underground.To drain water during morning and evening. This system operates on the amount of power generated from PV system. In day-time a battery stores the power and it act as a main source to the entire system. If it fails the AC supply from complete the action. During morning the sensor senses the level of water in underground and feed the garden or crop.At evening it drops water. A relay regulates the function. Without man functioning this will continue even fora year.

The Real Time Clock (RTC) maintains a day (or) a month (or) year information. So, the process is continuously performed without any change in it. A microcontroller based system design has been well known among people. In modern agriculture everybody choose to reduce the work and earn more. Advancement in every field makes the entire process within a hand. The same strategy is also followed in this solar powered soil moisture sensor to draw water.

There are plenty of advantages in this system. Some of them are listed below:

- Less expense
- Eco-friendly power generation
- Unusual power flow to the motor is limited
- Presence of RTC could not allowcollapsing the day-by-day process.

II. METHODOLOGY

A technique resolvedand proposed is revealed in figure 1. The ac source and dc source are seperated by a relay. Arduino is the key to perform storage function and relay function. PV panel produce adequate amount of power needed to function both Arduino and motor. An DC-DC converter boost the voltage before it reaches the pump. The sensor predict the weather condition.

It send an signal to intikate the water level. Ater the completion of this process, the system decides whether the water pumpiung is essential or not for a paticular period. If it needs water then the relay connection supplies power to the motor. In such condition it starts to pump. If there is an excess of moisture in the soil is noted; then the motor would not function.

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Improved Speed Control of BLDC Motor using Luo converter By Sliding Mode Control

R. Dhanasekar, S. Ganesh Kumar and M. Rivera

***Abstract*-The classical buck converter for BLDC motor applications do not meet the load requirement containing more ripples on the output voltage and parasitic effects. In order to overcome this effect, the additional filter elements are added in the Luo-converter to eliminate the output ripples and effectively enhance the output voltage level. The output stage of the Luo converter is comprised of an inductor and capacitor so it naturally acts as filter. The output stage stores and delivers energy to the load and smoothens the output voltage to produce a constant output voltage. The Luo Converter acts as both buck and boost converter by varying the duty cycle. Thus this Luo Converter is used for the proposed BLDC Motor Drive. The Sliding Mode Controller is used to make the speed of the System constant in a small amount of time.**

***Keywords*— Brushless DC Motor, Luo Converter, Motor Speed, Sliding Mode Control.**

I. INTRODUCTION

BLDC motor is a synchronous motor that synchronizes the rotor magnetic field with stator magnetic field which develops the mechanical torque. The stator windings are separated 120^0 degree electrical [1]. Also due to its construction the BLDC motor does not have brushes nor electromechanical commutator therefore its commutation is electronic and its operation is more complex. One of the main challenges in this field of drives was to achieve a perfect control for speed regulation even under the disturbances and parameter variations [2-4].

One of the prominent methods for the control design is the SMC (Sliding Mode Control) approach. Sliding mode controller is suitable for a specific class of nonlinear systems. This is applied in the presence of modeling inaccuracies, parameter variation and disturbances, provided that the upper bounds of their absolute values are known. Modeling inaccuracies may come from certain uncertainty about the plant (e.g. unknown plant parameters), or from the choice of a simplified representation of the system dynamic. Sliding mode controller design provides a systematic approach to the problem of maintaining stability and satisfactory performance in presence of modeling imperfections.

This paper consists of five sections including introduction. Section II discusses about the existing system, Section III discusses about the proposed system, Section IV discusses the simulation results and Section V discusses the Hardware results.

II. EXISTING SYSTEM

In general, BLDCM fed PID controller with Luo converter experiences ripples at the output of converter. Therefore, it is essential to eliminate the ripples in the output side to enhance the efficiency of the system. Limiting ripples in current restricts lead to well enhanced voltage output. This consequently necessitates a Sliding Mode Controller (SMC), for enhancing the output voltage at the output of converter. A conventional BLDCM drive with PID controller scheme will require a constant DC supply based VSI with Pulse Width Modulated (PWM) scheme for speed control. The high frequency switching in VSI will lead to large switching losses. The existing system has also high conduction losses due to oscillations while the speed of the BLDCM is dependent on the DC voltage measured across the front-end of the inverter, a variable speed operation can be employed by adjusting the DC link voltage of inverter with fundamental frequency switching. The Luo converter with SMC has additional elements comprised of an inductor and capacitor so it naturally acts as filter**.** In [5] the control of dc motor trajectory tracking is attained by Luo converter currents and voltages. The BLDCM fed with Luo converters designed under front-end BL configuration is utilized for a wide range of applications. The BLDC fed conventional PID has huge no of ripples, harmonic currents and parasitic effect when compared to the BLDC fed SMC controller [6-7]. The existing system has more chattering effect than BLDC fed SMC. The existing system has also a problem of maintaining stability and satisfactory performance in presence of modeling imperfections.

III. PROPOSED SLIDING MODE CONTROL OF LUO CONVERTER FED BLDC MOTOR

The proposed system consists of an AC source, filter, Luo converter, three-phase Inverter, BLDC motor, saw tooth generator, PWM generator, sliding mode controller,

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Power Quality Research On Three-Phase Pfc Rectifier (Minnesota Rectifier)

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Abstract—The Minnesota rectifier is a well established topology, however, no serious attempts have been made to explicitly investigate the improvement in power quality by the use of this rectifier. This paper discusses the harmonic reduction in the line currents of a three-phase diode bridge rectifier by third harmonic current injection technique. The improved performance of the current injection technique is validated by comparing the simulation results of a rectifier unit with and without current injection technique.

Keywords—THD, third harmonic, zig-zag transformer, ZCS Quasi-Resonant Converter.

I. INTRODUCTION

Power electronics component plays a vital role to energy conversion with improved efficiency and improved operating characteristics. Most of the converter systems are affected by the non linear characteristics. Harmonic distortion caused by these nonlinear loads leads to degradation in the power quality. IEEE 519-1992 [1] and the IEC-555 are the recommended standards for the limitation of harmonic currents at ac side to meet the power quality standards. To achieve those standards, it is essential to obtain the nearly sinusoidal current with low distortion and desired power factor at the ac mains to meet the high power quality standards.

Use of six-switch PWM rectifier [2] reduces the harmonics, but the problems of PWM technique are EMI and switching losses. In comparison to this approach, dc link current is modified by 3rd harmonic injected current component , fed through the rectifier input side requires only two controllable switches on the dc link side as shown in the Fig. 1. Zero-current switching or zero-voltage switching [3]-[8] of these switches overcomes the problems of PWM technique. Zig-zag transformer can be used as a third harmonic current injector [7] or a simple LC circuit [8]. Apart from the current injection network, the presence of source inductance is the added advantage to obtain the sinusoidal line currents with lower value of harmonic [8].

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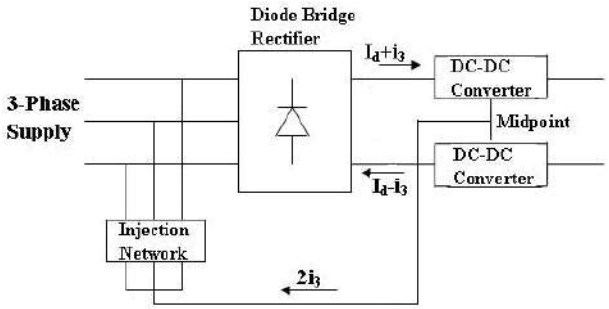

Fig. 1.Rectifier with Injection network

II. OPERATION OF THE RECTIFIER TOPOLOGY

A. Current injection device

Zig-zag transformer is used to give the 3rd harmonic current as a feedback to the utility interface from dc link interface to reduce harmonics. Three phase wye transformer is the basic model to obtain the zig-zag transformer. Three phase wye transformer has three windings with neutral point; each winding has cut in the middle so that it splits into two windings namely outer winding and inner winding in each leg. The outer winding of each leg are turned around and rejoined to the inner coil of adjacent leg. In the connection sequence, the outer coil of A phase is coupled to inner coil of B, outer coil of B is coupled to inner coil of phase C then outer coil of C is coupled to inner coil of phase A as shown in Fig. 2.

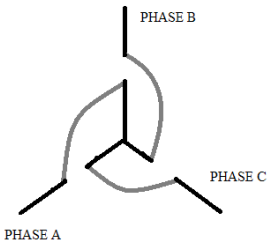

Fig.2. Zig-zag transformer connection.

In the minnesota rectifier topology, the main role of zig-zag transformer is to circulate 3rd harmonic current at supply side. Due to very high magnetizing impedance, it can be operated as open-circuited for both positive and negative sequence voltage components. If

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Nano Nickel Oxide/Vinyl Ester Composites with Improved Mechanical Strength

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Abstract: Nickel(II)oxide is a promising material which suits for many applications due to its speciality characters such as electrochromic, photocatalytic activity, semiconductor nature, etc. But use nickel oxide as filler in polymer composites is not well studied. In this work, nano nickel oxide filled vinyl ester matrix composites were fabricated by reinforcing various weight fractions of filler. The composites so prepared were characterized by mechanical strength analysis, Fourier Transform Infrared Spectroscopy and Scanning Electron Microscopic analysis. Outcome of the analysis showed that addition of nano NiO caused significant improvement in mechanical strength under tensile and bending stress and still further enhancement after the vinyl functionalization of nano nickel oxide.

Keywords: Nano composites, nickel oxide, vinyl ester, surface functionalization, tensile strength, flexural stength

I. INTRODUCTION

Presently, with the fast improvement of science and innovation, materials assume an essential part in the international economy and safety. New materials are the premise of new technologies, and materials science, vitality innovation and data science have turned into the three mainstays of present day science and innovation. As the human population is booming every year, a demand for materials of specialty characters is also arising and hence innovative development of material science and technology has become unavoidable in order to cater the needs of the rapidly growing population of the world. Polymer matrix composites are such kind of emerging materials which are being used in various fields of engineering like aerospace, mechanical, optical, electrical, etc. [1]. Thermosets and thermoplastics are the two main sorts of polymers used in polymer matrix composites. Thermosets have qualities such as a well-bonded three-dimensional molecular structure after curing [2] - [3]. They decompose instead of melting on heating. Merely changing the basic composition of the resin is enough to alter the conditions suitable for curing and determine its other characteristics [4]. Vinyl ester is an economically viable thermoset polymer possessing adorable chemical resistance, thermal stability and flame retardancy [5]. But polymers show poor abrasion resistance, low mechanical strength and stiffness compared to other structural materials, for example, metals and compounds and consequently their usage for structural applications has been limited to some degree [6]. To combat these issues, strategies such as process modification [7], reinforcement of functional fillers and fibres [8] – [9], optimal material selection are being followed by researchers. Nano sized fillers were found to be effective in improving the properties of polymer composites over macroscopic fillers. Nano clay [10], silica [11], metal oxides [12] – [14] are the major functional nano fillers of interest in particulate filled polymer composites. Further, their surface modification is an another way by which the end use properties of particulate filled composites are strengthened [15] – [17]. In this work, an attempt was made to use nano nickel oxide as filler, due to its unique characteristics [18] – [19], in vinyl ester matrix and the tensile and flexural properties of so prepared composites were studied.

II. MATERIALS AND METHODS

A. Materials

Vinyl ester dissolved in 30% v/v styrene monomer, methyl ethyl ketone peroxide (MEKP) catalyst and cobalt naphthenate additives were procured from Vasavibala resins private limited, Chennai, Tamil Nadu, India and used as such. Nano Nickel oxide (average particle size<50nm), coupling agent vinyltrimethoxysilane, were purchased from M/s. Sigma Aldrich India (Pvt) Ltd and.

B. Surface modification of Nano nickel oxide

Vinyltrimethoxysilane (VMS) of concentrations 1%, 2% and 3% v/v in ethanol were prepared and their pH was adjusted to 4.5 - 5.5 by adding dilute acetic acid. Surface modification of nano nickel oxide was carried out by stirring the nano powder with the silane solution for about 5 minutes and air dried at room temperature for 48 hours.

C. Casting of Composites

Nano nickel oxide of weight fractions ranging from 0.1 – 1.0% were mixed with vinyl ester resin, and fabricated by vertical open lay-up Resin Transfer Moulding using a glass mould with 3mm separator. The content of the mould was air cured for about 25 minutes at room temperature and post cured under microwave irradiation (2.4 GHz) at 240W for 30 minutes. The fabricated composite plates were cut by water jet cutting machine.

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Magnetohydrodynamic Viscous Fluid Flow Between Parallel Plates with Base Injection and Top Suction With an Angular Velocity

R. Delhi Babu, V. Yuvaraj, S. Hemanth Kumar

Abstract: In this article manages the issue of stable electrically lead laminar progression of a gooey incompressible liquid stream associating two parallel permeable plates of a divert in the event of a transverse attractive field through base infusion and top suction. Dependable vertical stream is made and controlled by a weight slope. Vertical speed is enduring everywhere in the field stream. It implies $v=v_w$=constant. Answer for little and huge Reynolds number is talk about and the diagram of speed profile for stream including parallel permeable plate with base infusion and top suction through a rakish speed Ω has been considered.

Keywords : About four key words or phrases in alphabetical order, separated by commas.
Keywords : Magnetohydrodynamic flow, fluid flow, parallel plates, angular velocity.

I. INTRODUCTION

The Fluid flow in between same kind of plates arranged in a manner which the hydrodynamic flow established by the Magneto hydrodynamic flow. The main usage of the concept in many fields in real time and also industrial like Magneto hydrodynamic flow, and they are MHD control generator, Aeronautics, Chemical synthesis, Dispersion of Metals, Electronics, Hydromagnetic dynamo action, MHD couples and bearings, MHD flow meters for liquid metals, MHD pumps.

Berman [1] examined the issue of adjusted laminar progression of an incompressible thick liquid from start to finish a permeable path with uniform rectangular cross portion, while the R-Reynolds number is wretched be considered in addition to an irritation arrangement expect ordinary divider speeds to be the equivalent was gotten. Sellars [2] broad the issue contemplated while the R-Reynolds number is raised. Later Yuan [3] suggested the few concepts of the infusion Reynolds numbers in two dimensional constraints with unflattering steam path along with their permeable dividers. Soundalgekar V. M [4] detailed the transfer of the MHD heat as a flow in their given non constant body temperature using the injection and suction as their major focused idea. Attia.H.A [5] [6] main concepts of the unsteady stream in the fixed plates as a parallel plates which has gooey liquid in the form of incompressible and exchange of warmth in the fixed plates. The normal and formed suction and the properties of blend are their major factor influenced. The consistency of their temperature in each subordinate are monitored whose fluids flows through their penetrable and parallel plates. The fluids flow in the shaky steam and dusty coordinating fluids. Ganesh [7] assured the measurement of the MHD fluid stream of viscous liquid. Ganesh [8] studies the MHD behaviour in the thick walls as plates in the parallel position which has fluid flow in porous plates with the concept of top suction and the entrenched. Krishnambal [9] highlighted the work of the stream in the fixed plates in parallel conditions and susceptible. Hafeez H. Y [10] gives the flow of the stream in the porous plates fixed in the bases, the flow studies by their MHD as bottom injection and suction at the top. Another highlight of MHD mentioned in Ganesh [11] which close concept of the parallel and porous plates. R. Delhi Babu [13] investigated the effects of steady magneto hydrodynamic flow in angular velocity which in poured in the plates fixed as a parallel plate. J. Charles Prem Anand [14] studied Magnetohydrodynamic effects on steady blood flow in a stenosis under angular velocity.

The new concept of the stream flow as incompressible liquid which in thick state liquid connecting two penetrable parallel plates inside seeing a transverse alluring field and angular velocity with base imbuement and best suction through precise speed.

II. PROCEDURE FOR PAPER SUBMISSION

Considering the proportionate permeable plates, the new methodology introduced in plates while the fluid flow as incompressible liquid in thick state, the laminar development improvised and the top suction at their dividers with the velocity of the sight of a crosswise attractive field of solidarity is mentioned as H_0. The dividers in the vertical position with the rakish speed Ω. The starting point is focused initially for the channel flow. The axis are mentioned as x and y for the tomahawks comparable and vertical position of their channel dividers. The determination of the long way channel is mentioned as L. The distance measured in the fixed plates is 2h.

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Magnetohydro Dynamic Steady Flow Between Two Parallel Porous Plates of a Viscous Fluid Under Angular Velocity with Inclined Magnetic Field

R. Delhi Babu, S. Ganesh, V. Yuvaraj

Abstract: The Model is made as the Steady Magnetohydro dynamic streams with an exact speed between parallel penetrable plates are considered. The issue is seen methodically by using comparability change, whose game plan oversees growing fluid stream with a dashing velocity. The Major Applications of Magnetohydro dynamic (MHD) are the controller of generators, the system containing Cooling and thermal structures, improvement of polymer, Fuel industries etc. The objective of this paper is to look at the Steady Magnetohydro dynamic stream of thick fluid with a saucy speed between parallel porous plates when the fluid forced to their back position by the way of the dividers of each partition at a comparative rate. The issue is decreased to a third solicitation direct differential condition which depends upon a Suction Reynolds number R and M1 for which a right course of action is gotten.

Keywords : Magnetohydrodynamic flow, fluid flow, parallel plates, angular velocity.

I. INTRODUCTION

Magneto hydro elements are the examination of the association connecting alluring fields and motion fluids. The effect of MHD and Hall current on gooey streams has unprecedented vitality for real time Engineering and related fields. Accordingly, this concept presents the practice of Engineering concepts in early 1960's. In astrophysical fluid and geophysical components many comparable and relevance wide region alluring field are implemented in electrically driving concept and the surge of a fluid. MHD accept colossal employment in many domains for instance, sun-based material science, sun-controlled cycle and turning alluring stars.

Using rectangular channel, the weight inclined viscoelastic Maxwell fluid with issue of precarious stream Bagchi [1]. Attia and Kotb [2] the temperature dependent thickness between two parallel plates by the concept of MHD stream and Warmth trade.Attia [3] cleared the transient state issues in MHD. Ezzat, Othman and Helmy [4] Micropolar Magnetohydrodynamics highlighted in issues of breaking point the stream layers. Aboul-Hassan and Attia [5] concentrated on the progression of transverse appealing field between the penetrable plates at two levels progression of the main viscoelastic fluid. Nabil, Eldabe, Galal, Moatimid and HodaSm Ali [6] experimented the visco-adaptablefluid of Non-Newtonian MHD stream of animated plate by orous medium.Attia [7] determined the viscoelastic fluid of Precarious Hartmann Stream with the Corridor sway. S. Krishnambal and S.Ganesh [8] researched the Temperamental blends streams in-between two parallel and penetrable plates whose fluid considered as thick fluid.R. Delhi Babu and S. Ganesh [9] given the rakish speed and their impact in magnetohydrodynamic steam experiment in parallel penetrable plates. R. Delhi Babu and S. Ganesh [10] highlighted the angular velocity of the Magneto HF in unsteady manner in a platform of porous plates in parallel view.

II. MATHEMATICAL FORMULATION OF THE MODEL

The estimation of the Crossway attractive field into dividers in the vertical direction applying the steady laminar progression in a liquid as incompressible gooey in main interface platform of Permeable plates which are aligned as parallel plates. In the beginning the channels are analysed and verified by considering the two major axes named as parallel and inverse axis for the two divider channels for tomahawks simulation.

L named as the Channel length and the distance between the two plates in parallel conditions are given as 2h. The velocity segment in the x direction named as u and in the y direction the velocity is named as v, Ω is the rakish speed.

The equation of continuity is $\frac{\partial u}{\partial x} + \frac{\partial v}{\partial y} = 0$ (1)

Equations of momentum are

$$\rho \frac{\partial u}{\partial t} = -\frac{\partial p}{\partial x} + \mu \left(\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2}\right) + 2\Omega u - \sigma_e B_0^2 u \sin^2 \alpha - \frac{\mu u}{k} \quad (2)$$

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Difference cordial labeling and strongly multiplicative labeling for some extended duplicate graph

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Abstract. The aim of this paper is to prove that the extended duplicate graph of arrow graph and splitting graph of path admits difference cordial labeling and strongly multiplicative labelling.

Key words: Arrow graph, Splitting graph of path, Duplicate graph, Extended duplicate graph, Difference cordial labeling, Strongly multiplicative labeling.

1. Introduction

E.Sampthkumar [8,9] introduced the concept of splitting graph and duplicate graph..P.Vijaya kumar et. al., have proved that duplicate graph admits many labeling [12,13,14]. K.Thirusangu et. al., have introduced the concept of extended duplicate graph [11]. Selvam et. al., have proved many result in extended duplicate graph [1,2,3,5,6,10] .In [7] Ponraj, Shatish Narayanan and Kala introduced the notions of difference cordial labeling. The strongly multiplicative labeling was introduced by Beineke and Hegde [4].

2. Preliminaries

Definition 2.1 An arrow graph A_m^n with width 'n' and length 'm' is obtained by joining a vertex 'v' with superior vertices of $P_t \times P_m$ by ' t' new edges from one end. Clearly the total number of vertices is 2m+1 and the total number of edges is 3m.

Example: Arrow graph

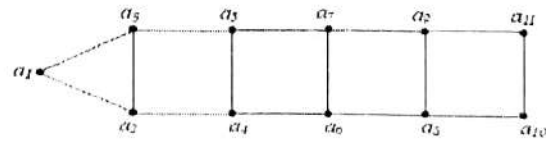

Figure 1 A^2_5

Definition 2.2 Let G (V,E) be a simple graph and the duplicate graph of G is DG (V_1, E_1) ,where the vertex set $V_1 = V \cup V'$ and $V \cap V' = \phi$ and $\varphi : V \to V'$ is bijective and the edge set E_1 of DG is defined as the edge a_ia_j is in E if and only if both a_ia_j' and $a_i'a_j$ are edges in E_1.

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ICAMMAS17

Influence of Polyvinyl Palmitate Copolymer As Viscosity Index Improvers For Lube

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Abstract

Polyvinyl palmitates were synthesized by condensing Polyvinyl alcohol with palmitic acid in different ratios and characterized. Intrinsic viscosity and their Molecular weights were found using Mark-Houwnik equation. Viscosity index of diesel oil doped with the prepared polymers were determined and compared. From the results it was observed that there will be slight increase in the viscosity index of the diesel oil at different ratios of additives. From these results it was confirmed that these additives can be used as viscosity index improvers.

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Keywords: Viscosity Index, Diesel oil, Viscosity index improvers

Introduction

The development of modern engine and transmission technologies would be impossible without lubricant additive. From its conception in the early 1900s, the lubricant additive industry has worked in partnership with the oil and the automotive industries to enhance durability and performance of engine and drive line systems through lubricant design [1]. Additives are synthetic chemicals that can improve or add performances of lubricants. Some additives impart new and useful properties to the lubricant; some enhance their inherent properties, while some act to reduce the rate at which undesirable changes take place in the product during its service life. One of the important types of additive is Viscosity Index Improvers (VII) commonly known as viscosity modifier (VM) [2].

The viscosity index is an indicator of the change in viscosity as the temperature is changed. The higher the viscosity index (VI), the change in viscosity of an oil changes for a given temperature change will be less [3]. Viscosity index improvers are used to limit the rate of change of viscosity with temperature. These improvers have little effect on oil viscosity at low temperatures.

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Dielectric Properties of Natural Rubber Composites filled with Graphite

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Abstract

Natural rubber (NR) composites filled with graphite (G) at various loading level was prepared by two roll mixing mill. Curing characteristics and dielectric properties were investigated and compared with NR/carbon black (CB) composites. The minimum and maximum torque of NR/CB composites increases upto 40phr loading. The same trend was found in NR /G composites upto 30 phr. Scorch time and optimum cure time of NR/ G are relatively higher than NR/CB composites. Dielectric parameters such as dielectric constant and loss factor increases on increase in CB. Graphite composites show maximum dielectric constant up to 20 phr. The frequency dependant dielectric loss factor of NR/CB is shows that, they are more conductive than NR/G composites.

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Keywords: Natural rubber, Graphite ,Carbon black, dielectric properties, vulcanization characteristics;

1. Introduction

Graphite is one of the important allotropes of carbon and abundantly available in nature. Graphite has a layered structure called Graphene, held together by a weak Vander Waals force. The presence of π orbital over the entire Graphene sheet makes it a thermally and electrically good conductor. The thermal and electrical conductivity of graphite is about 209.34 $W \cdot m^{-1} \cdot K^{-1}$ and 2 $x10^{4} \Omega^{-1} cm^{-1}$ respectively [1,2].

Therefore graphite filler is used in the elastomer industry as a filler to enhance electrical and thermal conductivity. Several authors are extensively studied the curing, electrical and dielectric properties of graphite filled polymer composites [3,4,5]. The presence of weak van der Waals forces between the graphite layers is attributed to relatively poor reinforcing properties in polymer. Further to understand the reinforcing effect of filler and the interfacial interactions between rubber matrix and graphite filler, dielectric spectroscopy studies was carried out. In this present study, the effect of graphite on vulcanization and dielectric properties of natural rubber composites has been investigated and the results were compared with NR/CB composites.

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Action Research: a Supplementary Source for the English Langauge Teachers

Poornima Varalakshmi. K, Shanmugathai M

Abstract*— This paper tries to explore that, Action Research is a supplementary source for English Language Teachers to bring out better teaching outcome of the teachers and better learning outcomes of the students. In the current scenario, apart from the syllabus, English Language teachers expect a supplementary source to follow a new strategy in order to satisfy the expectations of the students inside the classroom. They face many challenges in the classroom and one of the important problems is to draw continuous involvement of the students as well as to create good understanding of the subject in the classroom. In this connection, Action Research helps the teachers to explore effective teaching strategy in the classroom. This Action Research is integrated with a new approach called MUSE (Manageable, Urgent, Significant and Engaging), that helps the teachers to plan effectively. Besides, it is an exploratory or activity based classroom research and so it encourages the students to learn effectively and understand clearly with more involvement in the classroom. This study suggests a need for the supplementary source and it also focuses on Action Research to aid the teachers.

Keywords: Supplementary, Action Research, Manageable, Engage, Integrate, Exploratory

I. INTRODUCTION

Nowadays, English Language Teachers play a predominant role to sharpen the skills of the students. The English Teacher plays a vital role in improving the proficiency in the students at higher level of education [4]. But, teachers face many challenges in the field of teaching. In particular, ELT teachers undergo lots of problems in connecting the students with their thoughts inside the classroom. One of the main reasons is the gap between the teachers and students expectations. So, it's a crucial time for the teachers to find a solution for their problems. The teacher is expected to meet the needs of the learners This can be done by adopting learning-centered, project-based and activity-oriented approach in the classroom [4]. In other words, the students also expect many activities based and technology based teaching in the classroom. Hence, there is a gap in between the teacher and students in the classroom itself. In order to fill this gap, Action Research acts as a supplementary source to create a network or link between the teachers and students with a view to enhance the teaching-learning process .

Action research is gaining grounds in the educational arena around the world [5]. Action Research or classroom –based research is steadily gaining popularity in the Indian context because it focuses on the teacher's real-life classroom issues and solving those through an enquiry-based approach [1]. So, it is the right time for the teachers to revive their teaching methodology with the support of Action Research, to meet the recent demands of the students. Fig 1 shows the entry points of Action Research.

Fig 1 Entry Points for Action Research [7]

Continuous Professional Development is very essential for all the teachers to enhance the teaching pedagogy inside the classroom. Besides, many teaching strategies are emerged in the field of teaching to guide the teachers. Action Research is one of the best strategies that facilitate the teachers with creative ideas in order to help the students to face the challenging world confidently. Classroom is a place of interaction and collaboration between learners and the teacher [6]. It is important to develop a package of teaching-learning materials for classroom use in order to engage children in active learning [2]. Students are always passive inside the classroom and so they fail to show interest in the English Subject. A teacher has to use a variety of teaching-learning materials in the classroom, especially to teach a second language like English, as it is challenging for him/ her to sustain learner motivation for one full academic year using a single textbook [2]. In this connection, Action Research acts as an added source to the teachers to bring out a better teaching-learning outcome. Meyer (2000) comments that action research's strength lies in its focus on generating solutions to practical problems and its ability to empower practitioners, by getting them to engage with research and the subsequent development or implementation activities [1]. The purpose of all research is to generate new knowledge. Action research generates a special kind of knowledge [13]. This is done through reflective cycles in the process of Action Research.

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Keeping up with the English Language in India

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Abstract— Almost since the times of pre independence, the Indianness in English had started spreading diversified impact and unlimited changes deeply mingled with its cultural heritage which can be noticed predominantly in people belonging to all strata of society. Today, hybrid pattern of English stalks the land of India and helps to improve further more the popularity of already popular English. Indian English has a long journey and it has been steadily entertaining and educating by weaving and mixing innovative word power which goes strongly with the new age users who are familiar with multiculturalism, The reasons being technology, social media, the willingness to be techno-savvy and the touring populace. This paper throws light upon different aspects which ensure the fact that Indian English is here to stay for centuries ahead.

Keywords: Indian English, Diversified impact, Hybrid pattern, Multiculturalism, Technosavvy

I. INTRODUCTION

The Himalayan presence of English in India in the present century augurs well for unlimited foreseen & unforeseen changes that will happen in the near future. India's dalliance with English began when the East India Company arrived in India in 1608. Of course, it has become a marriage of two incompatible partners through the centuries of the Raj. But the fascination for English gathered extraordinary momentum after the British left the country. The growth of the language in India over the years is so steady. From the 18th century onwards, when it came to an important communication, it has to be in English. This has been happening due to two reasons one is the changes and trends in journalism and another is the job of advertising.

The search for a 'higher' language continues throughout the history of the Indian encounter with English starting with early 18th century and going on through various stages of education, administrative reforms and then reaching up to the elusive search for an elitist social status. To-day trying to forge a connection with English is an effort that can be seen at every level.

It is very difficult to answer the question like this: who are the primary users of English in major countries of today? The most natural and immediate response would be that these are upper class people, who belong to the leading strata of a society. It is true that in most of these countries, English Language has been taught from the preschool level. Often there is a strong feeling is in existence that if a student is good in language, particularly in a foreign tongue like English, the quality of his performance in different endeavours related to his studies seems to be good. Edgar W. Schneider (2011) says that there is an enormous liking / preference for English to learn all subjects related to one's education, precisely out of the instrumental motivation, because knowing better English always assures asserted status in society and lucrative job opportunities as well. So even the not so highly qualified individuals tend to practice English language skills for spontaneous communication not only to come up in life financially but also to attain different posts/positions by excelling in trade, tourism and politics.

As said earlier, when attempts are made to flourish in the usage of English, it is clearly observed that an amazing variety of semi fluent usage is noticed. Viniti Vaish (2008) describes the acquisition and use of English language in a lower middle class Government School in New Delhi, and she comments of English though members of it can listen, read and write. It is not the class that speaks Indian English. But this group handles the English language for personal objectives, similar skills like obtaining a license for driving a car to be a good earning driver.

An educated & techno-savvy youth, today, may find it difficult to understand the meaning of the sentence: the manager is a man of letters. In its true sense, the meaning is that the manager has sound English writing skills. But the perceived meaning is that the manager has the habit of producing letters for too many occasions. A great many Indian writers took the letter form to exhibit their writing skills. The first Indian book in English was epistolary, written by Dean Mohamed (1759-1851) who wrote letters about his travels and life. In the year 1934, Peter Davies Ltd published "Letters of an Indian Judge to an English Gentlewoman". The Judge Arvind Nehra was an Anglophile, and most of his letters were cloyingly sentimental about everything British. Further Nehru's letters though had no clear instances of Indian usages, it served to show Indian fascination for the epistolary form especially when it came to writing in English. Binoo K. John (2007) says that the Indian fascination for the writing of letters – good, bad, literary and indifferent - in English has had a wide ranging fall-out: the growth of Indian –English. Not everyone had the literary or descriptive powers of Nehru or Dean or other early Indian letter writers. Their ambitions were confined to seeing their letters printed in newspapers and suffixed with their pen names, as one can see.

Binoo K. John continues saying that Indianised English language will survive by all means defying all logic. Even the 'colour' will be changed due to different groups belonging to different states of India who use the language with their own flavour. A Keralite's English is different to a person from West Bengal and similarly different to that of a Mumbaikar, who of course proves that he is from the trade capital of the

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Strengthening and Retrofitting of RC Beams Using Fiber Reinforced Polymers

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Abstract

Reinforced Cement Concrete (RCC) Structures are bound to lose its strength while in service due to various causes. Rehabilitation restores the health and service life of the structures. Fiber Reinforced Polymer (FRP) composites overcome most of the limitations of conventionally practiced repair techniques.The Fiber Reinforced Polymer (FRP) application is a effective method to repair and strengthen structures that have become structurally weak over their life span. FRP repair systems provide an economically viable alternative to traditional repair systems and materials. Among the various fibers, Glass Fibers (GF) is widely used in FRP. Strengthening of RC structural elements using externally bonded GFRP composite is an effective method to increase the structural performance under both service and ultimate load conditions. Restoring or upgrading the strength of beams using GFRP sheet can result in increased strength and stiffness.

Keywords: Fiber reinforced polymer; cement concrete; increase structural performance

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1. Introduction

1.1 General

Reinforced Cement Concrete (RCC) is an extremely popular construction material. One major flaw of RCC is its susceptibility to environmental attack. This can severely decrease the strength and life of these structures.

The repair of structurally deteriorated RC structures becomes necessary since the structural element ceases to provide satisfactory strength and serviceability. The reasons may be due to changes in loading, changes in use, reinforcement corrosion or changes in configuration. Occurrence of natural calamities may also be one of the reasons requiring repair of existing structures.

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Node Collapse Discover In Mobile Wireless Networks: A Prospective Approach

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Abstract--- *Intense simulation of disconnected and disconnected systems shows that our schemes achieve high failure recognition rates, and sometimes false positive rates, and incur low communication costs. The current approach can result in a lot of network traffic, which is not compatible with the use of restricted sources in mobile wireless systems. Our method has the advantage of being relevant to connected and disconnected systems. When compared to other methods that use localized monitoring, our method has similar fault recognition rates, reduced communication load and a much lower false positive rate. In addition, our approach has the advantage of being suitable for connected and disconnected systems, while central monitoring is relevant only for connected systems. In the indoor environment where the GPS navigation system is not working, the node can use location techniques. Different site devices and methods have different amounts of error in site measurements. The probability of failure depends on the node itself with the atmosphere. Our approach generates only local traffic and is connected both online and offline. Many localization techniques are codified in the literature. Finally, we produce the highest failure recognition rate using our approach.*

Keywords--- NodeFailure Detection, Localized monitor, FPS, Network Traffic, failure node, disconnected network**.**

I NODE COLLAPSE DISCOVER IN MOBILE WIRELESS NETWORKS: A PROSPECTIVE APPROACH

One method that many people have followed in current studies relies on centralized observation. Each node must send periodic "heartbeat" messages to some central monitors, which are used for a possible shortage of node heartbeat messages as an indication of node failure. Detecting node failure is necessary to monitor the network. In this paper, we recommend the use of a unique probability approach that carefully combines local monitoring, site assessment and node collaboration to determine node failure in mobile wireless systems [1]. In particular, we recommend two planners. Detecting node failure in portable wireless systems is very difficult because the network structure can be very dynamic, the network is not always connected, and the sources are also restricted. In this paper, we take a probabilistic approach and suggest two-node error recognition schemes that systematically combine local observation, site estimation, and node collaboration. In contrast to the methods that use centralized monitoring, while our approach may have recognition rates slightly lower and false positive rates slightly higher.

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A Modern Methodology Enabling Smart Agricultural System

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Abstract-- Agriculture is the backbone of our country. However, in spite of all the development, Indians still follow the old methods. It is necessary for the farmers to have knowledge of the amounts of the macronutrients and micronutrients present in the soil. Lab testing method will not be able to visualize the soil nutrients for the live monitoring. This project is intended to provide the soil testing services at farmers door step by determining the amount of macronutrients present in the soil. Measurement of NPK contents of the soil is necessary to decide how much extra contents of these nutrients are to be added in the soil to increase crop fertility. This will improve the quality of the soil which in turn yields a good quality crop. To fulfill increasing demand of growing population over the years there is a need of increase in food production. To increase crop yield, fertilizers containing predominantly N, P and K are essential. Improper use of fertilizers in turn results in poor quality of fruits and vegetables, lagging in colour, size, taste and even quantity. Over-application of fertilizers has caused low fertilizer usage efficiency, resulting in low agricultural product quality, serious environmental pollution, etc. Quantity of NPK is dependent on crop type and on plant growth status. How much quantity of fertilizer to be used is further dependent on present contents of NPK in the soil. The project is implemented using a technology called WUSN which is used to detect the amount of NPK present in the soil and an automatic soil fertilizer dispensing robot is used to dispense only the required amount of fertilizers in the soil based on the data obtained by the sensors.

Keywords—Nitrogen-Phosphorous-Potassium(NPK), Wireless Underground Sensor Network(WUSN).

1. Introduction

To fulfill the increasing demands of growing population over the years there is a need of increase in food production. To increase crop yield fertilizers containing predominantly nitrogen(N), phosphorous(P) and potassium(K) are essential. Improper use fertilizers in turn results into poor quality in fruits, vegetable lagging in color, size, test and even quantity. The three elements promote plant growth in three ways .

- N- Nitrogen : promotes the growth of leaves and vegetation.
- P- phosphorous : promotes root and shoot growth
- K- potassium : promotes flowering, fruiting and general hardiness

Quantity of NPK is dependent on crop type and on plant growth status. The fertilizers are present in the ratio of 18-51-20 by weight : 18% elemental(N), 22% elemental(P), 16% elemental(K).

The existing systems deals with the actual detection of NPK values of the soil using multimode plastic fiber optic sensor and other technologies like FPGA, Colour Sensors, IOT, etc.,

The present study deals with the detection of NPK values of the soil using content detection sensor. Along with this the soil moisture sensor, humidity sensor and water level sensors are used to monitor the soil parameters.

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Lifetime Estimation of WSN with Enhanced Pairwise Directional Geographic Routing

G.Saravanan, R.Lakshmi Devi

Abstract: ***This research work proposes an enhanced pair-wise directional geographic routing (EPWDGR) technique using the directional antenna and compares it with the conventional pair-wise directional geographic routing (PWDGR) method that uses the Omni-directional antenna. PWDGR has two key limitations - minimum network lifetime and its use of static nodes. The EPWDGR technique aims to overcome these pitfalls by incorporating a directional antenna patch that requires lesser power, thereby increasing the network lifetime. The validations have been performed through simulations that use a random waypoint mobility model which is more practical. Varying performance metrics have been used for the estimation of network lifetime. The EPWDGR also solves the energy bottleneck problem at the nodes near the sink.***

Keywords : Wireless sensor nodes, Network lifetime, Directional geographic routing, Enhanced Pairwise directional Geographic routing (EPWDGR), Pairwise directional Geographic routing (PWDGR), Random waypoint model

I. INTRODUCTION

A Wireless Sensor Network is a pack of a specifically designed device with a transmission infrastructure for tracking and to read the conditions at different places. In this experimental work, an enhanced routing technique is compared with PWDGR by evaluating the performance metrics. Here, routing refers to geographic routing (also called geo routing or position-based routing), which is a directing technique that depends on information received from various geo-locations.

This method is mainly suggested for unwired networks and depends on the basic idea that the header node sends a piece of information to the specific geographical location of the endpoint instead of considering its physical address in the network. The problem that is discussed in both protocols is to develop a way to prolong the network lifetime with minimal delay. The conventional PWDGR uses three nodes for efficient routing, namely, Cooperative node, three-hop node, and the source node. PWDGR has been simulated in a static network but simulation validation for EPWDGR is done using a mobile network with a random waypoint mobility model.

II. LITERATURE SURVEY

The energy-medium multi-directional path which is based on relative arrangement of paths is analyzed in the research paper titled, PWDG routing depends on Wireless Sensor Network. GPSR is the leading greedy path algorithm, which it relies on the various geo points, and it propagates the information to the adjacent nodes which are nearest to the base station. In addition to GPSR, there is also a path depends on a gradient by choosing the adjacent node with a decreased angle as the next node [1].

In another paper on Multipath Balancing and Expanding for Wireless Multimedia Sensor Networks, Chen et al. suggested DGR understand the utilization - specific count of node-disjoint routing directions to extend the total bandwidth for the quality of service provided in Wireless Multimedia Sensor Nodes (WMSN). DGR is a procedure framed specifically for visual sensor networks and can significantly boost the running behavior in terms of lifetime and delay [2].

The algorithm explained in the paper Energy-oriented multiple-way finding in wireless sensor networks has primarily been forced by the AOMDV for finding node-disjoint or desired link-disjoint routes. By updating the initial-hop to the RREQ header, and bookkeeping of the initial-hops of the immediate arrivals of RREQs, nodes that accepts false RREQs by various adjacent nodes can quickly find whether the paths are node-disjoint. Every node retains an energy value calculation for each of its path entries. This value finds the possibility that a packet is directed through a specific path [3]. the frame structure, the nodes can form close to send the information within the groups. Then, the extraction of information by hop by hop method and multiple-trip route-finding methods are combined to the implied MIMO method to mutually provide power efficiency, reliability and assured point to point Quality of Service. The alternate usage of noncontinuous routes, GRAB uses a route interleaving method to obtain high reliability. The routing based on a geographical structure can be stateless because the second hop is chosen in such a way that, the geolocation of the endpoint, which is saved in the packet header [4].

Directed Diffusion is an inquiry-based multiple-path routing algorithm, in which the aggregating node starts the path detection work. The collector node floods the specific data through the network. These specific messages consist of information for the task which will be operated by the sensors. At the time of specific data flooding, all the agent nodes save the interest data which are arrived from the adjacent nodes for future use. As the interest data is extracted by the nodes, the receiver node produces an angle towards the node from which the information has been received. At this stage, multiple routes can be located between every source and collector node pair. After this process, when the header node finds the process matched with the available data in the interest table, it sends the information through all the constructed angular points. Depends on the functionality of the data reception over each path, the aggregating node chooses the way, i.e. the path with minimum delay.

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Ultrasonic Sensor Based Haptic Feedback Navigational System for Deaf - Blind People

G. Saravanan, K. Devibalan

Abstract*: *Deaf-Blindness is a rare collective disorder that affects nearly 3.5 million people in today's world. The improvement restricts the usage of two senses and by large impacts a person's navigational capability. A variety of aid devices are used to tackle such a disability. But one common drawback that setback them is their inability to address the collective disorder. The proposed project aims at overcoming the aforementioned drawback with the help of ultrasonic sensors and haptic feedback in the form of vibrations. These sensors and feedback mechanisms are to be controlled by a microcontroller in an Arduino. Further, a rechargeable battery shall be used to accommodate the power requirements which emphasizes on energy efficiency. The project commits to limit space constraints by proposing a compact handle design and maximizes its cost efficiency such that it is affordable for everyone equally.

Keywords* : *Deaf-blindness, SONAR, path guidance

I. INTRODUCTION

Deaf-Blindness is rare disorder that affects a significantly small percentage of our population. It is very rare that a person is born with this disability, but the chances that a person develops deafness or blindness in course of life is highly plausible. When that happens, if the person is already blind or deaf then he ends up with deaf-blindness. Navigational assistance has been a revolutionary technological innovation since its inception. The primary aim of such aid is to provide a seamless method of path guidance based on effective understanding of the environment. In its raw form the end user expects this form of assistance to provide him with the knowledge of objects in the environment in the predefined path to his destination. This brings us to the requirement of developing an efficient solution that enables a disabled person to use navigational assistance without any hassle. The proposed product focuses on providing a novel navigational assistance mechanism in an indoor environment that uses the concept of Sound Navigation and Ranging (SONAR) and haptic feedback**.** SONAR is implemented using ultrasonic transducers and haptic feedbacks in the form of vibrations are provided.

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II. LITERATURE SURVEY

Assistance devices conventionally use a signal or indication of some sort to inform the user about any obstruction in their path. In the vast number of technical articles, papers and experiments that have been studied, it was found that there is no concrete system that aims at providing assistance that is independent of auditory feedbacks. In the conducted survey a detailed account on the existing systems, their drawbacks would be elucidated along with discussion on research carried out in this domain. The most widely used aid device is the Guide Stick or the White Cane which is primarily hand held and extends till the surface of floor. Despite its universal popularity, the major disadvantage is its restricted usage capability. The stick does not inform the user about objects above the knee level. Also it requires the user to continuously tap around that might wear out the user over a period of time. The other alternative guiding mechanisms include, guide Dogs, GPS enabled Wheel Chair, Guiding Bots. Guide Dogs have proven to be a faithful and effective companion, but it requires a lot of training and a period of getting accustomed to which might reduce the usage efficiency.

In a study conducted by Mohamed Fezari *et al.* (2007) from University of Annaba, Ultrasonic transducers have been integrated with various conventional aid devices and their operational response was recorded. The sensors were controlled by a microcontroller and the feedback was given as auditory response with the help of speech synthesizer.

Another study carried out by Ramiro Velázquez *et al.* (2003) from Laboratoire de Robotique de Paris discussed an Intelligent Glass that records the environment in real time and provides an environmental perception to the wearer in the form of interactive Tactile Interface exploiting the concept of Man- Machine Interaction. The important understanding from this study is the need to provide the wearer with an understanding of his environment. [6]

The third study surveyed was by Kyle Curham *et al.* (2012) from University of South Florida focussed on providing Haptic Feedback to the disabled person in the form vibrations. This research also used the concept of SONAR and the working device was proposed as a hand mounted unit.

The results of this study tell the importance of device portability and handling ease. [2]

Finally Mahidi Safaa A. *et al.* (2012) from Technical Institute of Babylon, Iraq worked on a handheld device for obstacle detection using SONAR. The concept of Handheld was adopted from the two research works mentioned above as it gives more degree of freedom and ease of usage. [3]

IoT Controlled All Terrain Rocker Bogie Robot

Prasath Kumar.S, Auvai Saraswathy.M, Malligeshwari.H, Nandhinni.Su

Abstract*: *In today's world, we concentrate mainly on newly emerging technologies for several monitoring, surveillance and recovery operations. This paper presents combination of two emerging technologies, which are Robotics and IoT. Most surveillance and monitoring robots does not have the ability to move on uneven surfaces and on slopes, but the rocker bogies have these features. While the present rocker bogies are remote controlled, it needs a human to be near it to control it. So our aim is to design a rocker bogie robot that can be controlled via IoT from a distance, which can be done using web page controlling. The control mechanism is provided with video transmission facility through high speed image transmission. The robot is fitted with a camera which captures the scene and transfer the images to the server on which the user can control and watch the live feed. We present the design of rocker bogie suspension and how to control it using commands in the further sections.

Keywords: Robotics, IoT, Rocker Bogie Suspension, Live feed, Web page controlling.

I. INTRODUCTION

Surveillance is essential in many fields for monitoring and providing accurate information about the status of a place which is prone to illegal entries of spies. Now-a-days as technology improves, robots are being used for monitoring and surveillance applications. These robots have a camera fitted to them which displays the scenes captured by live streaming to the user. But, there are several disadvantages which include the inability of these robots to move on uneven surfaces and slopes. This is overcome by rocker bogie suspension setup which is capable of moving in all types of uneven surfaces and terrains.

Rocker bogie suspension is nothing but a combination of a rocker and a bogie where bogie means the wheels of the robot and bogie means the connecting link between the bogies. This setup allows the robot to move on obstacles which are up to twice the diameter of the wheels.

Existing Rocker bogies are either remote controlled or based on artificial intelligence. The main drawback of remote controlled rocker bogies is it needs a human to control it within its nearby range which cannot make humanless monitoring possible. The disadvantage of artificial intelligence based rocker bogie is it cannot be controlled in desired direction. It makes its automatic moves and cannot be controlled by the user.

To overcome all this problems, rocker bogie robot can be setup with IoT controlling section which would make the robot to traverse in the user desired direction as well as avoid any steeps present in the moving path. This makes the robot move even in slopes of 45 degrees and return without falling.

II. OVERVIEW

The proposed rocker bogie robot controlled using IoT takes commands from the webpage where the scenes captured by the robot are displayed. The webpage is divided into two sections. The section on the right side shows the scenes captured by the robot through live streaming. The session on the left has control buttons for the user to operate the robot from long distances.

The control section is written in HTML to place the buttons on the correct position.HTML is the main language used to build the webpage which use Php for traversing from the main page to the button status page. Clicking on the button changes the status of the button page which gives the control commands to the Raspberry pi3 which is present in the rocker bogie robot.

The Raspberry pi is the main component present in the rocker bogie setup which gets the command from the webpage and processes it and sends it to the motor driver IC. It does it through built in wifi modules for the access of the commands. The Raspberry pi used in this setup is of model B with quad core 64 bit ARM cortex A53 which is clocked at 1.2Ghz.We use Raspberry pi3 instead of Raspberry pi2 because it is 50% faster.

The motor driver IC gets the command from the Raspberry pi and controls the motors based on the command. The motor driver IC is L293D which is 16 pin IC with supply voltage 5volts and 600mA output current capability. It has two voltage pins one is used draw current for the working of L293D and other is for applying voltage for motors. It allows DC motor to drive on either directions simultaneously. We use L293D IC because it has internal ESD protection and high noise immunity inputs.

The dc motor driven by the driver runs at 100 rpm which is basically a 12 volt DC motor. The rocker bogie has 6 wheels and connecting links acting as the rockers The whole setup is supplied with a 12volt-1A sealed rechargeable lead battery. The Raspberry pi takes commands written in Python which is recent and easiest coding language. This project requires XAMPP Php interpreter for interpreting the scripts written in the Php and Pearl language. It is a free and open source cross platform for the webserver. The tight VNC software is used to project the scenes captured by the robot as live

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Pupil Detection Algorithm Based on Feature Extraction for Eye Gaze

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Abstract*: Exact real-time pupil tracking is an essential step in a live eye gaze. Since pupil centre is a base point's reference, eye centre localization is essential for many applications. In this research, we extract pupil eye features exactly within different intensity levels of eye images, mostly with localization of determined interest objects and where the human is looking for. Since it's a digital world and digital transformation, everything is becoming virtual. Hence this concept has a huge scope in e-learning, class room training and analyzing human behaviour. This research covers eye tracking technology to track and analyze the learners' behavior and emotion on e-learning platform like level of attention and tiredness. Harr's cascade classifier was used to first locate the eye's area, and once found and support vector machine (SVM) for classification with the trained datasets. We also include the state of emotions, facial landmarks of the salient patches on face image using automated learning-free facial landmark detection technique.Experimental results help in developing learner eye gaze detection in system using Pycharm and hardware output using Raspberry Pi. In Raspberry Pi is given with the input image captured using external webcam and based on the engagement level of the learner content 1 or 2 would be displayed in the Raspbian OS environment.

Key Words: Image processing, SVM, Harr's Cascade.

I. INTRODUCTION

In a virtual learning world, learners can lose motivation and concentration very easily. Our research is based on studying learner's behavior on an online learning platform to create a system able to analyze the learners based on their behavior, emotion and listening to educational content to their needs.

Eye tracking is one of the techniques for recording eye movements. This technology is used to measure eye positions and eye movement in many fields such as psychology, psycholinguistics, ergonomics and e-learning. This paper introduces the use of eye tracking technology to track and analyze the learners' behavior and emotion on e-learning platform like level of attention and tiredness.

In e-learning, it is necessary to create more effective interaction between the educational content and learners. In particular, increasing motivation by stimulating learners' interest is very much important. Users' eyes can be a significant source of information to analyze learners' behavior and listening to class. Eye movements provide an indication of learner interest and focus of attention. Movement of eyes provides useful feedback to personalize learning interactions which can help in effective teaching. With a study of eye movement, learners may be more motivated.

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II. RELATED WORKS:

"AUTOMATED WHEELCHAIR" can be regulated by theEYE-BALL movement by utilizing the concepts of Image Processing and other guiding technologies [1].

High accuracy of face recognition, detection of facial parts such as eyes, nose, and mouth is achieved by 2D Hough transformation for detecting circle of unknown radius in which, first it generates 2D parameter space (xc, yc) using the gradient of grayscale through obtaining the radius of circle r for each local maximum in the (xc, yc) space. The next step is eye detection using Support Vector Machine (SVM). At last, pairs of eyes satisfying predefined conditions are generated and ordered by sum of the likelihood of both eyes.[2]

An eye tracking system helps in tracking the movement of the eyes to know exactly where the person is looking and for how long they stare at. The suitable devices for eye movement acquiring and software algorithms are chosen as per the application requirements[7]. Some vendors have invested in eye tracking technology. But their solutions are focused on commercial remote camera-based eye-tracker systems for which the light source and camera are permanently affixed to a monitor which is considered as one of the demerits of the system.[3]

The automatic eye detection technique is subsequently validated using FRGC 1.0 database. The result of validation shows that our eye detector has an overall 94.5% eye detection rate, with the detected eyes very close to the manually provided eye positions. [4]

Three different algorithms were used for eye pupil location and testing. This algorithm efficiency comparison was based on human face images taken from the BioIDdatabase. In this case human face images were acquired by a webcam and processed in a real-time system [5].

For images with low resolution, computer vision community due to noise, shadows, occlusions, pose variations, eye blinks, etc., is used and a two-stage algorithm is proposed for iris centre localization[8]. A fast convolution based approach is used for obtaining the coarse location of Iris Centre (IC) and IC is further refined in next stage using boundary tracing and ellipse fitting. The algorithm has been evaluated in public databases like BioID, Gi4E[6].

To improve cursor stability, eye pupil center was filtered with Gaussian filter to remove the spikes[9].

The viability of autonomous public eye trackers as both data-gatherers and public exhibits is proposed in this research[10].

In automotive applications, integrated power electronic systems for automotive electronics gives a solution to

Advanced Patient Health Monitoring System Using Power Line Communication Technology

S. Sweetline Shamini ,Gayathri.M, Harshini.M, Suruthi.S

Abstract: ***Open source automation system is rapidly developing towards more reliable communication systems. In recent years for its convenient installation and low cost the power line increasingly become a popular transmission medium in creating industrial/ resident work. PLC is a technology uses power lines as physical media for data transmission. PLC offers a no new wires solution because the infrastructure has already been established. PLC modems are used for transmitting data at a rapid speed through a power line in a house, an office, a building, and a factory, etc. Due to this additional telemetry features, cost of the devices are more and all hospital or clinic cannot afford to buy them. Hence in our work, temperature, blood pressure and heart beat monitoring equipment based on power line communication is developed. This is cost effective equipment which uses existing power cables as communication medium. Power Line Modem (PLM) is used for transmitting and receiving the signals over power line cable. Signalsare modulated and demodulated using direct-sequence spread spectrum (DSSS) technology. When compared with other communication technologies like local area network (LAN), ZigBee, Bluetooth, the establishment cost for healthcare monitor using Power Line Communication (PLC) was low.***

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Index Terms: PLC Technology, PLC modem, Energy Efficiency, ZigBee, FSK.

I. INTRODUCTION

This project develops a real time communication using power line as the physical medium for data transmission. The main aim of this project is to monitor the patient health using PLCC technology. The health parameters and the data extraction methods have been set up in such a way that it is given as a input signal to the PLC modem. Then the data is modulated and transmitted through the power line using PLC transmitter.

If in case, any emergency occurs while monitoring the patient the buzzer will indicate and a message intimation will automatically be sent to the doctor through GSM. The data is extracted from the receiver and displayed. This project provides effective communication between patient and medical assistant.

II. RELATED WORKS

In hospitals, medical equipment like ECG machine, ventilators, infusion pumps, heart beat and blood pressure monitors are placed near the patients who need medical assistance. Medical Intensive Care Unit (MICU) in some hospitals has automated patient monitoring system for their patient. In some cases these automated units are interconnected by networking for central monitoring and medical data storage. Recent year's communication technologies are applied in healthcare for performing surgery and delivering assistance to the patients in the form of tele-surgery, telemedicine, biotelemetry using LAN, Radio Frequency (RF), ZigBee, WAN etc. Rural and urban sectors are targeted by the medical industries for assisting and delivering medical care.

High-speed data transfer over power grids is ensured by PLC technology supported by different worldwide standards. Realization of this technology is advantageous especially in buildings where there is no data network or other transfer medium. PLC technology can be used as an alternative way to Wi-Fi, for example, due to wall width when Wi-Fi is not usable. This technology has been often given in relation with possible usage in smart homes. Installation of modems is easy and fast. After connection of PLC modem in power supply, data are available in power grid at home or in a building.[1]

Power line communications (PLC) have become aviable solution in smart grid since most devices are connected to power lines. Although PLC stations can receive power through power lines, they also require efficient use of energy. To this end, recently published PLC standards define a power saving scheme. Since the current PLC power saving scheme only defines a simple constant sleep period strategy, two adaptive sleep period adjustment schemes are presented here. The delay performance and power consumption of the three power saving schemes are verified numerically and through simulations. The two adaptive schemes are confirmed to properly balance delay performance and power consumption for any traffic type.[2]

To improve energy efficiency (EE) in power linecommunication (PLC) systems, we proposed a dynamic load based PLC system model as a new model for EE maximization and an energy-efficient resource allocation strategy optimizing load impedance, transmission power as the optimization arguments. Since the load impedance at receiver is influenced by characteristics of a power line channel, optimizing the load impedance is required to maximally induce a received power while considering the channel characteristics. We need to

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A novel rescuebot for borehole accidents

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Abstract : Major reports are saying that many children were dead due to the unclosed bore wells. The rescue process cannot be handled smoothly because the environment inside the bore well cannot be predicted by easy means. A less expensive robot can be developed with simple mechanisms for controlling will simplify the rescue process. A movable robot capable of adjusting to the bore well dimensions is constructed. The robot has two arms that can be adjusted to rescue the child with the support of camera also aiding in the survival of the baby. Some additional features are also introduced to enhance and ease the comfort of the rescue operation. A compressor is used to fill an air bag that is implemented in this robot to make the rescue operation easy and be comfortable to lift the victim safely. The gas and temperature inside the bore well can be measured using gas sensor and temperature sensor respectively.

1. INTRODUCTION

Robots are humanoids which are having the ability to do the impossible work easily with less consumption of time. The branch of technology that deals with the operation and designing of robots is called robotics. The solution for bore well accidents can be enhanced with this technology. The child can be picked up using arms of the robot [1]. Control systems, sensors, manipulators, power supplies and software are all working together to perform this operation. Whether rotating on wheels, moving on wheels or propelling by inner force mechanism, a robot should move. It can move their arms, head, neck, fingers as well. A robot design must be able to recharge itself. A robot might be solar powered, electrically powered, battery powered. The energy needed by the robot is directly proportional to what the robot has to do. The rescue operation robotic mechanism for bore well accidents mainly consists of three processes: approaching the child, handling the body and taking child out of the well [2].

2. THE RESCUE MECHANISM AND RELATED WORK

The children are easily prone to bore well accidents because of the smaller size. The rescue process in earlier days was too difficult: digging a hole near the surrounding area of bore well. The presence of rocks in the surrounding regions of the bore well makes the rescue operation tedious. There must not be any hindrance to the resource availability for the successful rescue operation. Absence of oxygen and light is another major difficulty faced in this rescue operation. The rescue forces from the defence sector are called upon if further help is required. Time and energy consumption is more and the rescue

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Lab-on-Chip Technology: A Review on Future Scope in Biomedical Applications

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Abstract
Lab-on-Chip (LoC) integrates various analyses such as biochemical operations, chemical synthesis, DNA sequencing onto a single chip which otherwise would have been performed in laboratory taking sufficient amount of time. Due to the miniaturization of these biochemical operations, better diagnostic speed, cost efficiency, ergonomy, sensitivity and so on can be achieved. This paper gives the detailed description of Lab-on-Chip technology including its system components. Ongoing worldwide research projects based on LoC technology have been investigated and various constraints that need to be fulfilled for designing a LoC system are presented. The biomedical applications of LoC in different fields like in diagnostics, cellomics, in environmental studies to control the effect of pathogens, to check the food quality such as for the detection of various antibiotic families in raw milk have also been discussed. Finally, the current open research issues of this technology along with the possible future research scope in the biomedical area have been presented.

Keywords: *Biomedical Systems, Biosensor, MEMS, Microfluidics, Lab-on-Chip*

1. Introduction

Lab-on-Chip technology implies those techniques that perform various laboratory operations on a miniaturized scale such as chemical synthesis and analysis on a single chip leading to a handheld and portable device. In other words, LoC is a device which is capable of scaling the single or multiple laboratory functions down to chip-format. The size of this chip ranges from millimeters to a few square centimeters. [1] Current trend shows the growth of research in this area. In many universities across the world, many groups are formed that are dedicating their research in this area. For example, BIOS in University of Twente, Mina Med in Germany, and Nanobe in Finland [2] are some of the groups. Their main motive is to understand naonofluidics and nanosensing, to connect micro/nanoeng. with biomedical and life science fields, to develop new micro and nano technologies for LOC, and to demonstrate new LOC applications.

2. Design

A **lab-on-a-chip** (**LOC**) is a device that integrates one or several laboratory functions on a single integrated circuit (commonly called a "chip") of only millimeters to a few square centimeters to achieve automation and high-throughput screening.[3]. LOCs can handle extremely small fluid volumes down to less than pico-liters. Lab-on-a-chip devices are a subset of microelectromechanical systems (MEMS) devices and sometimes called "micro total analysis systems" (µTAS). LOCs may use microfluidics, the physics, manipulation and study of minute amounts of fluids. However, strictly regarded "lab-on-a-chip" indicates generally the scaling of single or multiple lab processes down to chip-format, whereas "µTAS" is dedicated to the integration of the total sequence of lab processes to perform chemical analysis. The term "lab-on-a-chip" was introduced when it turned out that µTAS technologies were applicable for more than only analysis purposes.

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Segmentation of Human Vertebral Spine -FEA Analysis

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Abstract
Back pain is one of the most common health problems facing people today. It is the second most common reason for a doctor's visit, behind only to the common cold. Billions of dollars are spent annually on treating back pain, which is also a very common cause of disability. More than 90% of people will experience an episode of debilitating back pain at some point in their lifetime. Once the chronic disc problem has been diagnosed, the conservative treatments like: specific rest, friction force medical aid or physiotherapy and exercise are followed. When correctly diagnosed, an excessive amount of medical/surgical treatments can be avoided. The aim of the study is to generate a mesh model and numerically simulate the biomechanical characteristics of the human spine, namely two vertebrae (L4 and L5) and inter vertebrae disc using finite element analysis (FEA) technique. In this process the bony areas of every MRI scanned image is segmented and the boundary lines are stacked into a smooth surface. Additionally, the technique generates the quantity mesh exploitation linear unit that is used to process the mesh for agreement. Moreover, L4 and L5 with disc were considered as linear materials with the exception of the ligaments. The contact behaviour of the two bones, simulation of disc and obtained displacements and stress describe about the pre-operation of human lumbar spine. The results depict that the potential fracture of the considered patient with respect to displacements. In this paper the implementation of bilateral filter technique is discussed . Using various edge detection algorithms namely, Canny edge detection, Sobel edge detection, Prewitt edge detection and Roberts edge detection, the results were compared. Among them, spine Canny edge detection algorithm produced effective output using MATLAB estimating the following parameters like total deformation, normal elastic strain, normal stress. With the help of these parameters, the human spine model was analyzed using the simulation software ANSYS. The implementation has done with MATLAB, whereas the stress and strain have been found at the plate bone of aspect joint of L4 and L5.

Keywords: *Magnetic resonance imaging(MRI) , Bilateral filter , Canny edge detection, Finite element modeling, MATLAB ,ANSYS*

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I. INTRODUCTION

The human back is composed of a complex structure of muscles, ligaments, tendons, disks, and bones, which work together to support the body and enable us to move around. The segments

Irovers: Real Time Unmanned Four Wheeled Iot Vehicles for Fire Monitoring and Extinguishing Using Sonic Waves

SUBASHINI.V, .ARTHI M, ANBARASI M, RAJAVENI R

Abstract*: The aim of the proposed system is to build an autonomous mobile robot system for measuring the various levels of air and noise pollution as well as the fire monitoring and in case of fire, this robot is used to extinguish the fire using SONIC WAVES. This is a IOT based robot which moves autonomously avoiding obstacles using the IR sensor. This robot is used for temperature monitoring for the analysis of the presence of fire. The data from the robot is sent and received using WIFI in IOT. This mobile robot is capable of avoiding obstacles using IR sensor thereby it can be easily introduced in places of fire accidents for the process of fire extinguishing. The fire detection are monitored by using the temperature sensor. These information from the sensor are sent to the PIC microcontroller and then using the wi-fi the information are sent to the cloud. The fire extinguishing process is carried out by the sonic fire extinguisher .

Keywords: IOT, sensors

I. INTRODUCTION

Fires are the accidents which occur most frequently, whose causes are the most diverse and which require intervention methods and techniques adapted to the conditions and needs of each incident. Depending on the type of fire (nature of the material ablaze), meteorological conditions (wind) and the effectiveness of the intervention, material damage can be limited (a single car, building or production or storage warehouse installation), or affect wide areas (forest or agricultural fires, hydrocarbons, gas or other highly flammable products, storage or piping installations, harbor installations and rail or marine transport equipment). Explosions are in a different category.

Each type of fire is the object of specific technical prescriptions as regards prevention, intervention and the behavior of the population affected. It is also relevant to note that many fires have a criminal origin and that in times of armed conflict or crisis as well as of indirect wars (sabotage) human intervention also provokes major accidents attires, cotton (bales, loose, explosive dust), fodder (fermentation), fires in high warehouses, silos or underground garages as well as forest fires.

All these types of intervention are subject to special measures. For practical reasons it is best to refer to technical documentation, which should be known or available to all security and fire-fighting services, and to national and regional disaster alarm and information centers.

This is especially the case for rescue and fire extinction on motorways, buildings designed to be Used by a great number of people (hospitals, hotels, cinemas, high-rise buildings, department stores, etc); fires affecting chimneys.

III-LITERATURE SURVEY

The first intelligent extinguisher used for eliminating a fire in domestic places. Also it is having a collision sensor to eliminating a obstacles. But the capacity of first intelligent extinguisher is less that is 1.5 liters. Termite is used for extreme hazard areas like aircraft fires and nuclear reactor and size also small. But cost is high. Approximately 95 lakhs.

S.no	Author	Paper Title	Year	Findings
1	B Siregar,H A	Fire Extinguisher	2017	Smart phones are the fire extingusihing robot.image is captured by camera in phones.
2	Varun S V,Vinod Rao.S	Autonomous fire extinguisher robot	2017	robot development isguided by sensors
3.	Srinivas Devarakonda,Parveen Suvesu,Hongzhang Liu,Ruilin Liu,Liviu Iftode,Badri Nath	Real Time air quality monitoring through mobile sensing in metropolitan areas.	2013	Monitoring air quality using fine grained real time pollution measuremen t.
4.	Poonam	Intelligent Fire	2014	Multi Sensor based security system that contains a firefighting system.

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Patient Monitoring using Pan of Wireless Intelligent Sensors

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Abstract
A wearable device for monitoring multiple physiological signals (polysomnograph) usually includes multiple wires connecting sensors and the monitoring device. In order to integrate information from intelligent sensors, all devices must be connected to a Personal Area Network (PAN). This system organization is unsuitable for longer and continuous monitoring, particularly during the normal activity. For instance, monitoring of athletes and computer assisted rehabilitation commonly involve unwieldy wires to arms and legs that restrain normal activity. We propose a wireless PAN of intelligent sensors as a system architecture of choice, and present a new design of wireless personal area network with physiological sensors for medical applications. Intelligent wireless sensors perform data acquisition and limited processing. Individual sensors monitor specific physiological signals (such as EEG, ECG, GSR, etc.) and communicate with each other and the personal server. Personal server integrates information from different sensors and communicates with the rest of telemedical system as a standard mobile unit. We present our prototype implementation of Wireless Intelligent SEnsor (WISE) based on a very low power consumption microcontroller and a DSP-based personal server. In future we expect all components of WISE integrated in a single chip for use in a variety of new medical applications and sophisticated human computer interfaces. Existing growth of wireless infrastructure will allow a range of new telemedical applications that will significantly improve the quality of health care.

Keywords: *personal area network, wireless, intelligent sensors, patient monitoring, telemedicine.*

1. INTRODUCTION

Rapid growth of wireless infrastructure in following years will allow a range of new medical applications that will significantly improve the quality of health care [1][2]. Wider acceptance of physiological monitoring hardware will allow development of devices based on natural human-computer interfaces. Micro Electro Mechanical Systems (MEMS) made possible the development of networks of intelligent wireless sensors for military and space applications [3][4] through the increase of processing power, miniaturization, wireless communication, and decreased power consumption. Defense Advanced Research Projects Agency (DARPA) and Army Research Laboratory (ARL), with their key partners – UCLA Electrical Engineering Department and Rockwell Science Center, are developing Wireless Integrated Network Sensors (WINS) [5]. Department of Commerce, through National Institute for Standards, sponsors Smart Spaces [6]. This is NIST's approach to pervasive computing that is impossible without wireless sensors. DOE, and its Office of Industrial Technology, sponsor Oak Ridge National Laboratory to work on the

Design and Implementation of Performance Improved Medical Signal Filters with and without Multiplier

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ABSTRACT

The digital filter can be done professionally with the compact area and reduced power with simplified multiplication arithmetic. More than Decades of years Computer aided analysis of ECG signal is getting with incredible quantity of work being carried out in the earth. This paper is a small work on our part in that track. ECG Electrocardiogram signal is most comely known familiar and used medical signal, the ECG signal is very responsive in nature, and still if small noise combined with actual signal the different properties of the signal changes, Data ruined with noise must either filtered or eliminated, filtering is important issue for design thought of real time health care process. This work presents a better FIR filter which can be designed in VLSI technique, with or without multiplier and has less power and area improvement.

Keywords: *FIR filter design; ARM processor; Multiplier; ECG;*

Introduction

In signal processing, the filter functions to remove the noise from the signal like random noise and also to extract the necessary parts of the signal like components within a precise range of frequency (Quan et al., 2009)[1]The design of the filters for specific application includes the coefficient calculation according to various criteria including sampling frequency, pass band and stop band frequency, filter order etc.

In future, the mobile phones and portable computing systems are anticipated to offer increased services, faster data rates and higher processing speeds at reduced power dissipation levels. This delivers us with an inspiration to explore new methods in low-complexity design of high-performance digital signal processing blocks which operate at lower power levels. Semiconductor technology today provides unprecedented level of device integration where several orders of millions of transistors can be packaged in a single chip using the state-of-the-art. The number is expected to grow steadily for many years.

Human bodies are continuously provides messages about fitness. This messages may be observed through body-structure-related devices that evaluate heart speed, blood stress, oxygen infiltration levels, blood glucose, nerve transmission, brain movement and so forth. Usually in the past, such observations are taken at clearly stated points in time and indicated in patient's chart. Doctors in fact observe a smaller amount than one percent of these values as they make their round and treatment are prepared based upon this chart readings

Bio-medical signal processing includes the study of these observations to offer helpful message upon which doctors can make conclusions. Engineers are finding new techniques to prepare these signals by means of a range of mathematical formulae and sets of computer commands. Functioning with conventional bio-measurement tools, the signals can be figured out by software-commands and provides the doctors , idea about what happening or viewable at present. By using more fancy (or smart) means to carefully study what bodies are saying, we can possibly decide the state of a patient's health through equipments which will not require cutting into the body.

Background

An extensive literature review was carried out on existing digital filters model and the method that are used for enhancing the performance of the digital filters.

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De-Centralized Certificate Creation and Verification using Block Chain (DCCVuB)

V Brindha Devi, R Skanda Gurunathan, N Keerthi vasan

Abstract: ***The rapid growth in the population has lead to generation of large amount of data from each individual. Each and every individual holds several physically signed documents. Currently, the documents, certificates, and contracts are all printed in papers and manually signed. It is difficult for other party say a recruiter, or a government official or any other custom officer to verify the validity of the certificates and other documents of the individual. It consumes a tremendous amount of time for validating and verifying such documents manually. Thus we propose a system to develop a Decentralized application (DApp) for implementing a Blockchain[1] to store and verify the documents. By the nature of blockchain, the documents are securely stored with high integrity, and no further modifications can be done to the blocks in the chain which in turn reduces the creation of forged documents. Also using Distributed Ledger technology(DLT)[5] and IPFS the data is decentralised so that it is readily available with integrity. Also, using MultiSig[3] concepts, the system is more secured by two step authentication. Thus, blockchain creates trust and DLT provides integrity ease of access. And with use of IPFS the DApp is decentralized4]***

Index Terms: ***Document Verification, Blockchain, Certificates, Smart Contracts, MultiSig***

I. INTRODUCTION

Our paper aims at providing trust to the user documents such as certifications, contracts, legal documents, identity documents, etc., stored on a blockchain in a distributed environment. Our system involves three categories of user. The Certificate Issuer, the Certificate Recipient, and the Certificate Verifier. Certificate Issuer(CI) issues a certificate or contract in the name of Certificate Recipient(CR). The issued certificate data is added to the blockchain by mining a block in the blockchain. DLT[5] implemented using IPFS[4] or Hyperledger[7] or Ethereum[9] that distributes the newly constructed blockchain to all the nodes in the blockchain[5] network. Each node verifies that authenticity of new chain and accepts or rejects it. When a Certificate Verifier (CV) wants to verify the data of the Certificate Recipient, CV computes the hash of recipient's data and compares with the hash in the blockchain. Also Asymmetric key encryption and decryption techniques are used to encrypt and decrypt the data present in the blockchain to safeguard it from eavesdropping in other nodes.

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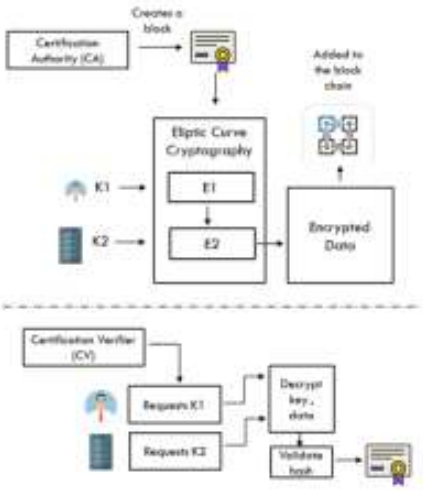
II. EXISTING SYSTEM

In existing system, the verification of documents is manual and data is fetched and verification is done from a centralised server. It requires lot of efforts to maintain a centralised server and at the time of verification, the server may become unavailable. Thus, relying on a centralized server for documents such as certificates doesn't guarantee availability and integrity. This we propose a system that uses a distributed system to ensure availability and blockchain is used to ensure the integrity of the documents. Also the system uses asymmetric key encryption mechanism to provide confidentiality to the data stored in the blockchain.

In Chapter III we propose DCCVuB Structure. In Chapter IV we propose methods creating user and records (mining) in the blockchain. In chapter V we propose methods for distributing the blockchain over the network using IPFS. In chapter VI we propose the process of verification of records in the blockchain. In Chapter VII we propose encryption and decryption mechanisms to ensure security of the system. In Chapter VIII we propose the implementation details of the system. In Chapter IX we propose the future work and conclusion of DCCVuB



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IOT Based Low End Automotive Drive Recorder As Blackbox

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Abstract— ***Automotive electronics plays an important role in the automobile industry and essentially addresses the safety and security concerns. The proposed work aims at a cost effective solution to the design and development of an event data recorder called black box which is more or less equivalent to the one that is being used in the aviation sector. The paper deals with the design of the black box that has features equivalent to the data recorder which could be very useful for domestic vehicles to record their parameters. It is also having additional features that could assist in reducing the number of accidents, by analyzing the previous accidents. The system also provides automatic accident alert system which helps in informing the nearest hospital and the traffic authority by providing not only the coordinates of the accident location but also the exact physical address for immediate medical attention which can save numerous lives every day. The system also provides other features like advanced web tracking and reduced overall cost optimization by integrating multiple features. The experimental results shows superior performance compared to the existing methods for accident analysis.***

Index Terms— ***Black box, Automotive electronics, accident analysis, web tracking, data recorder.***

I. INTRODUCTION

Internet of things is the combination of different technologies like real-time data analytics, machine learning, sensor networks and embedded systems. IOT extends Internet connectivity to range of non-internet-enabled physical devices. These devices are embedded with technology and so they can communicate using the Internet, and so they can also be monitored and controlled remotely.

Motivation and Objective for the Proposed system

The black box system has already been in use in aircraft since 1989 to store data and track the plane details. Two type of black boxes are used, one for capturing flight data that stores information on specific parameters like flight control and engine performance and the second one called as cockpit voice recorder – which records the background sound and conversation.

The objective of this work is to analyze the reason for accident and to prevent the future accidents by using a black box which monitors the whole vehicle by using different sensors such as gas sensor, vibration sensor, crash sensor, temperature sensor, and ultrasonic sensor. We have used GPS to track the location of vehicle and GSM is used to send alert message to the registered mobile number of the driver. The accident details have been stored both online and offline i.e., in the online mode, the webpage updation is done through an IOT module which is having unique URL to track the current location and accident details through sensors. In the offline mode, SD Card is updated and also we can send an alert message to nearby traffic authority and hospitals. IOT has become part of our overall infrastructure just like water, electricity, telephone, TV and currently the Internet. Internet typically connects full-scale computers, whereas the Internet of Things connects everyday objects in the physical world.

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Tracking of Prenatal and Postnatal for Fetus Condition System

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***Abstract*: The broad acknowledgment of cloud based administrations in the medicinal services area has brought about financially savvy and helpful trade of Personal Health Records (PHRs) among a few taking an interest elements of the e-Health frameworks. By the by, putting away the secret wellbeing data to cloud servers is helpless to disclosure or robbery and requires the improvement of philosophies that guarantee the protection of the PHRs. Along these lines, we propose a system called SeSPHR for secure sharing of the PHRs in the cloud. The SeSPHR plot guarantees understanding driven control on the PHRs and jam the secrecy of the PHRs. The patients store the scrambled PHRs on the un-confided in cloud servers and specifically concede access to various sorts of clients on various bits of the PHRs. A semi-confided in intermediary called Setup and Re-encryption Server (SRS) is acquainted with set up people in general/private key combines and to create the re-encryption keys. Besides, the technique is secure against insider dangers and furthermore implements a forward and in reverse access control. Besides, we formally dissect and confirm the working of SeSPHR philosophy through the High Level Petri Nets (HLPN). Execution assessment with respect to time utilization shows that the SeSPHR approach can possibly be utilized for safely sharing the PHRs in the cloud.**

***Keywords*: Cloud computing, PHR, SRS,SeS, PHR**

INTRODUCTION:

Advancements in medicine, quality of education and technological growth have been massive over the past few years. Starting from smart phones to 3D technologies and robotic surgery to Nano medicine, the world has grown to a whole new level. Sadly, these advancements are not easily accessible by all. Remote or underdeveloped regions of the world are still suffering without the aid of advanced medicine and technology. India, being a diverse nation has its population widely spread into two areas, rural and urban. Urban areas are developed and have access to all the latest developments. The inadequate development of rural areas has had even less impact on key issues such as unemployment and health issues.

The broad acknowledgment of cloud based administrations in the medicinal services area has brought about financially savvy and helpful trade of Personal Health Records (PHRs) among a few taking an interest elements of the e-Health frameworks. By the by, putting away the secret wellbeing data to cloud servers is helpless to disclosure or robbery and requires the improvement of philosophies that guarantee the protection of the PHRs. Along these lines, we propose a system called SeSPHR for secure sharing of the PHRs in the cloud. The SeSPHR plot guarantees understanding driven control on the PHRs and jam the secrecy of the PHRs. The patients store the scrambled PHRs on the un-confided in cloud servers and specifically concede access to various sorts of clients on various bits of the PHRs. A semi-confided in intermediary called Setup and Re-encryption Server (SRS) is acquainted with set up people in general/private key combines and to create the re-encryption keys. Besides, the technique is secure against insider dangers and furthermore implements a forward and in reverse access control. Besides, we formally dissect and confirm the working of SeSPHR philosophy through the High Level Petri Nets (HLPN). Execution assessment with respect to time utilization shows that the SeSPHR approach can possibly be utilized for safely sharing the PHRs in the cloud.

EXISTING SYSTEM:

The cloud computing also integrates various important entities of healthcare domains, such as patients, hospital staff including the doctors, nursing staff, pharmacies, and clinical laboratory personnel, insurance providers, and the service provider. Therefore, the integration of aforementioned entities results in the evolution of a cost effective and collaborative health ecosystem where the patients can easily create and manage their Personal Health Records (PHRs). Generally, the PHRs contain information, such as demographic information, patients' medical history including the diagnosis, allergies, past surgeries, and treatments, laboratory reports, data about health insurance claims, and private notes of the patients about certain important observed health conditions.

DISADVANTAGE:

1.Storing the private health information to cloud servers managed by third-parties is susceptible to unauthorized access.
2.In particular, privacy of the PHRs stored in public clouds that are managed by commercial service providers is extremely at risk.
3.The privacy of the PHRs can be at risk in several ways, for example theft, loss, and leakage.

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Heart rate encapsulation and response tool using sentiment analysis

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ABSTRACT

Users of every system expect it to get better. Providing feedback to the owners of the system was difficult but with the advent of technology, it has become handy. Users can now post their comments through online blogs, android apps and websites. Due to the enormous data piling up every second, it has become a problem in analyzing it. In this paper, sentiment analysis is used for analyzing comments and reviews posted by users. The experiments are done with dynamic and real data. The tools, algorithms and methodology that could fetch accurate results are described. Experimental results indicate 90% of accuracy in proposed system. The review report generated would help the hospital management to identify the positive and negative feedback which further assists them in improving their facilities that could not only create customer satisfaction but also enhanced business processes.

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1. INTRODUCTION

Healthcare industries like hospitals, pharmacies, laboratories, software solutions are growing tremendously which is leading to exponential growth of data. Continuous advancement of all these facilities is necessary as they deal with health of the human. The zones of enhancement are identified through observation, experience and feedback of the users. The word feedback refers to the reaction to a product that would act as a main ingredient in improvement. The technical boom has let the users deliver their feedback at any point in time. Hospitals consider this as an important parameter in providing care [1].

Upsurge in the patients directed to diverse views and insights with respect to clinical amenities. These are carried to the infirmary through android app submissions, mails and websites [2]. Survey reveals that 85% of individuals use websites and blogs to post their comments [3]. There is a wide angle to analyze but it has become difficult as the data is unstructured. Owing to this, an instant action cannot be applied to address the issue and correct the condition. This would result in loss of trust among the users. Manual scrutiny might draw precise results but would require profuse manpower and time. Since health information is sensitive, misusing it could cause drastic effects. Hence the associated data is to be collected in the utmost efficient way that would else result in improper data. The feedback submitted is an expressive statement of the user which aids as a grade sheet for the hospital. The usage of the words is diverse in numerous cases for which the algorithms are intended with many restraints like tense, context, substitutes, adjacent words. Some feedback is sensitive and hence sent through emails. The data is encapsulated so it is not exploited. The response tool proposed in this paper is built to expand the healthcare commercially [4], aesthetically and to increase user satisfaction [5].

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An analysis on Version Control Systems

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N. Deepa ; B. Prabadevi ; L.B. Krithika ; B. Deepa **All Authors**

87
Full
Text Views

Abstract

Document Sections

I. Introduction

II. Study of Existing Version Control Systems

III. Proposal of A Postmodern Version Control System

IV. Parametric Comparison of Existing Tools and the Proposed Tools

V. Conclusion

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Figures

References

Abstract:
Managing the source code of the project and other related documents in an organization is a mandatory need, which may ensure clarity in the delivery of the product enhancing the focus of the organization towards its intended product's quality. In this digital era of computing, we have many software configuration management tools to handle various documents, its revisions, versions and so. In this paper, we analyze the importance of various Version Control Systems (VCS) evolved to assist the software development lifecycle of the project, and compare favourite VCS tools in the market based on their features, measure their performance across chosen attribute. Also, we propose a new tool having some of the best features found in our comparison study as well as a few extra attributes that we believe will raise the quality of this new tool. This tools can combat the issues we face with existing tools in the market.

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I. Introduction

Version control, which is considered to be a very important component of software

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A Supervised Classification Techniques to Optimize Error Evaluation and Space Complexity

M.Santhiya, M.Shobana , R.Jegatha

Abstract*— Bayesian classification is based on Baye's Theorem, which is applied on a conditional probability basis of posterior and prior probabilities in parallel with future evidence. Prior Probabilities are the original probabilities of an outcome which will be updated with new information to create posterior probability. The revised probability of an event occurring after taking into consideration new information.A Bayesian classifier is used to predict the values of features for members of that class. It is used to over come the diagnostic and predictive problems. This classification provides a usefal perspective for understanding and evaluating machine learning algorithms.It is a probabilistic learning algorithm which calculates the explicit probabilities for hypothesis, among the most common learning problem.The proposed work has focused on designing of two classification algorithms naïve space and naïve Mine classification to optimize space complexity and error evaluation forlarger data sets.

***IndexTerms*– Prior & Posterior Probability, Bayes Theorem,Naive Space,Naive Mine.**

I. INTRODUCTION

The data or information that is anticipated in the present situation is significantly arranged or characterized. Arrangement goes under regulated learning methods of AI. Characterization can be quickly portrayed as the undertaking of doling out a class to occasions of information depicted by a lot of characteristics. It incorporates the development of a classifier which is prepared on a lot of preparing information that beforehand has the right class alloted to every datum point. Arrangement fabricates a brief model of the appropriation of class names and afterward used to group new information where the estimations of highlights are known however the class is obscure. Bayesian arrangement depends on Bayes hypothesis. Bayesian hypothesis gives a numerical math of conviction, which depicts what it implies for convictions to be reliable and how they should change with evidence.This supposition, called class restrictive freedom, which is made to improve calculation, thus it isconsidered 'Naive'.Bayesian classifiers are the statisti calclassifiers which predicts class participation probabilities. Guileless Bayes classifier works best in two cases, When the highlights are totally autonomous and also when the highlights are practically needy.

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II. LITERATURE SURVEY

Bayesian characterization [1] with Mistake Adapted successive testing system. Earlier Learning can be utilized related to the preparation information to build the ideal Bayesian Classifier. Discovering more exactness in forecast of information ought to be improved. To present grouping and bunching systems and execution investigation with exactness in blunder detection.Spatial parallel order, Spatial summed up direct model (SGLM)[2] and the Bayesian spatial summed up straight blended model (SGLMM) is utilized to recoup information robustness. A Bayesian characterization for perceiving written by hand numerical articulations [3]. Presenting some constraintson how data sources might be parceled, [4]we inferred an effective parsing calculation got from Unger's method.Expert elicitation and Bayesian System demonstrating for transportation Mishaps. How BBN is connected for demonstrating dangers in the oceanic area, uncommonly on where information originate from and how they are connected. A Bayesian approach [5], forcharacterizing vulnerability in announcing apopulation breakdown, this gauge of vulnerability as an approach to set a certainty interim around a predefined rate decay from the most extreme. Probabilistic methodology [6]for Anticipating the Size of Coding Units in the Quad-Tree Structure of the Quality and Spatial Versatile HEVC. An improved pressure execution atthe cost of critical increment in computational codingcomplexity. On Bayesian Network Classifiers[7]with Decreased Exactness Parameters, Execution is better wavelet-based improved Bayesian surmising. Precision and execution in system model ought to be expanded for discriminatively improved parameters for everything except extremely low piece widths. Moving endlessly from Blunder Related possibilities [8] to accomplish spelling remedy in P300 spellers. For bigger informational collections mistake must be assessed and improve the precision. its utilization as a compelling specialized instrument is dependent on high P300 arrangement exactnesses 70% to represent mistake revisions. Generalized different bit learning [9] with Information Subordinate Priors. Earlier likelihood of blunder ought to be improved with exactness. Early interterm flaw diagnosis[10] in acceptance machines utilizing an explanatory.

Original Article | Published: 25 July 2019

Enhanced fault identification and optimal task prediction (EFIOTP) algorithm during multi-resource utilization in cloud-based knowledge and personal computing

J. M. Nandhini ✉ & T. Gnanasekaran

Personal and Ubiquitous Computing (2019) | Cite this article

60 Accesses | **1** Altmetric | Metrics

Abstract

Virtualization technology is playing an important role in cloud computing for efficient task scheduling and application deployment. Cloud computing offers a platform to store and retrieve a large volume of information without any restriction on time or location. The system optimizes the available resource based on the user application requirement. Server and data storage devices can access distributed data residing in remote places via virtualization mechanism, where cloud applications are easily migrated from one server to another. Issues related to fault identification and resource optimization problems often occur in a cloud environment. To resolve these issues, an enhanced fault identification and optimal task prediction (EFIOTP) algorithm are proposed for finding and preventing faults during task execution with multiple resources. The research work objective is to design a deadline-determined resource allocation model with the VM resource isolation method in a cloud. The proposed work evaluates the maximum amount of task execution by considering different types of resources to identify and predict the faults at various levels and to minimize the occurrence of faults and task execution time. Based on the experiment evaluation, the proposed EFIOTP algorithm reduces 775 task completions (TCT), 0.237 datacenter server utilization (DCSU), 2% virtual machine cost (VMC), and improves the 0.39 hypervolumes (HV) on several parameters and scientific workflow application.

This is a preview of subscription content, log in to check access.

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An Assessment Survey of Cloud Simulators for Fault Identification

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Abstract: **Cloud computing is a large set of logical computational resources accessible via internet. Cloud computing offers services to obtain coherence, scalability, economy subscale with maximum efficiency and resource optimization. Fault tolerance is the characteristic that enables the system to stay operating and adhere SLA even when the in the system faults and failures. For a system to be fault tolerant the interval of fault identification and removal must be minimum to follow the QoS requirements. virtualization in the Data center can assist in fault prediction that makes the system fault tolerant. A cloud simluator is an extensible tool to analyse, evaluate and measure the system performance of the cloud cloud applications to satisfy the QoS provisions. This paper deals with the survey of the various cloud simulators with emphasis on using CloudSim**

Keywords:Data Center, Simulation, CloudSim, Fault tolerance

I. INTRODUCTION

Cloud computing delivers computing services comprising servers, databases, networking, analytics, software development platforms and other services over internet thereby providingflexible resources, rapid modernization and economies of scale. The distributed services are used by the cloud customers as needed. cloud computing extends scalability, security, anytime, anywhere access, high availability for consumers and organizations. The usage of cloud computing is in a fast pace. For the purpose of evaluation and analysis the components of cloud computing such as data centers, virtual machines and other services can be modelled using cloud simulator.

One of the most popular tool available inthe industry for modelling cloud computing iscloudsim. Cloudsim is developed in Java based on Gridsim.The main benefits of a cloud simulator are design and performance feedback, flaw detection at various abstraction level, conceptual demonstration made easier, cost optimization and experimental feedback, risk mitigation at initial stage.[1]

II. SIGNIFICANCE OF SIMULATION

Cloud computing offers IT infrastructure, applications , resources to the end users as services using pay as per use model . Before executing new algorithms and methods in the real time environment, they have to be tested for their performance and other security issues. Cloud simulation makes the task easier by simulating a real time environment that can be used at liberation . Simulation eases the complication in the infrastructure, examining the threats and measuring the quality and overall performance. The key advantages of using a simulation based framework are:[2]

- Making scalable and reliable real time environment.
- Facilitating dynamic flexible configuration and development environments.
- Customizing the visual interfaces in a simple way.
- Increasing the cost benefit by reusing the available components.
- Creating a platform to test the proposed algorithms and methods thereby allowing to examine the quality and performance.

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Intelligent Crime Analysis System Using Pyspark

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and P. Pavithra

Abstract--- *Crime analysis is one of the most important activities of the majority of the intelligent and law enforcement organizations all over the world. Generally they collect domestic and foreign crime related data (intelligence) to prevent future attacks and utilize a limited number of law enforcement resources in an optimum manner. A major challenge faced by most of the law enforcement and intelligence organizations is efficiently and accurately analyzing the growing volumes of crime related data. The vast geographical diversity and the complexity of crime patterns have made the analyzing and recording of crime data more difficult. Data mining is a powerful tool that can be used effectively for analyzing large databases and deriving important analytical results. This paper presents an intelligent crime analysis system which is designed to overcome the above mentioned problems. The proposed system is here is we find weather analysis along with the crime happened and we proposed Pyspark here to store large amount of data's for crime analysis. The proposed system consists of a rich and simplified environment that can be used effectively for processes of crime analysis.*

Keywords--- *Pyspark, Bigdata, Data Mining.*

I. INTRODUCTION

Crime analysis has become one of the most vital activities of the modern world due to the high magnitude of crimes which is a result of technological advancements and the population growth. Law enforcement organizations and the intelligence gathering organizations all around the world usually collect large amounts of domestic and foreign crime data (intelligence) to prevent future attacks. As this involves a large amount of data, manual techniques of analyzing such data with a vast variation have resulted in lower productivity and ineffective utilization of manpower. This is one of the most dominant problems in many law enforcement and intelligence organizations.

There are several significant reasons for crime analysis such as to identify general and specific crime trends, patterns, and series in an ongoing, timely manner, to maximize the usage of limited law enforcement resources, to access crime problems locally, regionally, nationally within and between law enforcement agencies, to be proactive in detecting and preventing crimes and to meet the law enforcement needs of the changing society. There are various crime data mining techniques available such as clustering techniques, association rule mining, sequential pattern mining, and classification and string comparison.

Several web based crime mapping systems are available on the Internet such as narcotics network in Tucson police department, but majority of them have been custom made for legislative authorities in different countries and those systems are not accessible to parties outside that particular law enforcement or legislative authorities.

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EFFICIENT REGISTRATION OF LAND USING BLOCK CHAIN TECHNOLOGY

A.Ponmalar, M.Poovarasan, T.Vasumathi, G.M.Keerthana, A.Yogesh, Dr V.Dhanakoti

Abstract: ***A Block chain as a technical solution for real estate(land registry)transactions that is a technical demo shows technology and development of the solution. In the proposed system, the knowledge about the block chain and what are all the ways the concepts of block chain will be used in real life applications such as land registry, vehicle registration, financial records,etc. In this paper we can detailed study about the land registry concept . There merits and demerits on using the concepts of block chain on this fields are also analyzed.***

1. Introduction

What is block chain? Block chain concept was introduced by Satoshi Nakamoto in 2008 it can serve as a public ledger using its own unit of account (Bit coin)[1]. Development of a new information technology(IT) can bring change in the society. Blockchain is a technology to serve as public ledger using its own unit of account (bit coin).The invention of bit coin using blockchain concept is the first digital currency. This block chain technology involves creating a new methodology digital verification records of files. E.g. transactions[2]. This verified records are considered as fingerprints. This records are groups into blocks and they are linked together. It is generally defined as the block of chains, each and every block contains a cryptographic hash value of the previous block in the chain.

A block chain is a public or distributed ledger that is used for managing the transactions in an efficient manner. A block chain uses only a peer to peer network as a protocol for communicating all the new blocks. The third parties can't able to alter the data in any given block when the transactions

completed. But the data can be alter by doing alterations of all the subsequent blocks[3]. Data stored in a block chain are impossible to alter, rewrite, delete or do any illegal manipulation activities, it's highly secure and reliable network. Block chain is consider as the decentralized system which uses peer -to -peer network system, so there is no centralized government or organizations to control these block chain because it is a public digital ledger that is used for providing security as well as managing all the transactions

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across the world who are all connected to block chain so that a data cannot be altered in blocks , without the alteration of all subsequent(previous and after) blocks.

There are three types of networks available in block chain, they are public block chain, private block chain and consortium block chain.

In Public block chain there is no restrictions for accessing the data. Everybody can send a transactions through the internet connection and become a valuator. The well-known public block chains are Bit coin and Ethereum.
A private block chain is authorized as a middle-ground for companies small group's that are generally interested in the block chain technology but they are not with any level of control . Only the network administrator can allow the persons to join on block chain . There is some restrictions to access the data . This type of block chains can be considered as a private network.

A consortium block chain is a semi decentralized system. It is also authorized but instead of a single organization a unique group controlling it, a number of companies, where each might operate a node with the help of a network. In consortium chain, administrators restrict the users reading and also to see the block, this type of blockchain can allows only the restricted user that the people whom are they trust can only add them in the block and made a control with them itself.

2. Related works

Now a days blockchain technology is one of the most developing technology in the world , there are lot of researchers are involve they are trying to develop the technology ,let us see what are the related works done in the field. The most important aspect of blockchain concept is the security every one can easily trust the concept , first the concept was introduced for the transaction of the bit coin which is called as the online currency there is no dependency of the third party these are all done by the blockchain concept.

E-voting system is the another developing technology on the blockchain , by introducing the digital concept in voting system majority of the malpractices are reduced and this leads to the correct democracy nation if the concept are introduced by our government. The technology are also used in the financial services that are also helps in the development of

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SMART CAR PARKING SYSTEM IN SMART CITIES USING IR

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Abstract: **Internet of Things (IoT) plays an indispensable role in bridging the gap between all the day to day things to the networking system, and creates an ease to access all the un-internet things from any distant location. Adaption to the growth in the recent trends is inexorable for the people. With all the advancement in the technology, finding a particular place to park our automobile becomes an exasperating issue. In our work we have designed a Smart Car Parking System (SCPS) with the help of infrared sensor and a database based on application of Iot, which permits the driver to find the proximate parking slot, and gives the number of free places available in that respective parking zone. This ideology mainly focuses on diminishing the time involved in discovering the parking space and also it decreases the unwanted travelling, through filled parking slots in a parking arena. This will in turn reduce the consumption of fuel, which would reduce carbon footprints in our environment. Thus, this will pave way for an eco friendly surrounding.**

Index Term: IoT, SCPS, HTML, IR, GPS, LCD

I. INTRODUCTION

The concept of Internet of Things (IoT) started in 2008 and 2009. The gadgets could be easily tracked, managed or monitored using remote computers connected through Internet. IoT enlarges the use of Internet. It acts as an inter-network of the devices and physical objects, or 'Things'. The two eminent words in IoT are"internet" and "things". Internet means a vast global network of coupled servers, computers, tablets and mobiles using the various types of protocols and connecting systems. Internet allows the process of sending, receiving, or communicating of information. IoT generally comprises of inter-network of the equipments and physical objects. These objects can gather the data from isolated locations and interact to units managing, acquiring, organizing and analyzing the data in all the processes.

It provides an institution where things (date to day equipments, watch, wake up clock, home devices) become chic and behave lively through sensing, computing and communicating by embedded small devices which communicates with remote things or isolated persons through connectivity. The scalable and robust nature of Internet of Things is allowing developers to create and host their applications on it. In basic terms IoT can be explained in form of an equation stating:

Physical Object + Sensor + Internet = Internet of Things

The ideology of producing a Smart City is now becoming viable with the exposure of the Internet of Things. The key aspect for the exposure of smart cities is comfortable parking facilities and systematic transportation and management [12]. There are several issues in smart cities; one among these issues is related to car parking. In these days, urban people are finding it difficult to avail parking spot to drop their vehicle. It is always exhausting for drivers to park their vehicles. It tends to become harder with ever increasing number of private car users. These circumstances can be considered as an opportunity for smart cities to undertake actions in order to improvise the parking resources.

Thus, this leads to reduction in time spent on searching vehicles, traffic congestion across the highway and road accidents that occurs because of these vehicles. Problems concerned with parking and traffic congestion can be resolved if the drivers are informed prior about the availability of parking slots in and around their intentional destination.

Current advancements in making low-cost, low-power embedded systems are useful for the developers to build new applications for Internet of Things. The developments in sensor technology, many modern cities have paved way for deploying various IoT oriented systems in and around the cities for the purpose of monitoring. The LCD display is highly efficient for the improvement in this technique. The use of GPRS is made to make the system more advance and distinct.

A recent survey performed by the International Parking Institute [1] reflects an increase in number of innovative ideas related to parking systems. Presently there are still certain parking systems [2] that claim to drivers to deliver

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Implementation of effective test automation with instrumented customer experience data

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Abstract: ***In the B2C & B2B ecommerce arena, the Measurable Business Results (MBR) of an application is its ability to retain customers and its prospects. And in an ephemeral product and services world, customer experience (CX) is a pillar of value creation. A superior customer experience is a means to stay ahead in the competitive environment. The issues that arise on the customer experience has a greater visibility on the smaller social world and is a direct impact to MBR. With all said, a greater priority of resolving such issues with an effective test automation that leverages the CX oracles in automating the test suites is a solution to mitigate the issues around customer experience. The approach involves flooding the test oracles created with the real customer experience data to the test automation suites that cover the 360 degrees of the functional, regression and integration testing of the application.***

Index Terms: Customer experience, test automation.

I. INTRODUCTION

The application testing with respect to functional, regression and integration testing is a continuous process with the discovery of new data set that suits the changes that has been incorporated as a new feature or changes to the existing one. Every time, the data set identification and streamlining the data set for automated testing is a herculean task and often involve manual efforts to make it happen. There are different mechanisms to validate the correctness of the system under test. The approach taken here is the continuous flooding of the test oracles that get generated by the instrumentation mechanism of the application. The application under test is continuously instrumented gathering the data of customer experience that deal with each specific class and methods of the application. In a nutshell, it is the Integration of Technology with Customer Experience with Open Source API & Frameworks towards enhancing a Java/Web Application with better quality using the automated testing with the following modules.

1. Bytecode Instrumentation to trace CX Behavioral and Interaction Data
2. Automated Testing with CX Data

A. THE CHALLENGE OF TODAY'S IT ENVIRONMENT

The following are few challenges that we see as an inherent issue in the testing world

1. Lack of API Testing
2. Lack of Automated Testing
3. Lack of visibility into production applications
4. Difficulty in managing environments

Fig. 1.1 The Challenges of IT Environment

The results of the above challenges when turned out to be an issue in the production system will result in

1. Voice of Customer – The interaction and behavior data of the customer are analyzed only when the application suffers a huge threat with its stability and reliability
2. Negative Scores of Customer Experience is direct impact to the brand.
3. CX Analytics - is the baby of top management for any organization directly proportional to the following

– Conversion and Revenue
– Scorecards & Competitor Ranking's

B. THE INTEL EFFECT

One of the greatest security issue identified in the early Jan of 2018 was the Meltdown & Spectre Attack. The fundamental design flaw of the intel chips was identified after decades of it being the market leader in the industry. The vulnerability was the leakage of kernel memory to any application when introduced with chip-level security bug. The defense mechanism adapted by various operating systems in the Kernel Address Space Layout Randomization (KASLR) is defected by this vulnerability. This vulnerability can be exploited by hackers and malware to read the kernel's memory and the complete system is under threat inclusive of its network.

C. THE VOICE OF THE CUSTOMER

The feedback from the customer about the product or services to different mediums is the voice of the customer (VoC) and materializing this input to the testing arena before it reaches the public forum will benefit to a larger extent. The following are the different source of VoC data.

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Role of Social Sentiment Analysis in Stock Trends Forecasting

K.Anuratha, M.Parvathy, S.Sujeetha, J.Ghayathri

Abstract: ***Social media like Face book, Twitter have attracted attention from various sectors of study in recent years. Most of the people share ideas, opinions on various topics such as Stock Market Prediction, Digital marketing, Movie review, Election Results Prediction and Product reviews etc,. Forecasting Financial Market is considered to be one of the significant applications of Sentiment Analysis on Social Data like Face book, Twitter. It is essential to accurately predict the movements in stock trends, as the stock market trends are volatile. In the past few years several researches have been carried out for predicting the future trends of stock market through sentiment analysis on social media comments. This paper gives the survey on the various techniques, tools and methodologies adopted by several researchers on Stock Market Prediction based on sentiment analysis of Social networks.***

Keywords: Stock Prediction, Twitter, Sentiment Analysis, Classifiers, Accuracy, Deep Learning

I. INTRODUCTION

It is always interesting for the researchers to find ways to predict what will happen in the future. Social media is a communication platform contains valuable knowledge hidden in it. Information available in the social media resembles real world events and they can be exploited by the researchers to enhance the application capabilities. Stock market prediction can be considered as the one of the important applications of social media. The Stock market is a complex system as it is been influenced by the political, economical and social factors. The prices of stock are very dynamic and impressionable to changes due to the nature of financial domain. Though it is a complex system still stock market is one of the important economic factors.(Al-Augby,2015)[17].The focus of stock market forecasters is to develop a successful approach to predict the stock prices. Prediction of stock market is one of the tough tasks because globe the use of social networks is popular and huge, as it provides a medium to express, share and publish the opinions of people. The effect of social media in stock market prediction has been studied by several researchers, in recent times. Social networks play important role in the society to share the ideas and thoughts of the users through the internet among the virtual community. The knowledgeextracted from the social networks can be applied to predict movement of stock market to some extent.

The most famous micro blog Twitter allows it users to create tweets, short messages that can be shared with and responded by other users of Twitter. The users are much focused on the message they wish to communicate, as twitter employs a restriction on message size. This feature of Twitter makes the tweets good candidates for the Sentiment Analysis task.

Sentiment analysis falls under Natural Language Processing (NLP), a branch of Machine Learning which deals with How computers process and analyze human linguistics?.

This paper is planned as follows: Section II describes Sentiment Analysis. Section III describes the inference from the related research on stock prediction – Stock Prediction Roadmap. The Comparative Study on the different approaches is summarized in Section IV. Section 5 describes the Conclusion on the work carried out and proposes the scope for future work.

II. SENTIMENT ANALYSIS

Sentiment analysis is the process of determining opinion from people's emotion and feelings. Sentiment classification can be done at phrase level, sentence level and document level. The sentiment analysis uses Natural Language Processing (NLP) to divide the language units in to three categories: Negative, Positive and Neutral [20].

The different opinions of people, shared in the social media play significant role in the process of decision making and recommendations [20]. The analysis on micro blogging websites are done using Sentiment Analysis. The contents of Social Media such as posts, tweets, photos are analyzed by people of different community such as politicians, marketers and analysts etc,. Nowadays, stock market investment plays an inevitable role in the finance sector, as high stock market value is considered as the parameter of high economies. The volatile nature of stock market has

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Advanced Coherent System For Predicting Cardiac Risks using Data Mining Techniques

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Abstract: ***Considering health care and medical industry related data there are millions or tons of data which contains numerous hidden information. This information can be mined through which we can make effective decisions in their related industry. There are numerous far advanced methods and techniques in mining and determining the useful decisions using the retrieved useful information. Such an effective system called Coherent cardiac risk prediction system (CCRPS) is developed using neural networks in early detection or prediction of various risk level in cardiac disease. This work employs a multilayer perception neural network with back propagation as the training algorithm. This system aims in predicting the likelihood of patients getting disease related to cardiac such as CHD, a prior heart attack, uncontrolled hypertension, abnormal heart valves, congenital heart disease (heart defects present at birth) and heart muscle disease. The system uses a total of twenty-one medical related parameters such as age, sex, chest pain type, resting blood pressure (in mm Hg on admission to the hospital), serum cholesterol in mg/dl, Smoking, stress etc for prediction purpose. It enables or activated the important knowledge such as how the medical factors related to cardiac disease and patterns and the relationship to be established. Through this system we obtain effective results that have crafted its own diagnostic method or way to predict the risk level measurement of cardiac disease.***

Keywords: ***data mining, mining tools, classification, neural networks, multilayer perception neural network, back propagation, risk diagnosis.***

I. INTRODUCTION

Data mining or Knowledge discovery is the way of extracting meaningful information from a huge data. The data which obtains from various sources are collected as huge data sets which may or may not be in an orderly manner. These data contain so many secret information hidden within them. Many organisations may not be aware of such information and hence retrieving such useful information are not possible. The solution for retrieving such information with-in a span of time is done with the help of some tools and algorithms.

There are many Data mining techniques which helps in analysing the data and make much better decisions in the organizations. In this paper we focus onto the medical sciences more specifically about cardiac disease, where more patterns or some hidden data can be retrieved and treated through the above said techniques. This helps in diagnosing or predicting near to accuracy and treating the medical cases in much efficient manner. This also promotes automation in early diagnosing and treating phases.

Cardiac disease is considered to be a dreadful disease which lead to sudden death or severe disability with psychological impact and affects the economic standards of a family. As per the survey reports of WHO, more than seventeen million people across the globe are dying every year because of Coronary Artery Disease. There are numerous heart disease, some are Coronary artery disease, Heart valve disease, Angina, Heart Arrhythmias, Endocarditis, Rheumatic heart disease, Cardiomyopathy, Congenital Heart Disease which occurs by numerous factors. Menopause in later stages in women, complications during pregnancy can also be a reason for heart disease and heart attacks.

As a tremendous growth in healthcare industries as well as new diseases occurring day by day the healthcare data centres and so huge and they get millions and millions of data each second. Hence data mining and machine learning algorithms plays the most fundamental part of extracting meaningful information. Even some advanced machine learning techniques are used so that some basic automations are made.

Prediction automation in most of the cases are always a good practise in healthcare industry for instance when a patient enters with a heart pain the specialist wont just predict with a touch examination, but allowed to a diagnostic centre after an emergency treatment. The prediction with an automation may have more parameters such that the results are almost accurate decision which helps the medical practitioners to treat the patients well.

A. Weka

Weka is a collection of machine learning algorithms for data mining tasks. The algorithms can either be applied directly to a dataset or called from your own Java code. Weka contains tools for data pre-processing, classification, regression, clustering, association rules, and visualization. Weka makes learning applied machine learning I recommend Weka to beginners in machine learning because it lets them focus on learning the process of applied machine learning rather than getting bogged down by the mathematics and the programming — those can come later.easy, efficient, and fun. It is a GUI tool that allows you to load datasets, run algorithms and design and run

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Determination of Organic Matter and pH Value of the Soil Using Deep Learning Techniques

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Abstract--- Tamil Nadu net cultivated land is 48.92 lakhs ha in which 58% land are under irrigation and rest are rain-fed. The productivity of rice, maize, sugarcane, cotton, and grams compared to the other countries are very less. The productivity of vegetables in India is 11.2 tonnes/ha and fruits are 16.2 tonnes from the document on Tamil Nadu Vision 2023. This motivated to develop a system that identifies the organic content of the soil. So there needs a technology to estimate or predict the organic matter of the soil before cultivation of any crop that ends up in good crop yield with better productivity. To estimate the soil organic content and pH value present in the soil, Shortwave Infra Red (SWIR) and Visible-Near Infrared (VNIR) bands ranges between 400-2500 nm are used. The work is to elaborate on soil organic and pH estimation using remote sensing (RS) techniques. SOM provides important functions including nutrient preservation, water holding capacity. It acts as a key pointer for soil quality. Soil pH is measure of acidity and alkalinity present in the soil, on a scale read from 0 to 14. The comprehensive study on soil spectroscopy needs to be investigated. The soil images are captured using UAV using hyperspectral sensor camera for the chosen study site. The estimated organic contents of the soil benefits the farmers to improve the crop yield which results in the increase of their productivity.

Keywords--- Organic Soil Content, Hyperspectral, ph Value.

I. Introduction

Agriculture is the backbone of the Indian economy as it contributes 18% of India's GDP and 1/6th of export earnings. Agriculture is more important because of world food demands for the increasing population and more production of crops eventually helps in achieving zero hunger. Agriculture is the main source of income for most of the people in India. For good crop production, the land used for the cultivation should be healthy. The soil used for cultivation should be rich in minerals like nitrogen, phosphorus, calcium, potassium etc. Soil naturally contains these minerals. These nutrients allow plant growth. When soil nutrients are missing or in a shortage than required, plants suffer from nutrient deficiency and stop growing. When the nutrient level is too low than normal, the plant cannot function properly and thus cannot produce the food necessary to feed the worlds' population. For every time the crops are harvested for human consumption, the natural supply of nutrients in the soil must be refilled. This is why farmers add nutrients to their soils in one or many ways like organic matter, chemical fertilizers, and even by growing other small plants etc. This maintains the fertility of the soil. So, those farmers can continue to grow the crops healthy and nutritious next time.

In spite of much technical advancement, agriculture remains the ma-jor source of income for 60-70% of the population in our country. There are several problems faced by the farmers due to lack of knowledge in using the fertilizers. This leads to crop failure or reduction in the productivity of crops. It has been shown that for proper usage of fertilizers minerals present in the soil should be known. For this government has issued Soil Health Cards (SHC) for every farmer. The work done by SHC's is physical and costly. So, in the proposed sys-tem, the Hyperspectral images from satellite are collected for the area specified and analyzed the images. To generate the spectral Signatures of organic matter present in the soil. According to data collected the amount of organic matter present in the soil using Machine Learning techniques.

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A Study on Financial Problem of Organised Retail Stores in Kancheepuram District

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Abstract
The size of Indian retail industry is more than US $350 billion but it is highly organized. The organized sector has started developing in the past few years. Many International brands have entered in to the market with the growth in organized retailing, organized retailers are fast changing their business models. The aim of this paper is analyzing financial problems of organized retail sector.

Keywords; *Retailers, organized, financial problem, market*

I. INTRODUCTION

Indian Retail Industry is placed a few of the ten largest retail showcases in the world. The attitudinal move of the Indian client and the rise of looked after out retail arranges have modified the substance of Retailing in India. With the indications of reappearance of monetary development in India, consumer shopping in retail detail is being predicted as a key open door area. The sorted out retail enterprise will develop up to 18 percentage in 2017. With those stages of improvement, there may be excessive extension proper now. Huge Indian business enterprise gatherings like Reliance, Tata, Birla and Mittal are investigating openings in retailing. There will be increment in mindfulness tiers as for gadgets, use and all prompting higher preference level the various customers.

II. INDIAN RETAIL SCENARIO

India's retailing blast has acquired further power, dynamism and liveliness with conventional game enthusiasts checking out in the Indian marketplace and the dominion's present day-day goliaths locating a way to charm the patron. Simultaneously, the early people are rethinking their methodologies to stay extreme and match the new market scene. The following not a few years have become a kick out of the chance to take a look at short development in the composed retailing bunch with a few riding global gamers installing their essence in India with the resource of improving their preparations to healthy close by tastes and purchasing conduct at the same time as territorial game enthusiasts have ventured up their guards and are endeavoring to choose up side over global gamers by way of utilizing their perception into community markets. The big majority of the looked after out retailing in India had as of past due started out and turned into basically moved in metropolitan city regions. Despite the truth that India has greater than five,000,000 stores everything being equal and patterns, the state needs present day feeling of looked after out retail places. This offers awesome risk to shops. As a good deal as ninety six percentage of the 5,000,000 shops are littler than 500 rectangular toes in territory. This implies India's consistent with capita retailing area is round rectangular ft this is most minimal on the planet. A little extra than 8 percent of India's populace is worried with retailing while contrasted with 20 percent in U.S.

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e-Governance through e-Seva in Tamilnadu

C. R. Senthilnathan, V. Dhanyalan

Abstract: e-governance services have become a key measure for the governments to improve their services to the general public after the advancement of information and communication technology (ICT). India being one of the developing countries, has initiated their ICT services in the form of e-Seva. Though governments started these services in India about four years ago, this study is initiated to find the consumers perceptions on the e-Governance and the gaps in the consumer expectations. Three consumer namely, system stability, service reliability and service quality are used in the study to measure the satisfaction. It is found that of the three measures, system stability and service quality have less positive impacts on consumer satisfaction indicating that definitely the government has to improve their service. Whereas the service reliability is better as far as the satisfaction level of the consumers concerned.

Keywords: e-Seva, Consumer perceptions, ICT, Service quality.

I. INTRODUCTION

e-governance / e-seva is all about the implementation of information and communication technologies (ICT) to help the government in administration, support public services and creating relationship among its citizens. Government usage of ICT is to create governmental policies, norms and regulations and flexibly to manage and monitor its governance in known as e-governance (Palvinder Sharma (2007)). Before the implementation of e-governance across Pan India, one should take into consideration the ground-level realities in accessing internet in the villages of India (Malhotra C., Chawla V. Dan. I. (2010)).

Like any other developing countries, India also faces many major hurdles and opposition to the implementation of ICT in various government sectors (Mistry H. (2010), Dwivedi (2010), S.K. Kumar S.P (2010)). The reasons for these inadequacies in addition to Resource lack of motivation and awareness , lack of trust, and lack in technical change. Some of the previous studies (Rajagopalan R.(2009), Damm P. K.(2010), Okike K.M.(2012)) have identified that major problem in Indian e-governance is that it is not citizen centric and suggest that it should be citizen and users specific, community centric and duly understanding the local needs and their demands.

One of the major vision projects of Indian Government is to enable all Government services with information technology which will enable accessibility to every state in the Indian village in a more efficient and reliable way. The vision project name is e-Seva meaning service through electronic media.

II. OBJECTIVES AND SCOPE OF THE STUDY

- To study the consumer perception on e-Seva services
- To find the extent of consumer satisfaction

This study will help in identifying the satisfaction level of the consumer and would help in rectifying the lacuna in the service procedures. This will also bring out the consumer expectations which can be addressed as some factors for enhancing the consumer satisfaction.

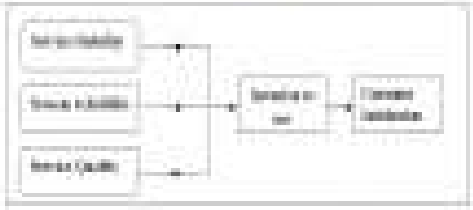
III. REVIEW OF LITERATURE

In the economy wise classification, one among the top states is Tamilnadu. Tamilnadu has enabled many of its services through the e-seva platform (Kumar et al.,(2017)). Over the years the public interest has increased dramatically in the use of ICT and e-technology is the solution for this. Today, e-governance plays an importance role in transforming the political, social and economical landscape of an economy. The reasons of the implementation of ICT by the government is not an easy as it looks. The reasons of implementation includes other important factors like cultural values and attitude within the government and its offices (Angchuan, Sikdar, 2003).

IV. METHODOLOGY

The sample size of the current study is 206 with the respondents selected at simple random technique with a well structured questionnaire. Five point likert scale is used to assess the responses of the respondents. To statistically analyze the data, SmartPLS software is used.

V. CONCEPTUAL FRAMEWORK



The major two objectives of any government is to convey the relevant information to the general public and to increase the level of transparency of the government functioning (Silva,Chiang et al., 2000). A good government system's goal should be to provide the required, reliable, useful and timely information services which is easily accessible to all the people (Bakos, 2000). The three major dimensions which determines the satisfaction level of e-seva (eGovernment) users are service quality, system reliability and stability. Service quality refers to all the services as the one-stop service centre like the individuals, business, community

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Impact of Direct-To-Home (DTH) on Indian Television Viewers

C. R. Senthilkumar, R. Jayalakshmi, M. Manju Bashini, P. Vasumathi

Abstract:— Above us times has revolutionized the television viewing in India. Despite of the high switching costs, alternate offers like more regional channels, discounts, free installations and recent subscription modes are attracted more consumers. Hence, independent variables consumer satisfaction, alternate offers and switching cost were used to understand the consumer loyalty towards DTH service providers. The data collected was analyzed using statistical tools revealed that, substantial amount of switching cost for changing DTH service providers is a biggest hurdle which makes the consumer loyal. The consumer satisfaction which has a positive influence on the consumer loyalty is also the fact that irrespective of the service providers, their responsiveness towards customer calls and complaints are not addressed at the expected level.

Key words: Customer Perception, Loyalty, Customer satisfaction, Alternate offers, Switching cost

I. INTRODUCTION

Direct-to-Home (DTH) was perceived in India during 1996 and government permission was given during 2000 Novembers. But the first DTH services was launched only during 2003 by Dish TV. Currently there are 4 private DTH operators and one government DTH operator (Doordarshan). 500 paid TV channels, with a total of 877 TV channels in India. Total number of active DTH subscribers is 30.09 million in India. As the entry and growth of private service providers increased, the government of India formed a regulatory body TRAI (Telecom Regulatory Authority of India) to monitor and control the telecom services.

Use of newer technology has moved the television viewers to the next level by using satellite signals. DTH is reception of the satellite TV signals with a dish in each individual house pairing with a set-up box to decode.DTH has become more popular with the introduction of high definition (HD) channels and the choice of selected their favourite channels and paying only for those channels they have subscribed.

II. OBJECTIVES AND SCOPE OF THE STUDY

- To study the subscribers' perception on DTH service providers in India.
- To find the extent of consumer loyalty towards service providers.

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This study will help in analysing the satisfaction level of the DTH users and would help in identifying the reasons for their choice on switching service providers. This will also bring out the consumer expectations which can be addressed in near future for enhancing the customer loyalty.

III. LITERATURE REVIEW

Direct-to-Home (DTH) is a high digitalized satellite services provided for the subscribers any part in the country to the television viewer. Cable and satellite operators are completely dominated in use of DTH. The advantage of absence of cable makes possible the television customers even in the remote places in the country. So DTH has revolutionized the Indian television receiver entertainment scenario (Gupta and Bhawan (2003)). Over the years the awareness and reach of DTH is remarkable in India (Fernandes, Anjanshi (2015)). The growth of DTH is more in rural areas compared with Urban areas in India (Thakur & Kohli (2011),Dhawan@Jamdia (2013)).

DTH thought that many users but it also has some domestic rivals including it. Media(Kerala (2009). Like any other business sectors, DTH also has many hurdles like new entrants, rivalry and threat of substitute. (Dhawan (Jalandra,2012) To overcome these threats and to attract more new customers DTH service providers should provide customer problems with a faster and clear response to their satisfaction(Jawahir Kumar and Nagarajan (2012) and with more number of favorite channels (Bhardas Khan, Labib Raj (2013)). To attract more customers value added services such as interactive education for students, farming advisory content and religious content are popular in DTH services Durgadhanap (2011). The other way to survive in the DTH business are to maintain good picture quality, affordable price rather than other factors to make a successful business and satisfy the subscribers (Jayashree.S. Venkatesan.A (2013),Mly-Dynamic &(2013)).

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Investment Avenues Available for Teaching Professionals – An Empirical Study

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Abstract

Competitive pressures have triggered massive shifts in the style and speed of business across the globe. In this situation, financial sector has offered various avenues for investments. Investment avenues are widening in the world to create a positive sources of income. Under these circumstances, investors have their own time and choice to invest their hard-earned savings in available avenues like bank deposits schemes, postal savings scheme, provident fund (PF), share market both primary and secondary, life insurance policies (like LIC), government security or bonds (like NSC), mutual funds, real estate, gold, company deposits and other avenues for investment. Teaching professionals earn handsomely (especially after the implementation of sixth pay commission), but they seldom find time to get information about the various investment avenues. Thus, lack of financial education sets aside their disposable income in low safety, profitability and marketability of investments. As investors, teaching professional do have right to expect a good rate of return from their investment. For all these, they need adequate flow of information. Wealth creation is not an art. It is an attribute of one's attitude towards money. How does one know whether investors have the right kind of attitude towards money? To answer this question, the present study entitled "INVESTMENT AVENUES AVAILABLE FOR TEACHING PROFESSIONALS – AN EMPIRICAL STUDY" has been taken up to understand their a) awareness level; b) investment objectives, c) preference over investment avenues, duration, financial institutions and sources of information; and d) problems in current investment decisions.

I. INTRODUCTION

Investment avenues are widening in the world to create a positive sources of income. One can invest disposable income in domestic or offshore market. Though few people in society are investing their savings in a systematic manner and many are not doing so. A systematic investment plan always yields a fair return. People are earning handsomely, but they do not know where, when and how to invest. Every one should realize that financial planning is a must today in order to know where one stands financially and also to focus on one's financial efforts in the right direction. A proper understanding of money, its value, the available avenues for investment, various financial institutions, the rate of return and risk, et., are essential to successfully manage one's finance for achieving life's goal. Increasingly, over the past several years, competitive pressures have triggered massive shifts in the style and speed of business across the globe. In this situation financial sector have offered various avenues for investment. Markets whether organized or unorganized are flooded with various financial instruments/avenues to enable the investors to invest their disposable income freely. The financial institutions are clearly stating their conditions and regulations subject to market risk to the investors.

Under these circumstances, investors have their own time and choice to invest their hard-earned savings

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A Study on Performance Analysis of Selected Mutual Fund Schemes in India

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ABSTRACT

In India, there are various investment avenues available for investors to invest and earn profitable return. Among the others financial products, investment in mutual fund ensures the minimum risks and maximum return to the investors. The need and scope of the mutual fund operation has increased as the emphasis is being made on increase in domestic savings and improvement in diversification of investments. Thus it became important to study the mutual fund industry and the performance of the mutual funds. This study aims to evaluate the performance of a few selected mutual fund schemes of India on the basis of their daily net asset value (NAV) for the period of five years from 2015-2019. A sample of 10 open-ended, growth-oriented equity funds has been selected for the study. The performance of the funds is evaluated using Sharpe index, Treynor index and Jensen alpha whose results will be useful for investors for taking better investment decisions.

Keywords: **Mutual Funds, Performance, Sharpe Index, Treynor Index, Jensen Alpha….**

INTRODUCTION

In 1963, the mutual fund industry was started in India with the formation of the Unit Trust of India (UTI), at the initiatives taken by the Reserve Bank of India and the Government of India. Mutual funds constitute an important segment of the financial system. It is a non-depository financial intermediary. A mutual fund is a type of investment that pools the savings of the investors for investments in shares, debentures, government securities and other financial instruments. It is a special type of institution that acts as an investment conduit. The unit holders share the income earned through these investments in proportion to their units owned them. The mutual funds in India follow a three-tier structure. The three entities involved in the process are:

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A Factual Research on Employee Green Behavior in Select Medical Research Centres - Medical Tourist Staffs' Perspective

K S Usman Mohideen, V Selvakumar, H Hari Harasudha, K Maran

Abstract **Employee Green Behavior (EGB) is the positive environmental behavior that the employees exhibit in an organization. It is one of the several methods in which environment could be protected. The purpose of this study was to gain an understanding of variables that impact EGB of employees in the select medical centers. This descriptive paper on EGB gives insight into the significance of employee green behavior which plays a significant role in protecting the environment and analyses the benefits of green behavior for the employees as well as the environment. The study explored various variables such as Sustaining work, Avoiding harm, Conserving resources and Taking initiatives from medical tourist staffs perspective. The sample size selected for the study is 100 respondents. The respondents are selected by simple random sampling method and structured questionnaire is used to collect data. Correlation, Independent sample t-test and Chi square were used to analyse the data. There is a significant difference between Marital Status and Avoiding Harm and Marital status and Conserving Resources whereas there is no significant difference between Marital Status and Sustaining Work and Marital Status and Taking Initiative. Positive relationship exhibited between considered variables.**

Keywords: *Avoiding Harm, Conserving Resources, Employee Green Behavior, Medical Research Centers and Medical Tourist Staffs, Sustaining Work and Taking Initiatives.*

I. INTRODUCTION

Environmental sustainability is a critical dimension of corporate well-being in modern era. It can be enhanced by adopting Employee Green Behavior (EGB) Practices. Dilchar defines EGB "as any measurable individual behavior that contributes to or detracts from environmental sustainability goals in the work context." The author states that EGB is an essential component of organizational environmental sustainability. Gonzalez-Benito opined that there is a crucial need for an enthusiastic approach towards environmental management across the world. Improved adoption of ecological management is called Green Management Strategy. It aims at protecting and measuring environmental aspects. Observational learning allows people to pick up on effective behaviors and adapt to new and ambiguous environments. There is an accumulating pressure to address the long term consequences of environmental degradation and pollution and to improve the responsiveness. These practices are called as green practices and it should be formally and informally incorporated within the organization. Employee Green Behaviour variables considered are Sustaining work, Avoiding Harm, Conserving Resources and Taking Initiatives. Medical tourists are the people who come from other countries for availing treatment. Medical tourist staffs are the staffs who are assigned for taking care of medical tourist. The positive employee green behavior of medical tourist staffs creates favorable impression among medical tourists and helps to bring more and more medical tourists not only for the economy and cost but also for the care for ecology.

II. REVIEW OF LITERATURE

Mandlip (2012), in his research on the practice of green HR he stated that green HR should be incorporated in each and every process of HR starting from recruitment, training, appraisal, employee relation and reward. Green initiatives within HRM is major part of CSR. Green HR involves two essential elements: environmentally-friendly HR practices and the preservation of knowledge capital.

Luther (2015), author states that employees perceive that top management is committed to environmental management, employees are provided with environmental training before their joining or during their job as and when required and companies implement green programs which have an impact on environmental performance.

Piotr (2016), the author examines the direct effects of green organizational climate (GOC) on Organizational Citizenship behavior with the mediating effect of individual factors. It is found that employee values and commitment were positively related to OCB of employees who engage in EGB.

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EMPLOYEE ATTRITION –REASONS AND INTENTION TO ATTRITION WITH REFERENCE TO ALLSEC TECHNOLOGIES LTD.

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ABSTRACT

Employee attrition is the rate at which organizations and/or company's hiring and fire employees to either represent their firm or leave their firms. It also referred to the employee turnover rate. There are many different ways for a company to lose employees, most of which are typically taken into account to ensure that the organization is able to operate efficiently. Attrition refers to the loss of employees due to reasons other than firing and other employer-initiated events. This means that an employer has no direct control over how many personnel are lost to employee attrition. Retirement is one major cause of employee attrition, and since people tend to retire around a specific age this is a factor that can be accounted and planned for. Other causes of employee attrition, such as personnel who quit due to prolonged illness, dissatisfaction with the company, or other reasons, can be more difficult to estimate

Keytermss: Employee, Attrition organization

INTRODUCTION

Employee attrition refers to the loss of employees through a number of circumstances, such as resignation and retirement. The cause of attrition may be either voluntary or involuntary, though employer-initiated events such as layoffs are not typically included in the definition. Each industry has its own standards for acceptable attrition rates, and these rates can also differ between skilled and unskilled positions. Due to the expenses associated with training new employees, any type of employee attrition is typically seen to have a monetary cost. It is also possible for a company to use employee attrition to its benefit in some circumstances, such as relying on it to control labor costs without issuing mass layoffs.

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"KSA – Research" of Gap Analysis Towards Management Graduate's Deliverables and Industry Expectations – A Contemporary Perspective of Human Resource Professionals

K S Usman Mahideen, S Helen Roselin Gracy, S Santhana Jeyalakshmi

Abstract*— The object of this study is to understand the gap between the performance of management graduates and employer's expectations from them. It is measured through KSA (Knowledge, Skills and Attitudes) approach for the services industry. The questionnaire was distributed to 210 Human Resource Professionals from different spectrum identified through convenience sampling method. Data analysed using Chi-square test, U-test and Weighted average rank. The findings indicated that to reduce a gap institute should increase an institute Industry interactions through Industrial visits, Lectures, etc., The Industry expectations are quite high so, the universities and institutes design curriculum based on the Industry expectations and review the knowledge imparting strategies.

Keywords: Attitude, HR Professionals, Industry, Knowledge, Management Institute, Skills

I. INTRODUCTION

In the last decade, the world has dramatically changed. The outlook of corporate has changed drastically with new disruptive technologies. The education industry is not fortunate enough to be updated with recent trends and demands and, the institutions have not met the requirement of the hour. Especially Indian educational institutions are blindly following an outdated educational system. Very few educational institutions which can be stated for its credibility and reliability. Majority of the educational institutions have not adopted the change. Out of millions of postgraduates or professionals, only 21% of them are fit for employability. Statistics further drops deeply to 8% in the case of engineers. This is evidence for a gap between what the industry expects and what is supplied to them.

II. NEED FOR THE STUDY

For the prospect of the country Industry and Academia should go hand in hand, but in reality, they both have a diverse obligation. Industry focus on cost and institute focus on prestige, so always there is a gap between their expectations. The bitter truth is that statistically, only 14% of postgraduate management students have an ability to meet expectations of the industry (according to survey 2009 NSF) there is a need to tackle the problem of the gap between what industry expects and what the graduates possess. So this study is undertaken to find out the expectation of industry from management graduates.

III. OBJECTIVES OF THE STUDY

- To evaluate the level of satisfaction of recruiters.
- To assess the impact of demographic factors of HR professionals on expectation from management graduates.

IV. REVIEW OF LITERATURE

Farhad Analoui and Mirza Hassan Hoseini (2001), from the study, it is inferred that the appropriate mixture of KSA facilitates the fresh graduates to contribute more. In reality, there is an interlude between actuals and expected. They concluded that there should be more emphasis on self-development parameters.

Giannantonio and Hurley (2002), they found that the first and foremost challenge for HR professionals is "management of change." The graduates must focus on covering the interlude, on being ready to face prospective, turbulent and dynamic opportunities.

Suchismita Bhattacharjee and Somik Ghosh (2012), the paper aims at comparing compare industry expectations from fresh graduates with student perceptions towards requisites for their professional success. The study conducted by collecting data from potential employers and graduates who are about to complete the course. The result depicts a weak correlation between expectation and requisites in the dimension of interpersonal skills.

Ana Anwesha (2012), the study focuses on the required competencies of management students. This research found eight critical competencies for management graduates; the skills are in line with previous studies.

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A STUDY ON EMPLOYEE ENGAGEMENT TOWARDS LEADERSHIP IN SELECTED STEEL CASTINGS PLANT OF KERALA STATE

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Abstract

Employee engagement is level of involvement and commitment on behalf of an employee's level of participation in their organization and its values. Engaged an employee is aware of business context, and works with Colleagues for the benefit of the organization to improve performance within the job. This is a positive attitude towards the organization and its values held by employees. This research study is an effort to understand how employee engagement is associated with employee job satisfaction and how an employee loyalty leads to better work force and affect its loyalty. The results shown that majority of employees are compliance with the organization which brings maximum involvement of the employees and in turn retaining is not impossible. This study is conducted at selected steel castings plant of kerala state to understand the extent of employee engagement towards leadership in the organization. The data was collected by interviewing the respondents with the help of interview schedule.
Key words: Employee engagement, Leadership.

Introduction

The degree of complexity in the business world enables companies to adapt constantly to changes and meet various workplace needs. Sometimes, companies struggle and seek to thrive by lowering prices, cutting costs, redesigning business processes, and lowering employee numbers. If there is a limit to cost reduction and downsizing, new human resource management strategies are necessary for corporate sustainability and growth. Instead of focusing on cost reductions, the focus shift in human resource management (HRM) is to build employee

A STUDY ON EMPLOYEE ENGAGEMENT TOWARDS CAREER DEVELOPMENT IN SELECTED STEEL CASTINGS PLANT OF KERALA STATE

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Abstract
Employee engagement is a key business driver for organizational success. Every organization wants to gain competitive advantages over others and employee engagement is the best tool for it. Engagement is creating prospect for human resources to attach with their managers, employees and organization. This study is conducted at selected steel castings plant of kerala state to understand the extent of employee engagement towards career development in the organization. The data was collected by interviewing the respondents with the help of interview schedule.
Key words: Employee engagement, Career Development.

Introduction
The degree of complexity in the business world enables companies to adapt constantly to changes and meet various workplace needs. Sometimes, companies struggle and seek to thrive by lowering prices, cutting costs, redesigning business processes, and lowering employee numbers. If there is a limit to cost reduction and downsizing, new human resource management strategies are necessary for corporate sustainability and growth. Instead of focusing on cost reductions, the focus shift in human resource management (HRM) is to build employee engagement. As a result, several pieces of research have been published calling for a more constructive approach that focuses on the workplace, i.e. engaging workers rather than concentrating on methods for problem-coping.

A STUDY ON EMPLOYEE ENGAGEMENT TOWARDS BENEFITS & SAFETY MEASURE IN SELECTED STEEL CASTINGS PLANT OF KERALA STATE

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Abstract
Employee engagement has become a heavily discussed topic in recent years. However, there is still ambiguity within the academic literature as to how employee engagement can be influenced by management. There has been significant interest in employee engagement, but this has been coupled with a good deal of misunderstanding. This research study is an effort to understand how employee engagement is associated with employee job satisfaction and how on employee loyalty leads to better work force and affect its loyalty. The results shown that majority of employees are compliance with the organization which brings maximum involvement of the employees and in turn retaining is not impossible. This study is conducted at selected steel castings plant of kerala state to understand the extent of employee engagement towards Benefits & Safety Measure in the organization. The data was collected by interviewing the respondents with the help of interview schedule.
Key words: Employee engagement, Benefits & Safety Measure.

Introduction

Due to the varying definitions of employee engagement, the results of different studies become difficult to examine. This is because each study may look at the subject of employee engagement through a different lens, depending on the definition they decide upon. According to Ferguson (2007), with a universal definition of employee engagement lacking, it cannot be accurately defined and thus it cannot be measured and thus managed. According to Robinson et al (2004), while it has been noted that employee engagement has been defined in numerous ways, a number

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Effectiveness of Training and Development Program with Reference to Real Image Media Technologies (P) Ltd.

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***Abstract*: The project aim is analysis the effectiveness of training and development program in an organization. The study starts with the industry profile, Company profile, and also the need for study, review of literature and objectives are set out for the study. Research methodology, Limitations, Scope, Data analysis & Interpretation, Findings and Suggestions of the study follow. This study is based on questionnaire from the employees by using this tools combined it enables to determine in an effective manner. The main area of the project is the analysis part, where the data are analyzed & interpreted, to find out the methods of training and used in size effect an organization are regarding to and then conclusion, limitations & scope for further study were discussed.**

***Keywords*: Employee, Training, Development.**

1. Introduction

Training is a planned process to modify attitude, knowledge or skill behavior through learning experience to achieve performance in an activity or range of activities. The purpose of training in the work station is to develop the abilities of the individual and safety the current and future needs of the organization.

In earlier practice, training programme focused more on preparation for improved performance in particular job. Most of the trainees used to be from operative levels like mechanics, machines operators and other kinds of skilled workers. When the problems of supervision increased, the steps were taken to train supervisors for better supervision. For training to be effective it is necessary to training needs. Many organizations invest considerable resource in training and development but never really examine now training and development can most effectively promote organizational objectives, or now training and development activities should be attended in the light of business. Training effectiveness is a highly desirable step in total training programs so that one can judge the value or worth of the training. It has been given special importance to develop the skills of the employees in turn leads to the productivity and quality of both the employees and organization as well. This study has undergone to identify the effectiveness of the training and development effectively.

Development is all those activities and programme when recognized and controlled have substantial influence in changing the capacity of the individual to perform his assignment better and in going so all likely to increase his potential for future assignments. Thus, management development is a combination of various training programme, though some kind of training is necessary, it is the overall development of the competency of managerial personal in the light of the present requirement as well as the future requirement. Development an activity designed to improve the performance of existing managers and to provide for a planned growth of managers to meet future organizational requirements is management development. Training need identification is a tool utilized to identify what educational courses or activities should be provided to employees to improve their work productivity. Here the focus should be placed on needs as opposed to desires of the employees for a constructive outcome. In order to emphasize the importance of training need identification we can focus on the following areas: -

- To pinpoint if training will make a difference in productivity and the bottom line
- To decide what specific training each employee needs and what will improve his other job performance
- To differentiate between the need for training and organizational issues and bring about a match between individual aspirations and organizational goals

Identification of training needs is important from both the organizational point of view as well as from an individual's point of view. From an organisation's point of view it is important because an organization has objectives that it wants to achieve for the benefit of all stakeholders or members, including owners, employees, customers, suppliers, and neighbours. These objectives can be achieved only through harnessing the abilities of its people, releasing potential and maximizing opportunities for development.

Therefore, people must know what they need to learn in order

3PL and Warehouse Management at Uniworld Logistics India Pvt Ltd

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Abstract— The study has been undertaken with a view to study the operations effectiveness of Uniworld Logistics India Pvt Ltd which is one of the leading third party logistics & warehouse service provider to its clients. This logistics in analyzing the operational efficiency which might help in increasing the performance of the organization. The research is conducted using several customers of Danfoss department of Uniworld Logistics. Thus it can give a better output. This study focuses on analyzing the importance and efficiency of Logistics with special reference to Third party logistics. In the process of analyzing the operations of third party logistics in Uniworld logistics with Danfoss, tools like Vendor rating, Process chart, Exponential smoothing and Work measurement are used. By using vendor rating the efficient and economical transporter can be identified. Process chart helps to understand the overall activities carried out in a particular process so as to reduce the unnecessary activities. Exponential smoothing is used to forecast the work load for every month and finally Work measurement is used to calculate the standard time in packaging the compressors.
Keywords: logistics, operational, efficiency, packaging

I. INTRODUCTION

A. Operations Management

Operations management refers to the administration of business practices to create the highest level of efficiency possible within an organization. Operations management is concerned with converting materials and labour into goods and services as efficiently as possible to maximize the profit of an organization. Operation management is an area of business concerned with the production of goods and services, and involves the responsibility of ensuring that business operations are efficient in terms of using as little resource as needed, and effective in terms of meeting customer requirements. Operation management is widely classified into Service operations, Production management and Supply chain management.

APICS Dictionary defines Supply chain management as the "Design, planning, execution, control, and monitoring of supply chain activities with the objective of creating net value, building a competitive infrastructure, leveraging worldwide logistics, synchronizing supply with demand and measuring performance globally". SCM draws heavily from the areas of operations management, logistics, procurement, information technology and strives for an integrated approach. Among all these areas Logistics plays a major role in fulfilling the ambition of supply chain management.

B. Production Management v/s Operations Management

A high level comparison which distinct production and operations management can be done on following characteristics:

- Output: Production management deals with manufacturing of products like (computer, car, etc.) while operations management cover both products and services.
- Usage of Output: Products like computer/car are utilized over a period of time whereas services need to be consumed immediately.
- Classification of work: To produce products like computer/car more of capital equipment and less labour are required while services require more labour and lesser capital equipment.
- Customer Contact: There is no participation of customer during production whereas for services a constant contact with customer is required.

C. Scope of Operations management

The scope of operations management ranges across the organization. Operations management people are involved in product and service design, process selection, selection and management of technology, design of work systems, location planning, facilities planning, and quality improvement of the organization's products or services. The operations function includes many interrelated activities, such as forecasting, capacity planning, scheduling, managing inventories, assuring quality, motivating employees, deciding where to locate facilities, and more. We can use an airline company to illustrate a service organization's operations system. The system consists of the airplanes, airport facilities, and maintenance facilities, sometimes spread out over a wide territory. Most of the activities performed by management and employees fall into the realm of operations management.

- Forecasting such things as weather and landing conditions, seat demand for flights, and the growth in air travel.
- Capacity planning, essential for the airline to maintain cash flow and make a reasonable profit. (Too few or too many planes, or even the right number of planes but in the wrong places, will hurt profits.)
- Scheduling of planes for flights and for routine maintenance; scheduling of pilots and flight attendants; and scheduling of ground crews, counter staff, and baggage handlers.
- Managing inventories of such items as foods and beverages, first-aid equipment, in-flight magazines, pillows and blankets, and life preservers.
- Assuring quality, essential in flying and maintenance operations, where the emphasis is on safety, and important in dealing with customers at ticket counters,

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Work Life Balance of Women Employees in Manufacturing Sector with Respect to Madras Export Processing Zone (MEPZ)

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Abstract

In the present competitive environment, the future of manufacturing sector is on a fast and an effective growing rate among staff the other sectors. India is the fastest rapidly growing country globally, thanks for the various initiatives which are given by the Government, the privileges given to the various sectors, advancement of technologies and tie ups with other global companies. Due to the foreign investment in India, many manufacturing sectors have show high impact in the Gross rate of the nation. In this context effective employee motivation is very essential for the success of any organization, the classical perspective of the management was essentially rational and analytical and the employee's emotions were not taken into consideration. In motivating process, the human capital and the organizations have to capture their employees hearts and minds, which can be achieved by incorporating the magical term "Work life balance" amongst the working employees. In the present day work scenario, it is merely not the intelligence or the technical competence, would measure one's satisfaction or success at the workplace, it is the "skills of people" on their work life balance that seems to have a vital role. The imbalance of work life will not only influence their members, but also on the productivity of the organization which may lead to a greater mishap among other companies. Globalization and the stress for competitiveness are increasingly making all the companies to focus on their core competencies and outsource the remaining business processes. This provides an opportunity to global companies to relocate such processes to India. India has inherent strengths to support this. In this aspect the study was done to find out the work life balance of women in manufacturing sectors.

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I. INTRODUCTION

Work-life and personal life are the two sides of the same coin, these both are interconnected and interdependent too. The personal life can also be demanding if you have a kid or aging parents, financial problems or even problems in the life's of a close relative, this can lead to unexpected absence from work, creating stress and lack of concentration at work. The work-life balance of working women employees in the recent years has been a very essential aspect since the time changed from men to earn the family living in the current fast-moving world where both men and women hopefully share the responsibilities of earning for the betterment and the satisfaction of their family life. Hence, it is for the betterment of family life in achieving the various aspires and the needs of their family. With the advanced and changing high-tech advancement in education and training institutions, things have been improved and changed to a greater extent. Work-life balance is explained as a balanced equilibrium in

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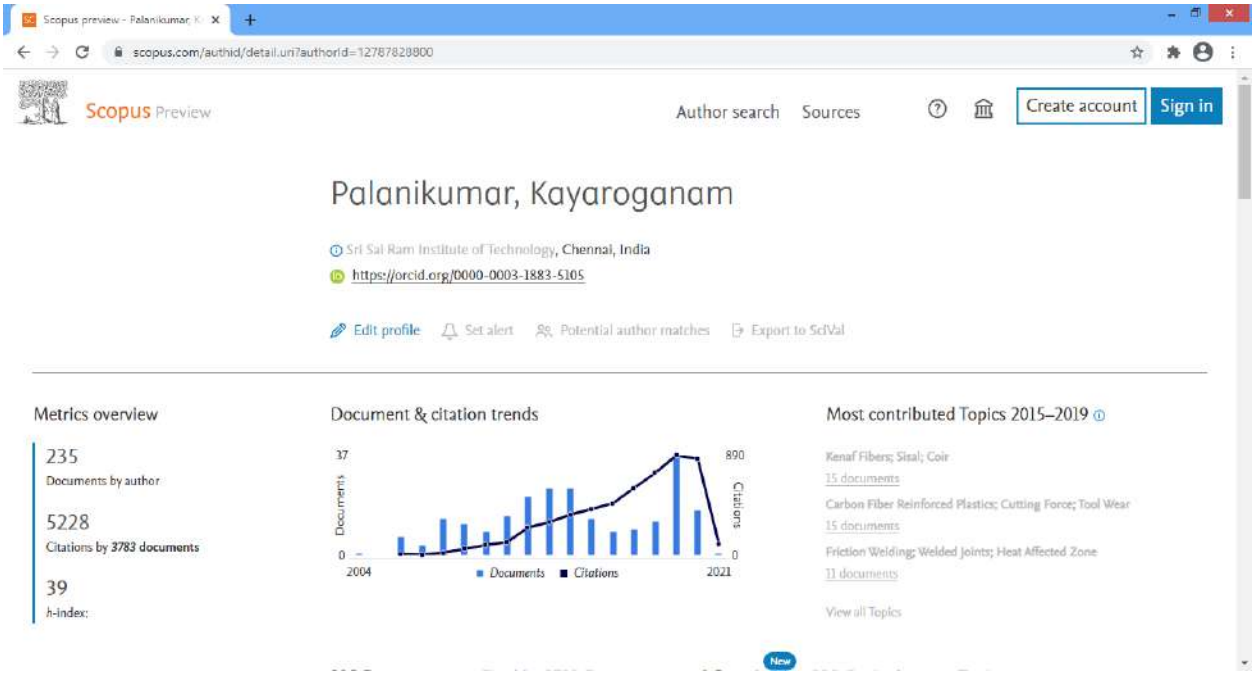
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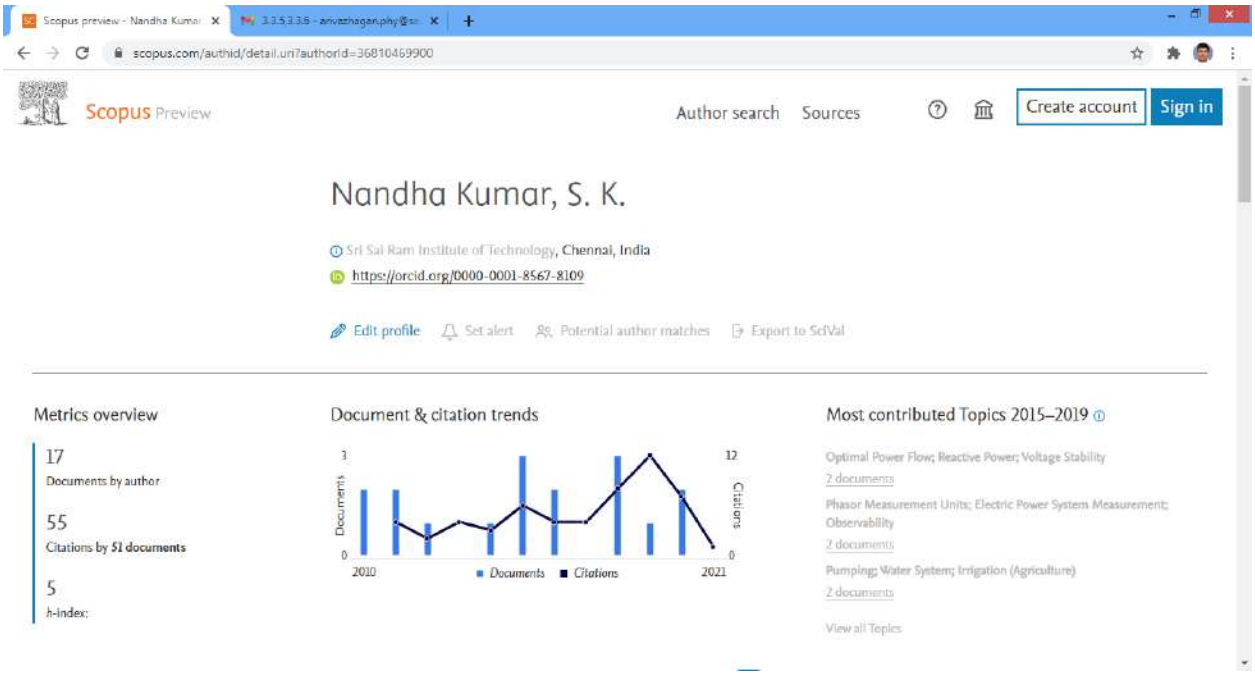
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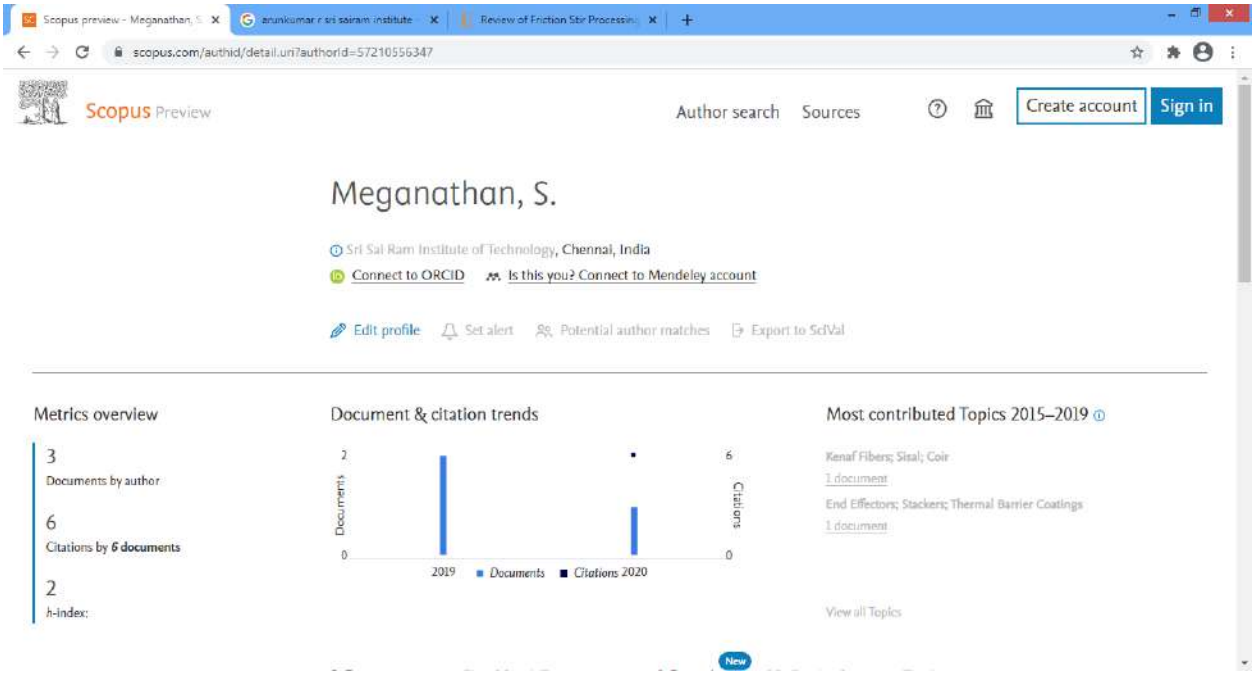
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1 document
End Effectors; Stackers; Thermal Barrier Coatings
1 document
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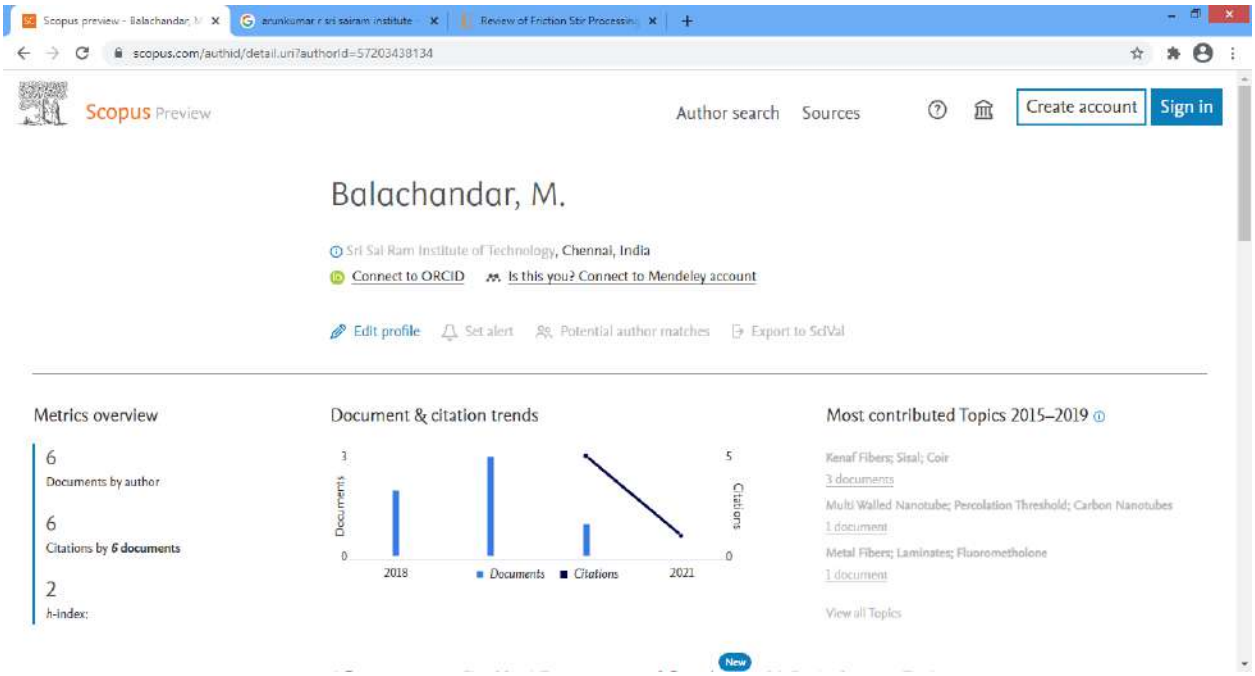
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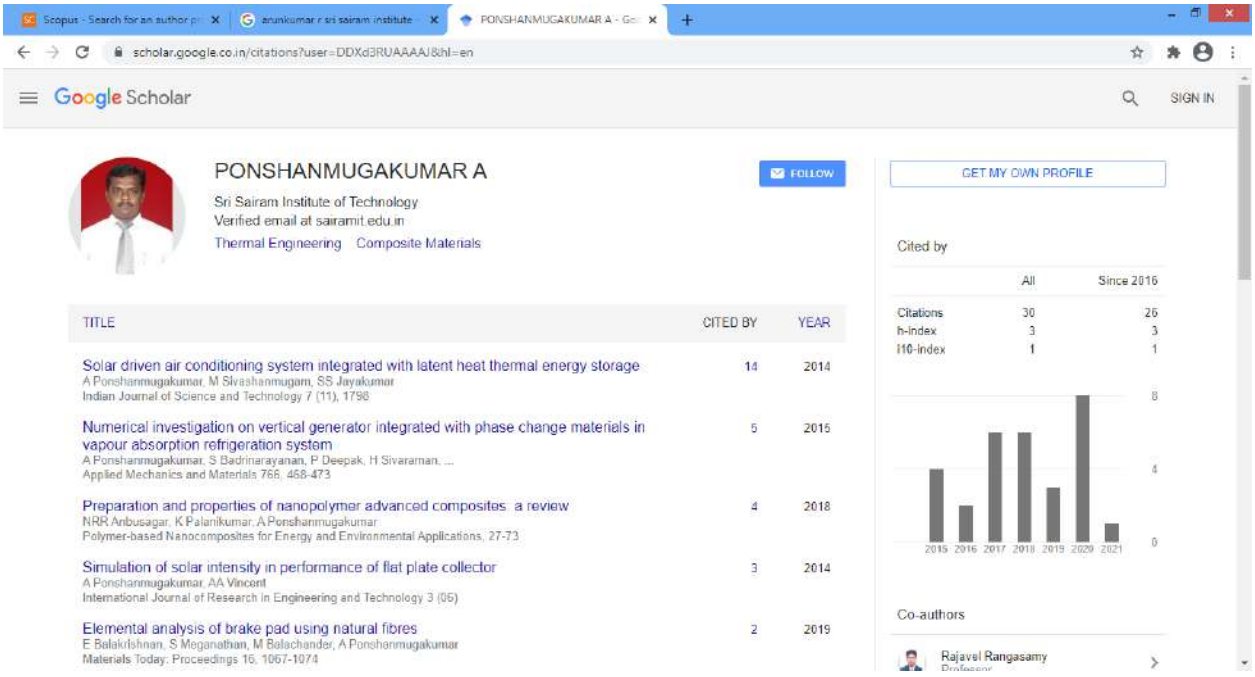
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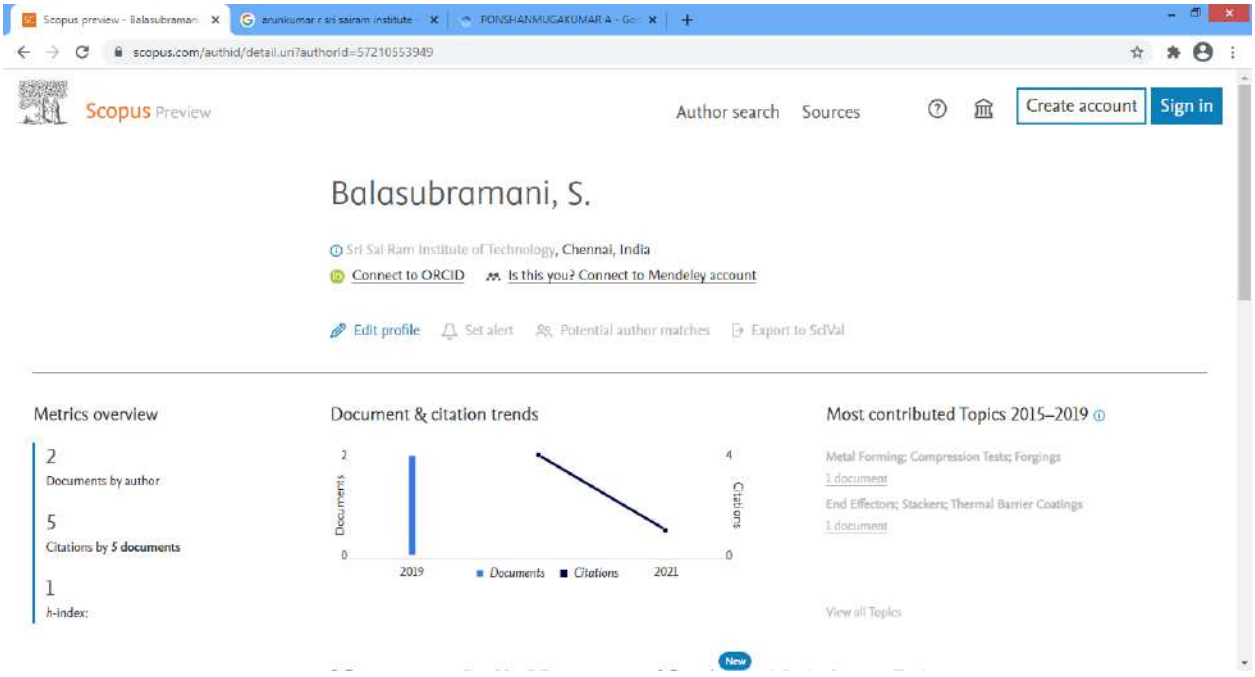
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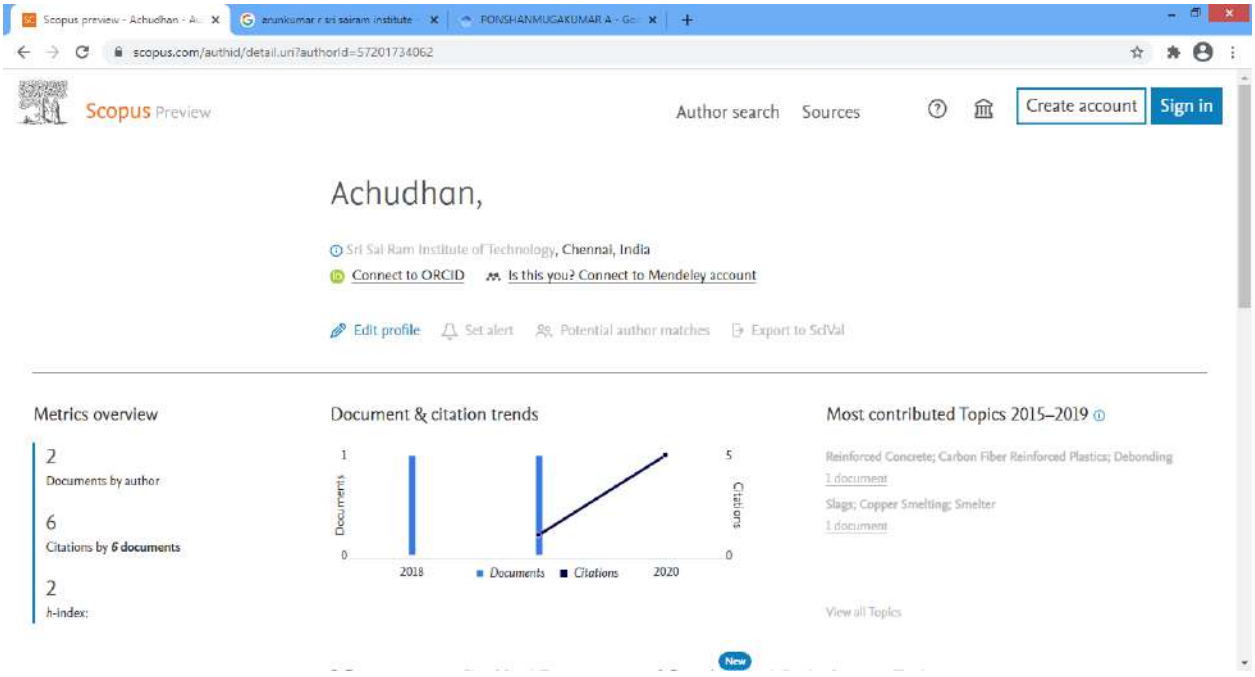
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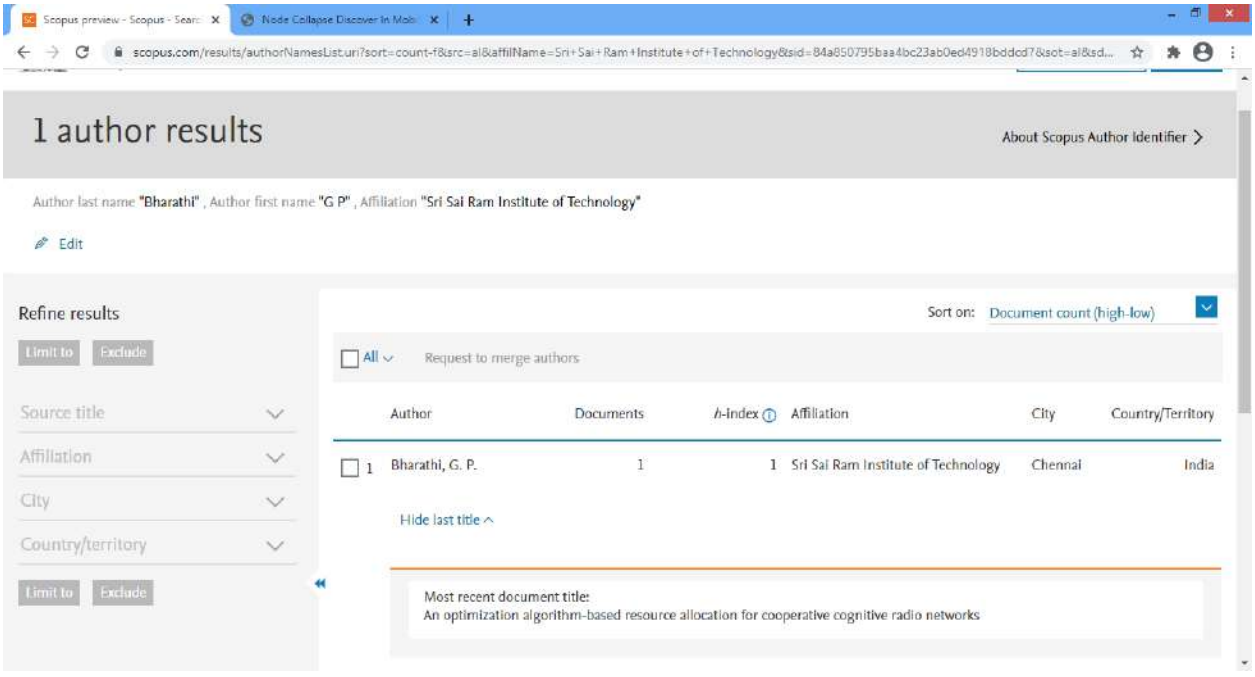
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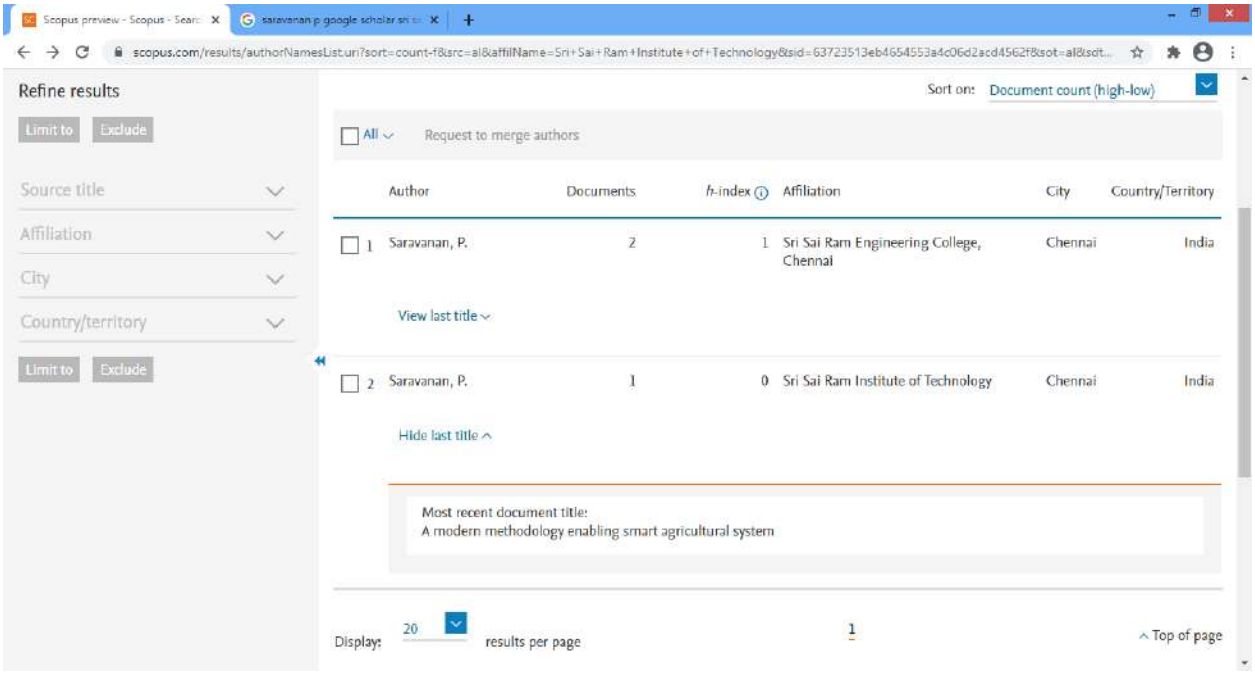
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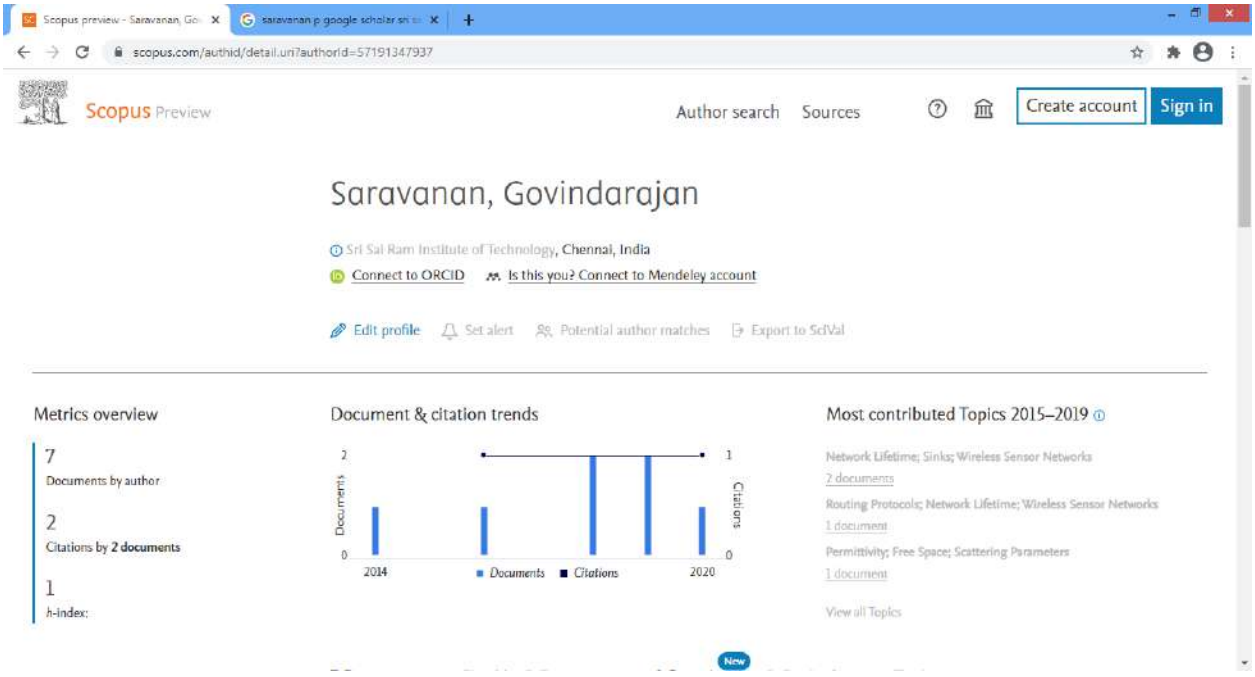
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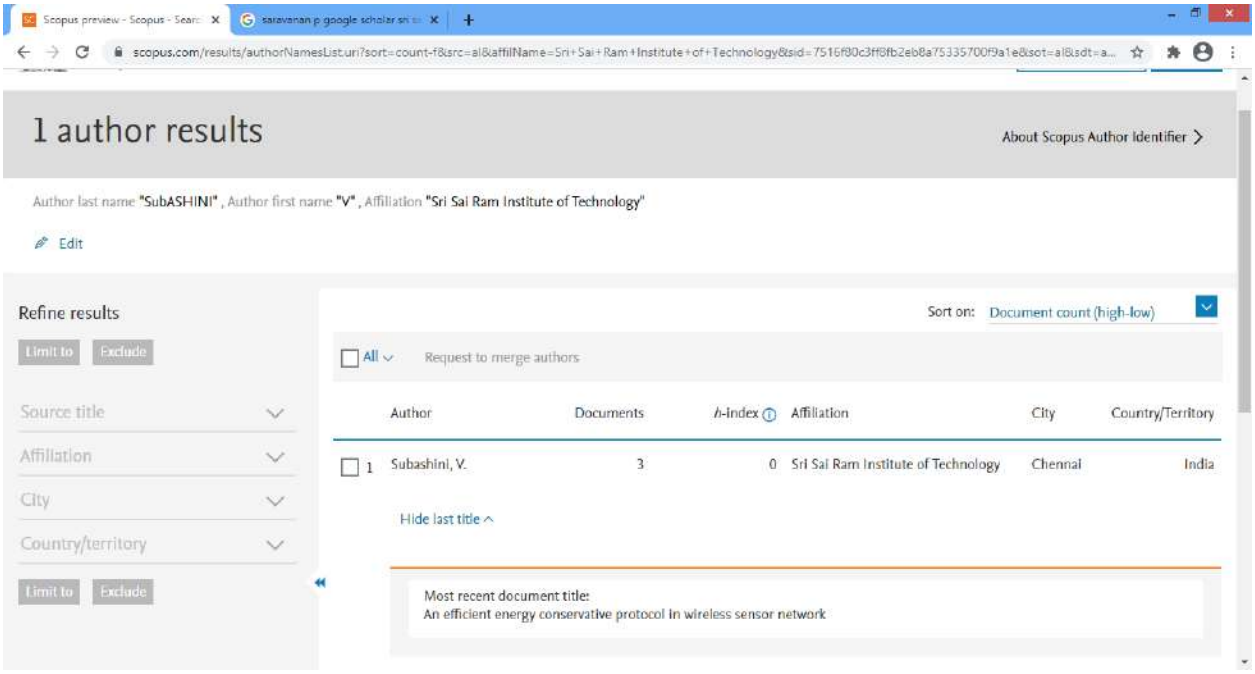
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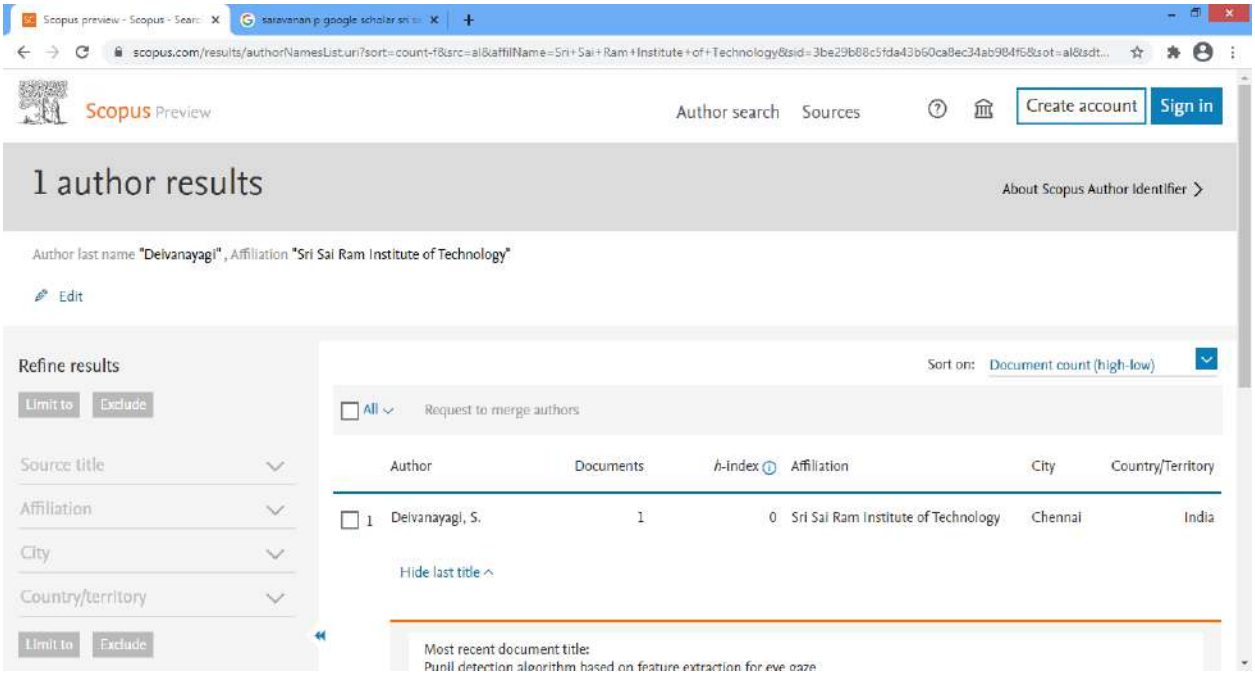
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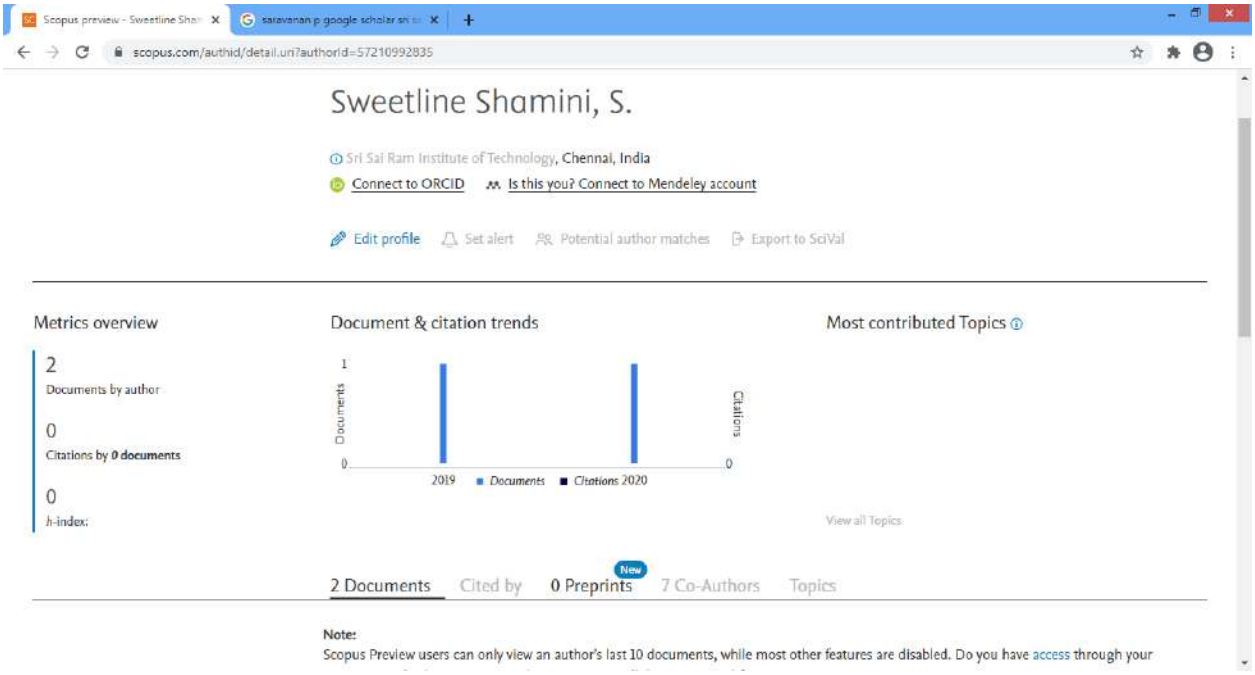
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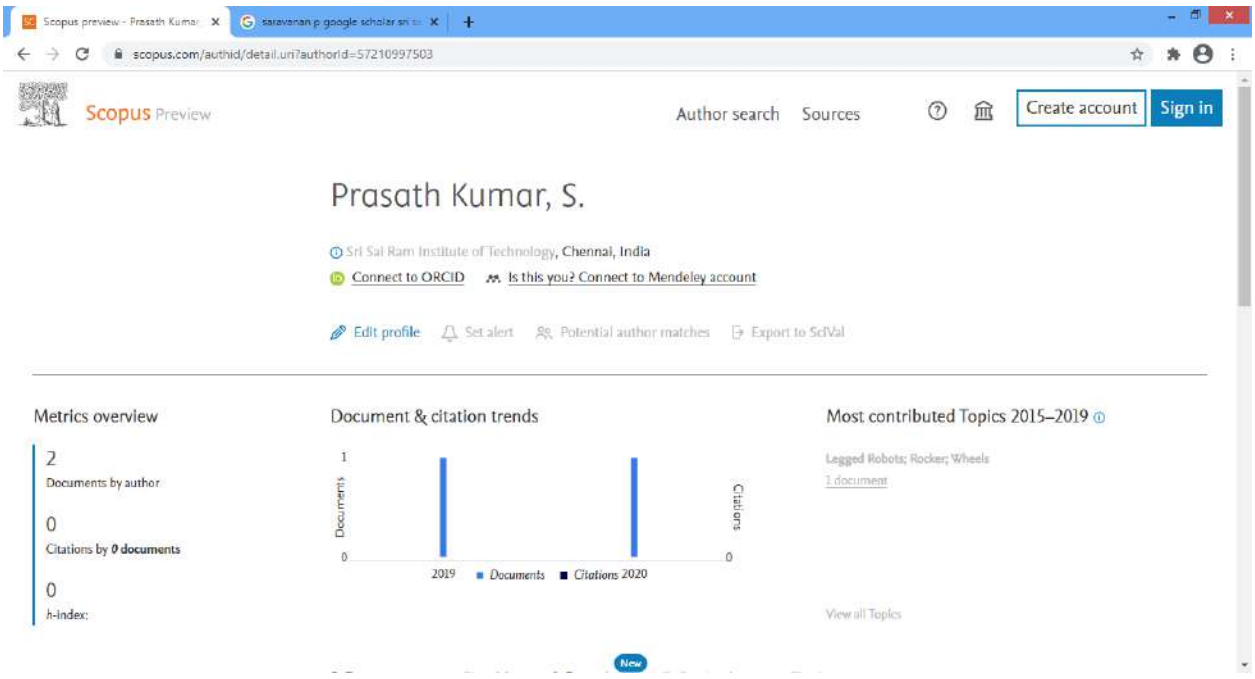
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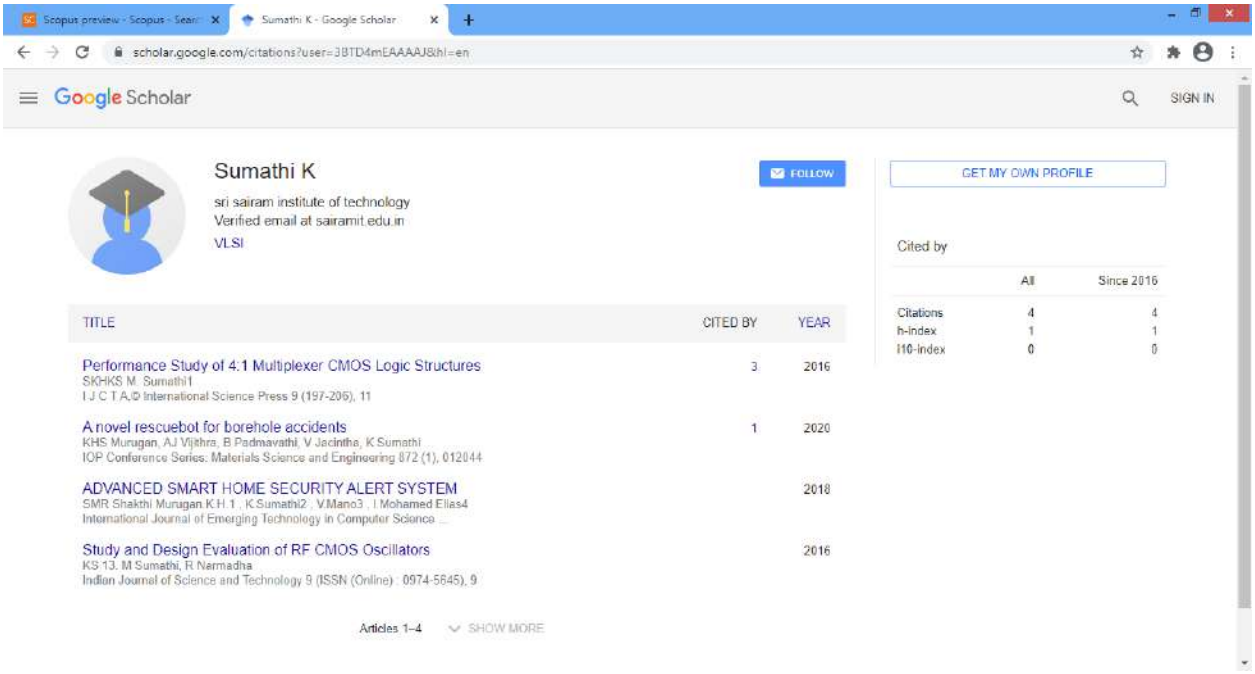
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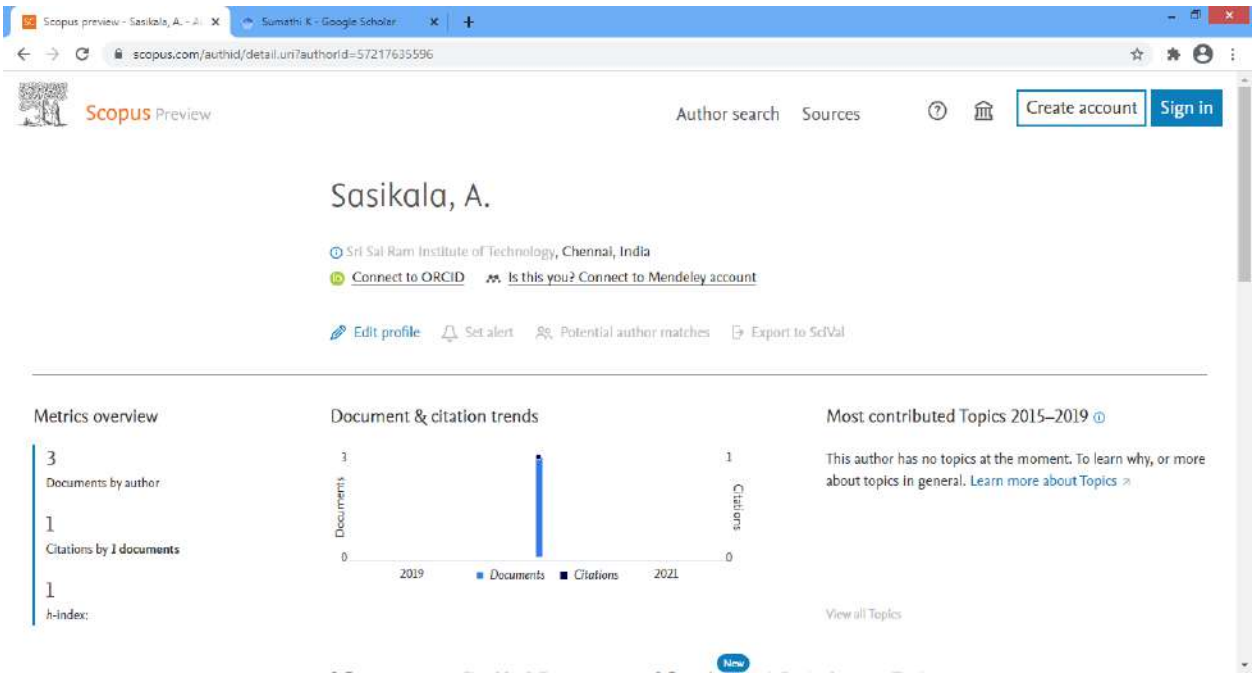
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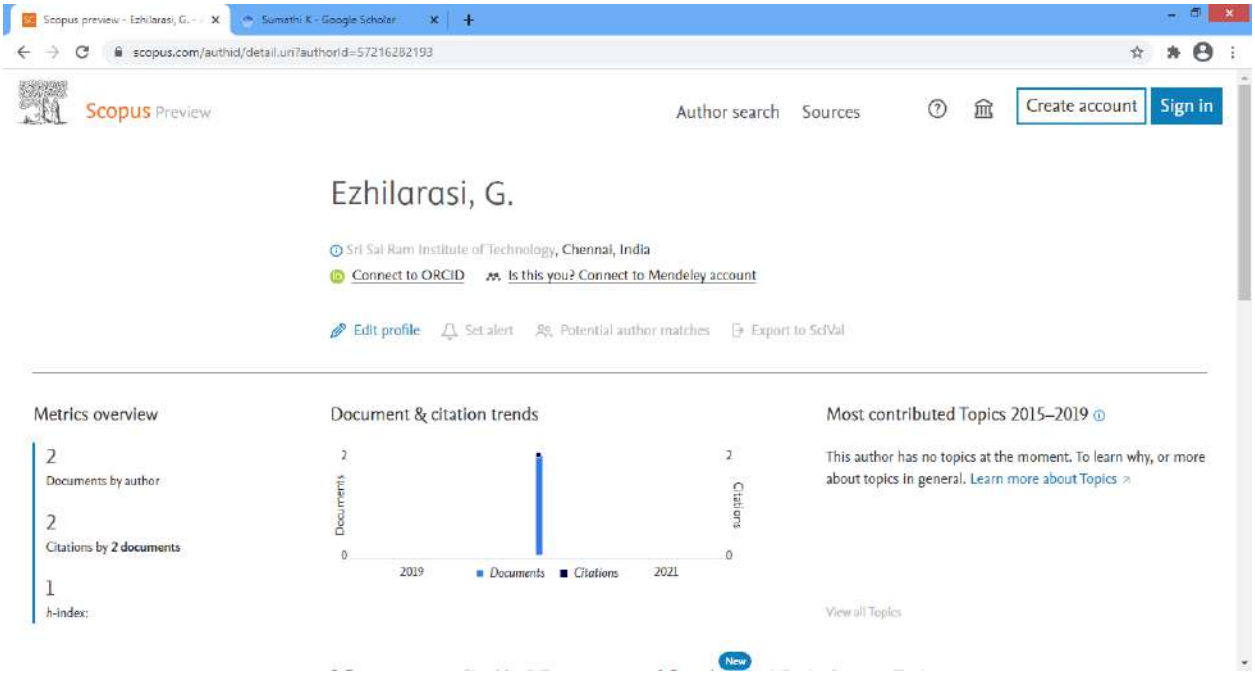
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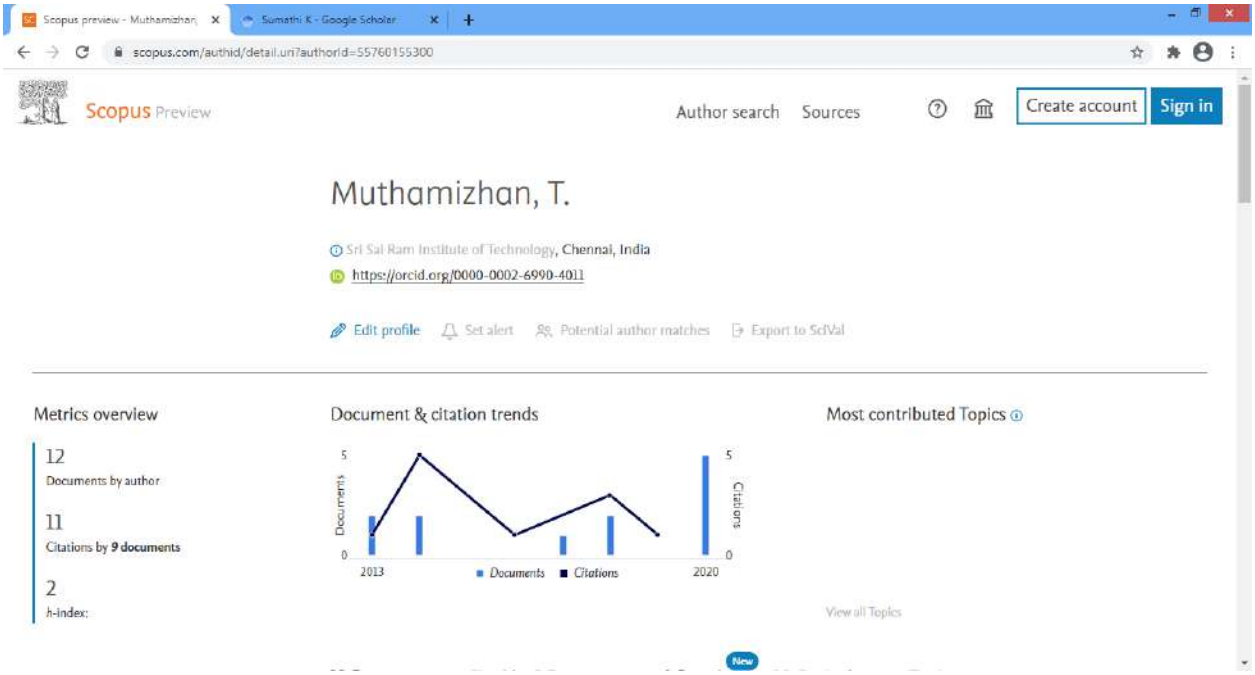
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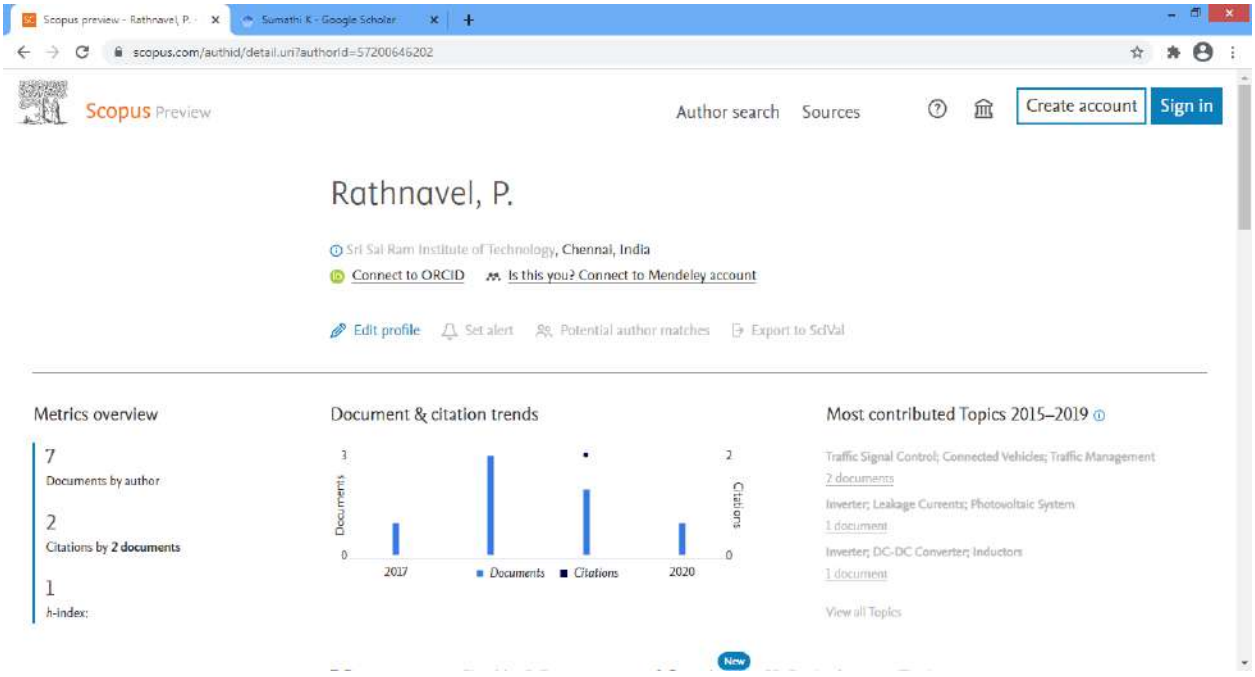
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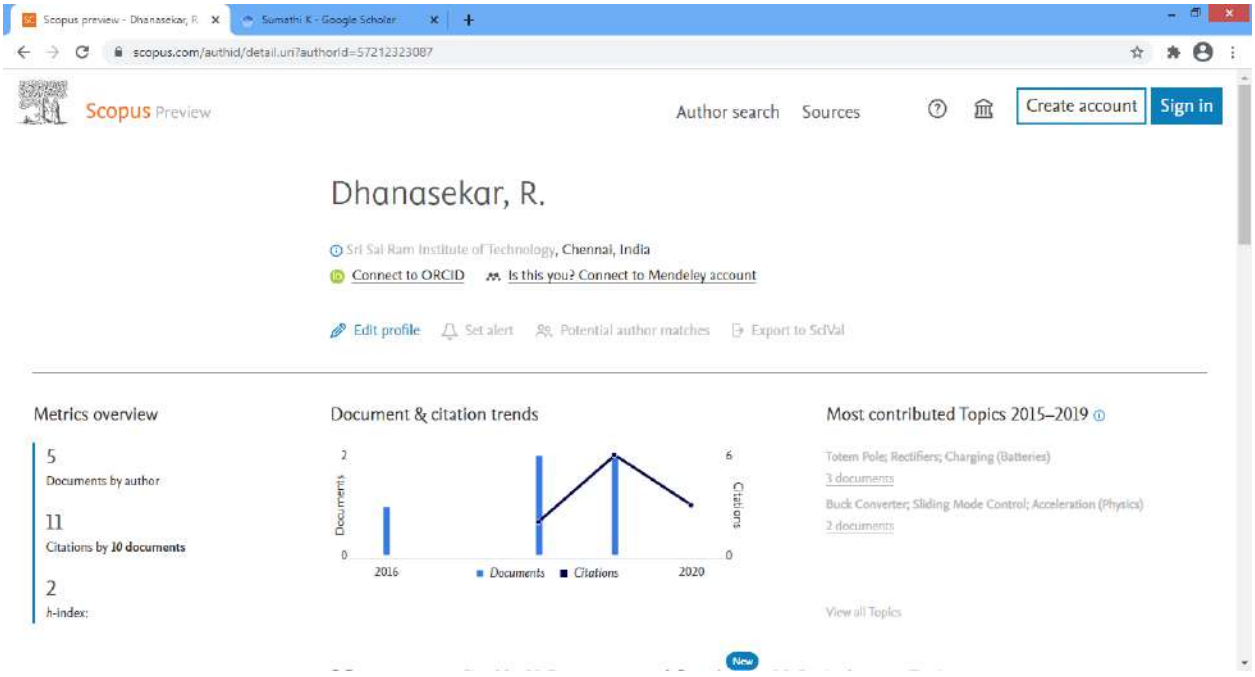
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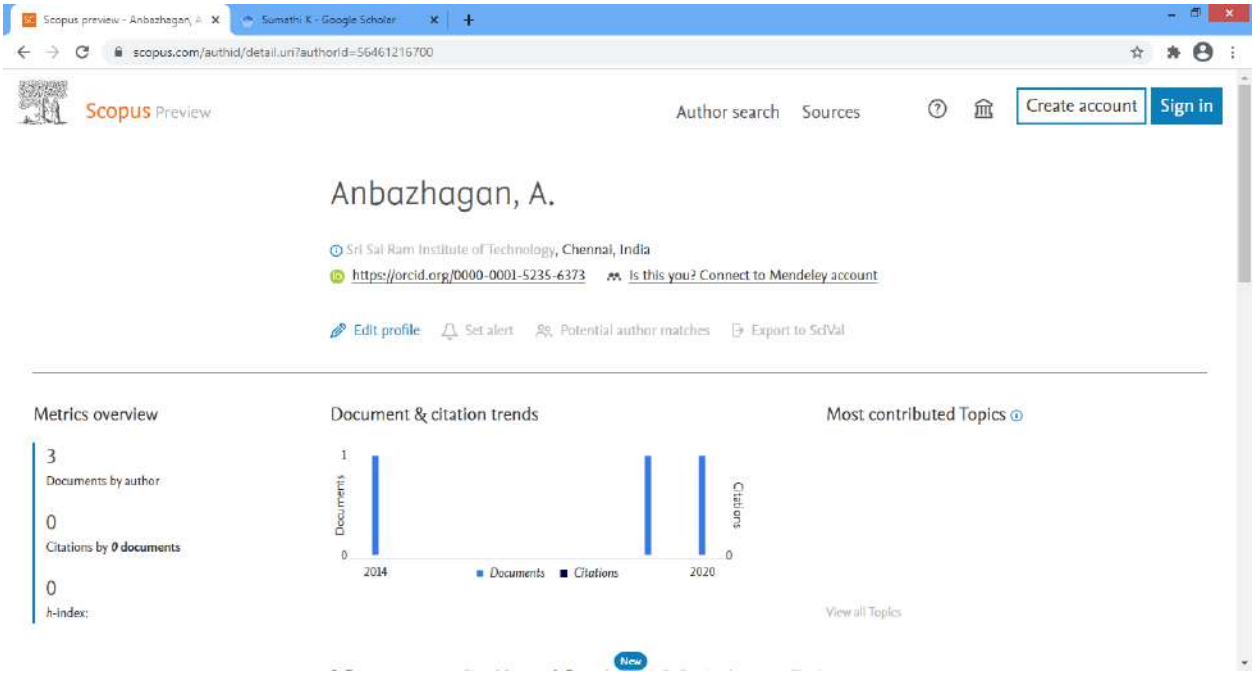
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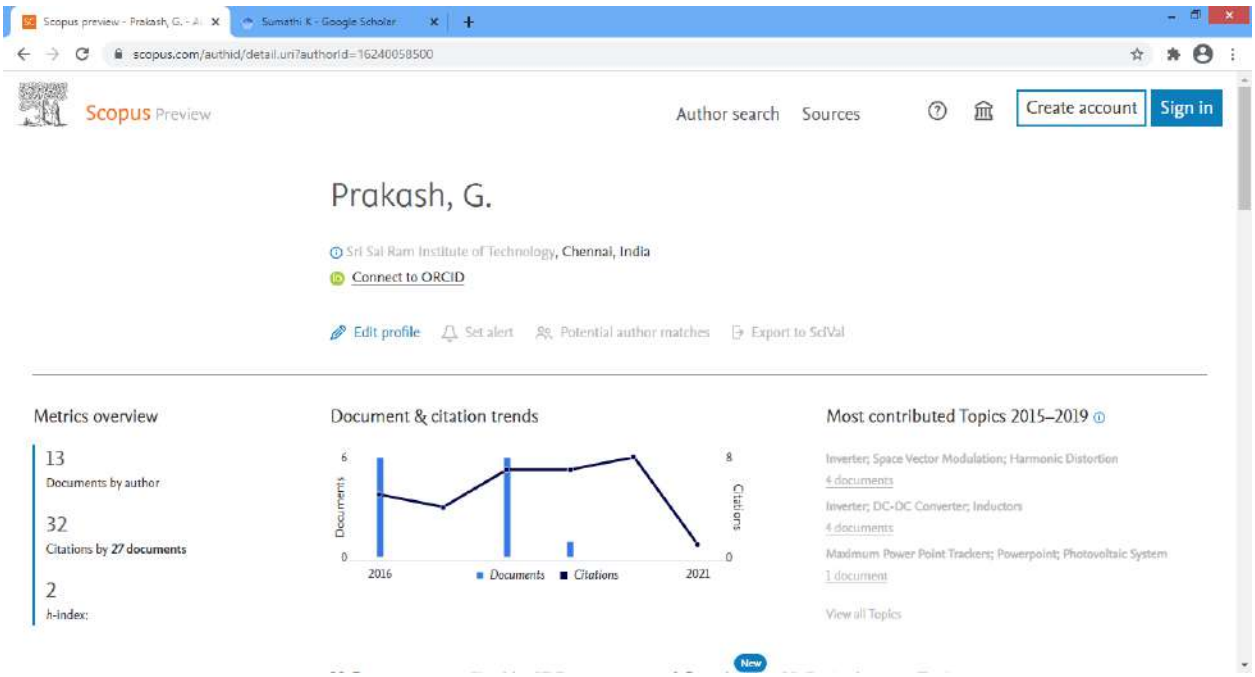
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Document & citation trends
Documents
Citations
2016
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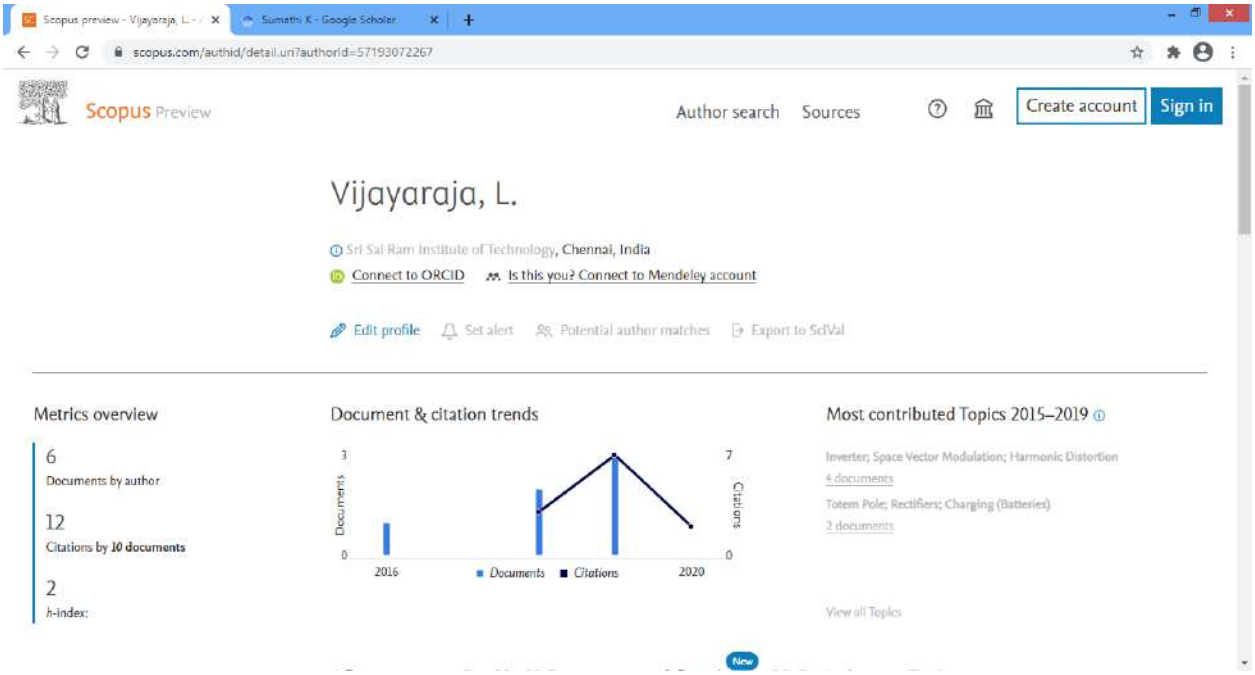
Documents
Citations
Most contributed Topics 2015–2019
Inverter; Space Vector Modulation; Harmonic Distortion
4 documents
Inverter; DC-DC Converter; Inductors
4 documents
Maximum Power Point Trackers; Powerpoint; Photovoltaic System
1 document
View all Topics
New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2016
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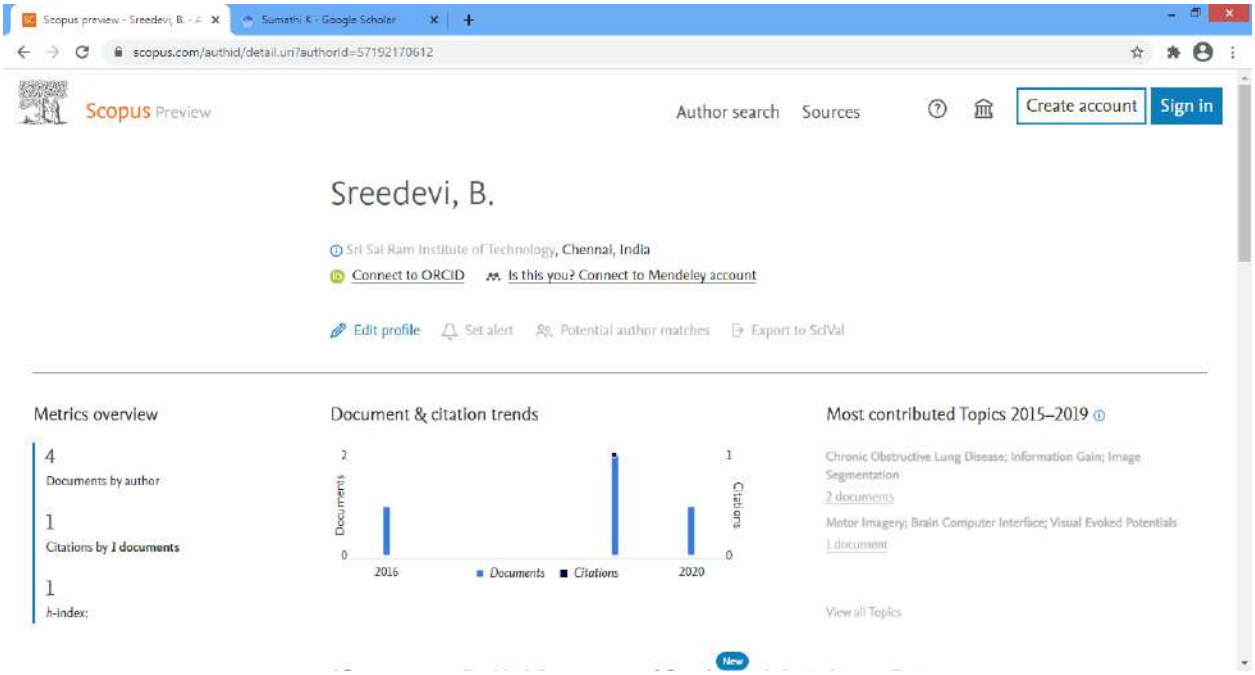
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Citations
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2 documents
Motor Imagery; Brain Computer Interface; Visual Evoked Potentials
1 document
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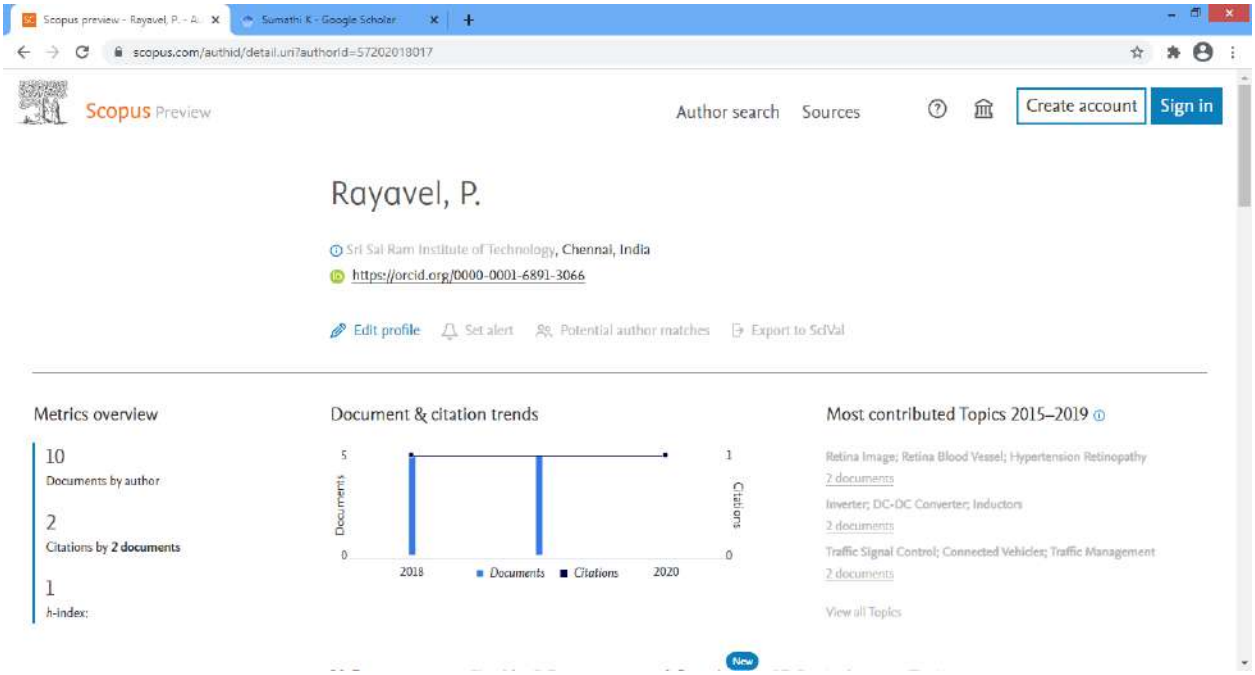
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Most contributed Topics 2015–2019
Retina Image; Retina Blood Vessel; Hypertension Retinopathy
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Inverter; DC-DC Converter; Inductors
2 documents
Traffic Signal Control; Connected Vehicles; Traffic Management
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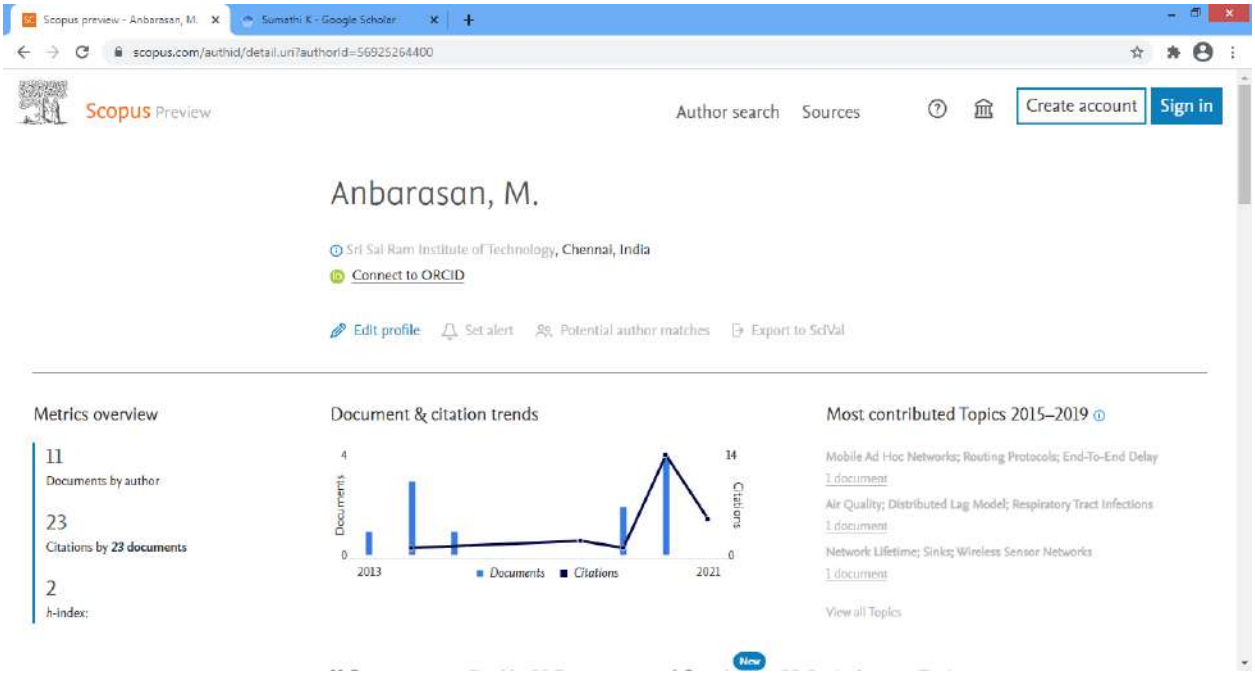
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Network Lifetime; Sinks; Wireless Sensor Networks
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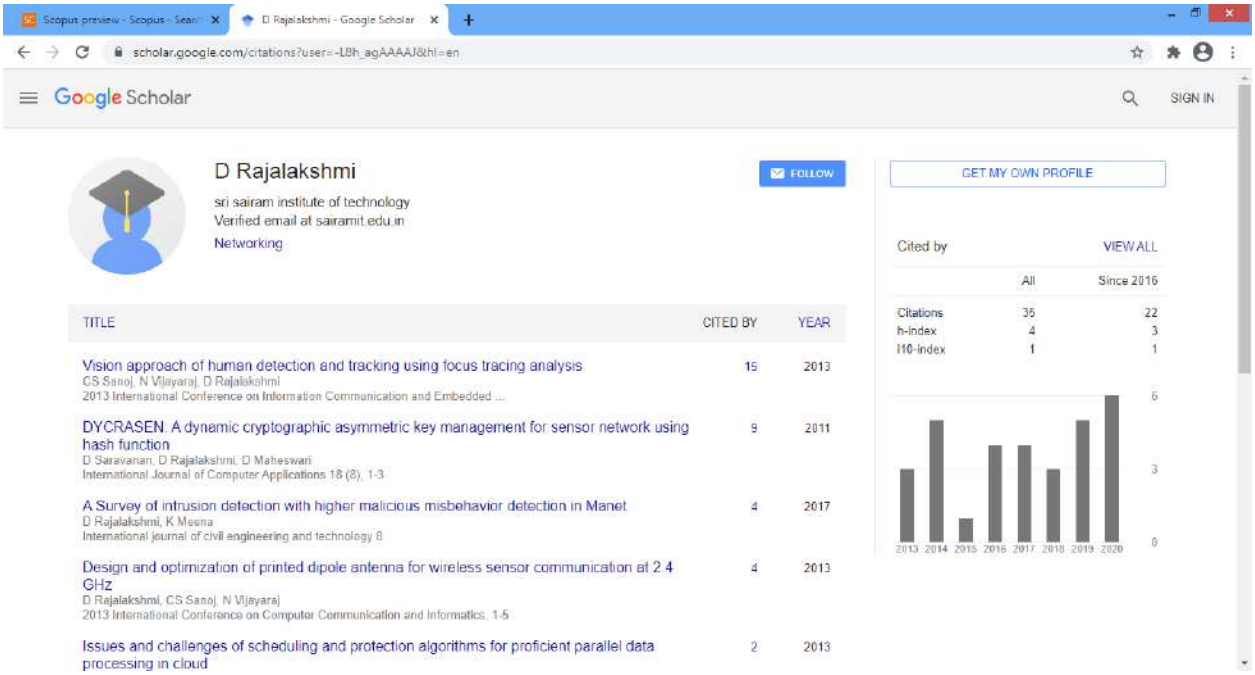
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2013 International Conference on Information Communication and Embedded ...
DYCRASEN: A dynamic cryptographic asymmetric key management for sensor network using hash function 9 2011
D Saravanan, D Rajalakshmi, D Maheswari
International Journal of Computer Applications 18 (8), 1-3
A Survey of intrusion detection with higher malicious misbehavior detection in Manet 4 2017
D Rajalakshmi, K Meena
International journal of civil engineering and technology 8
Design and optimization of printed dipole antenna for wireless sensor communication at 2.4 GHz 4 2013
D Rajalakshmi, CS Sanoj, N Vijayaraj
2013 International Conference on Computer Communication and Informatics, 1-5
Issues and challenges of scheduling and protection algorithms for proficient parallel data processing in cloud 2 2013
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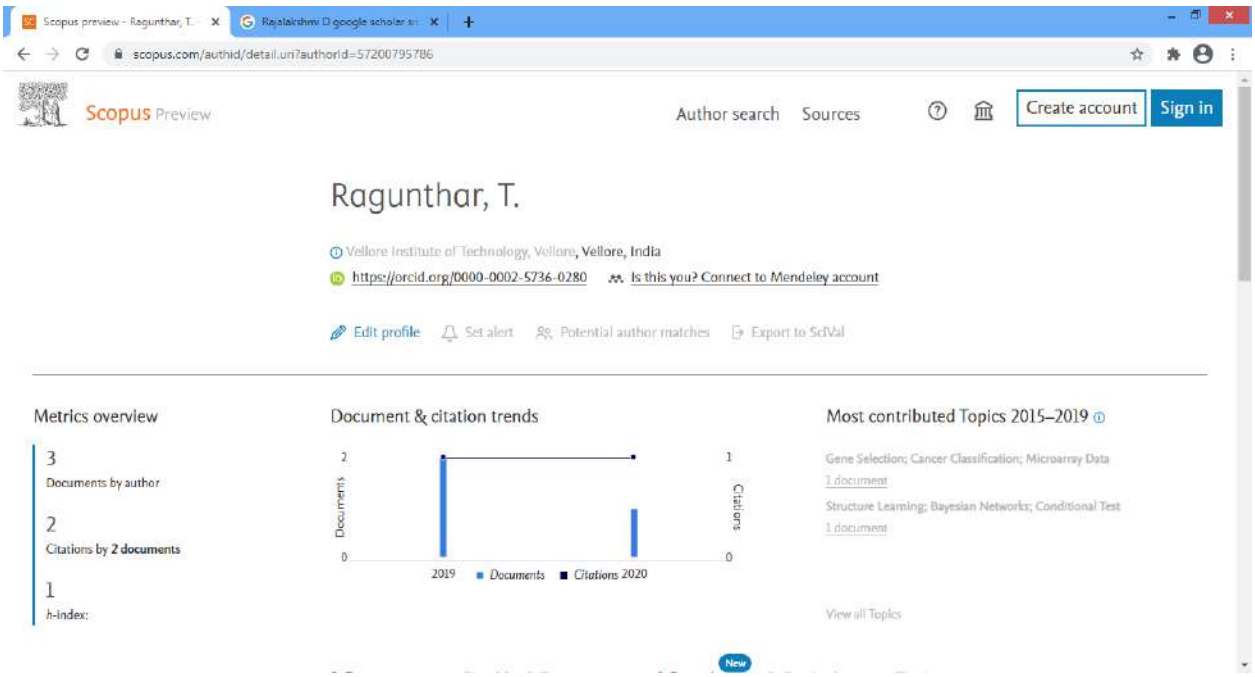
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Structure Learning; Bayesian Networks; Conditional Test
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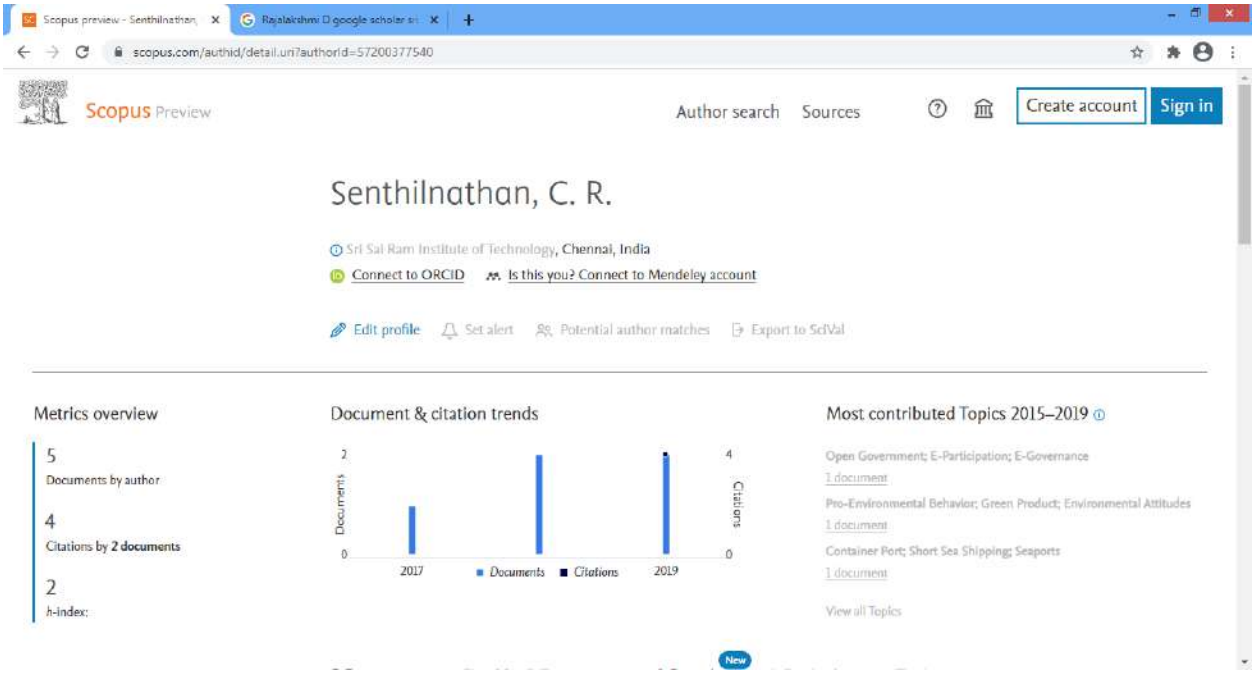
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Open Government; E-Participation; E-Governance
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Container Port; Short Sea Shipping; Seaports
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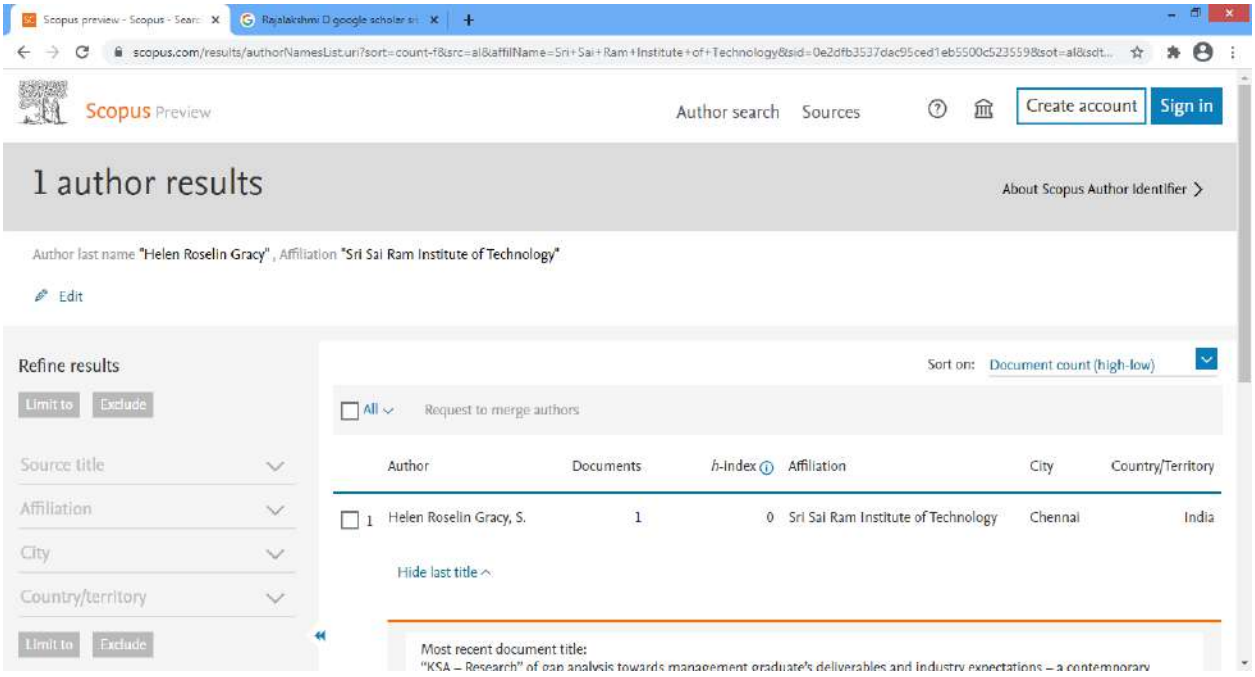
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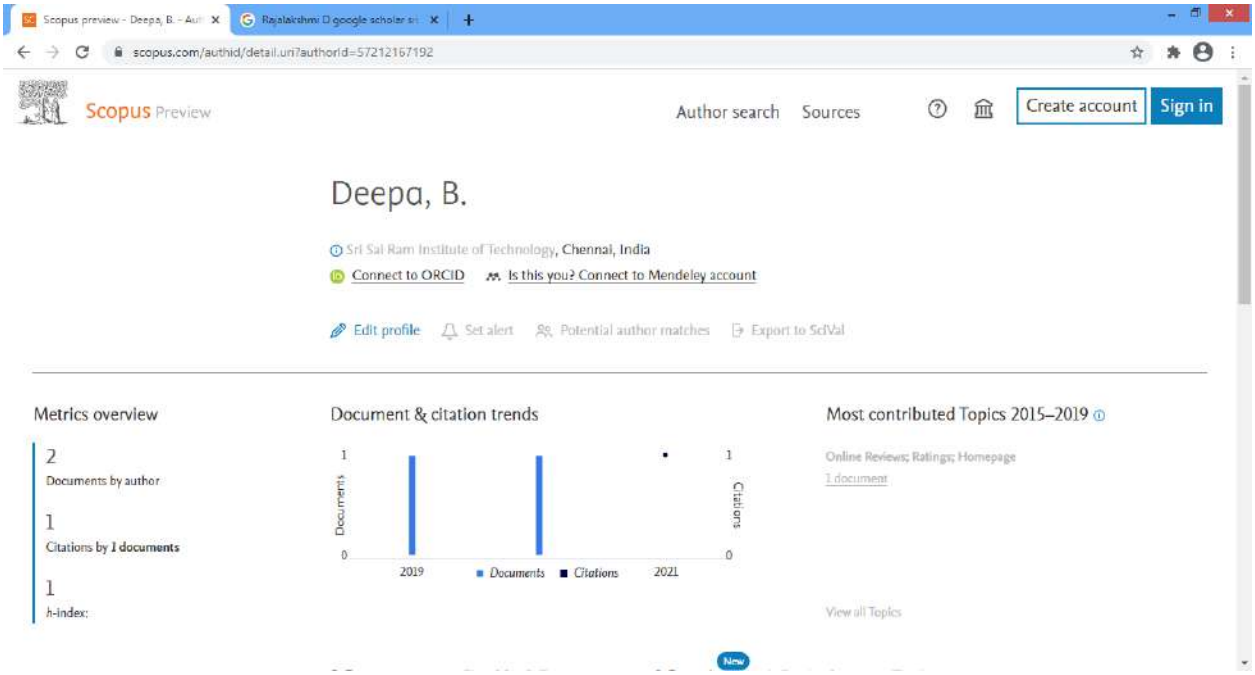
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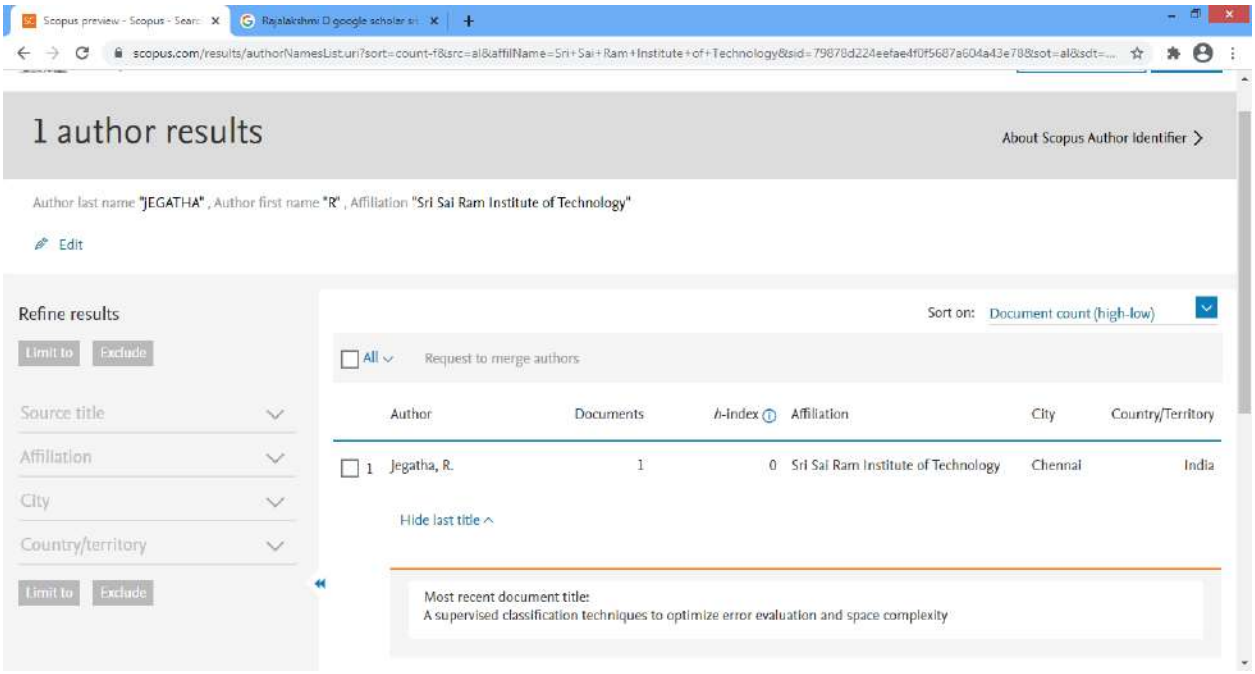
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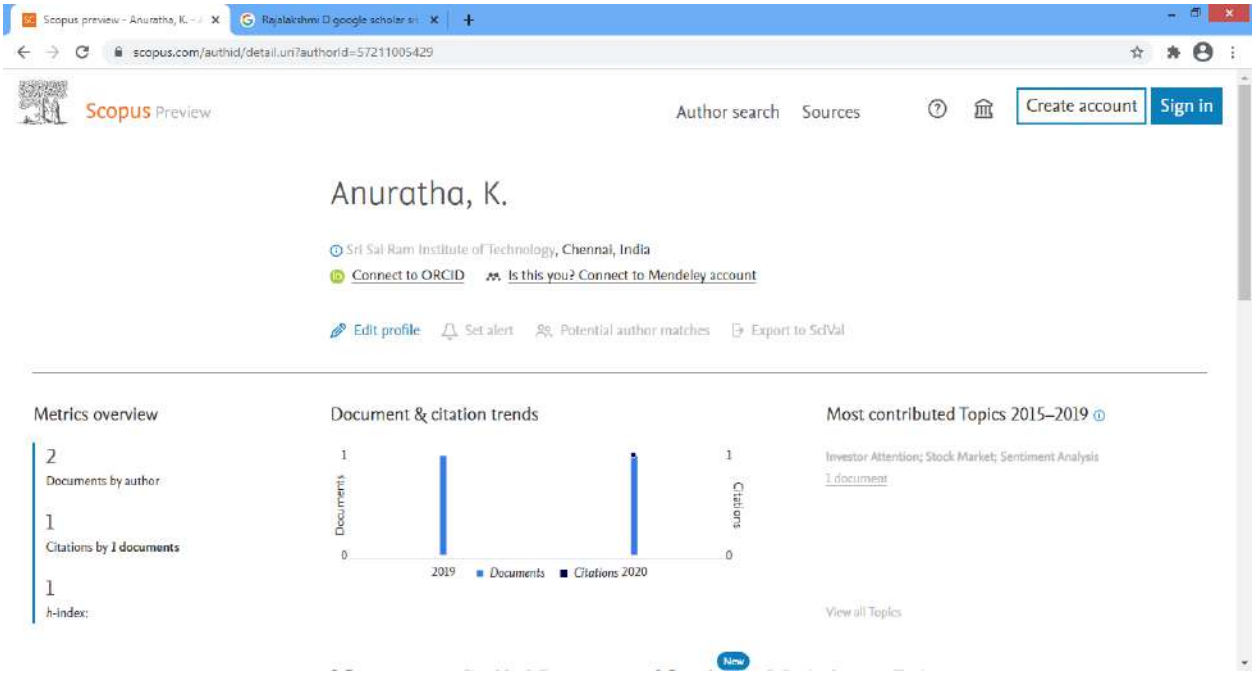
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Investor Attention; Stock Market; Sentiment Analysis
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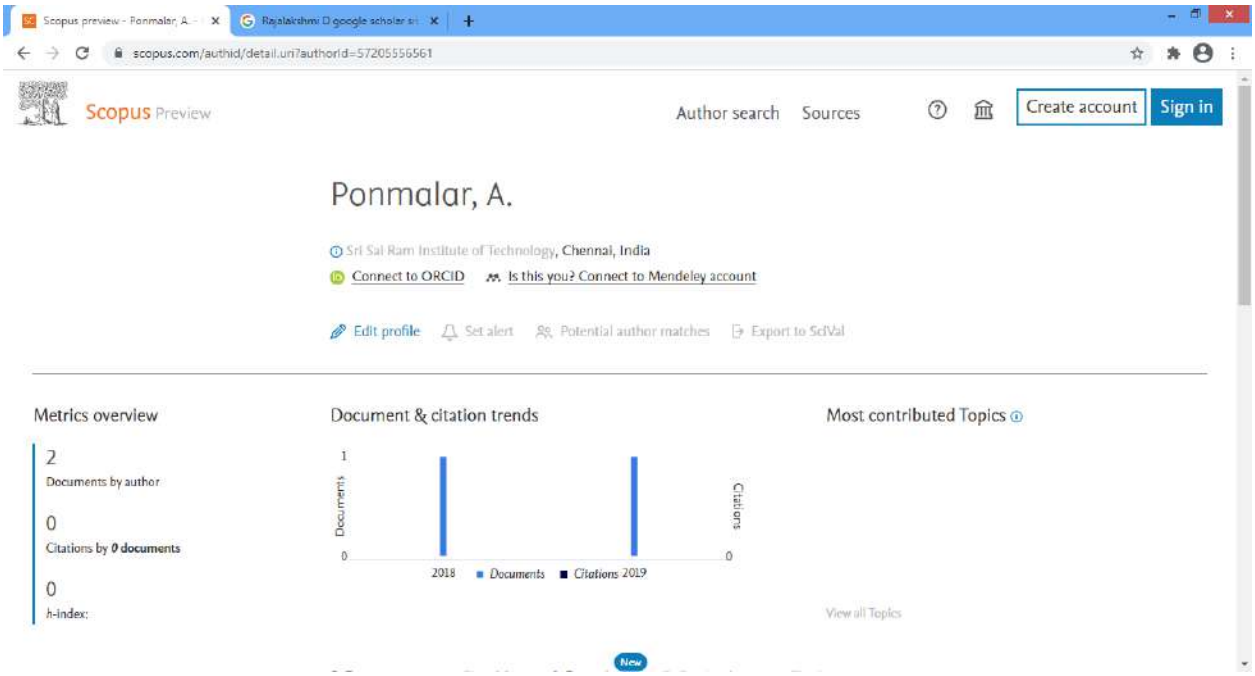
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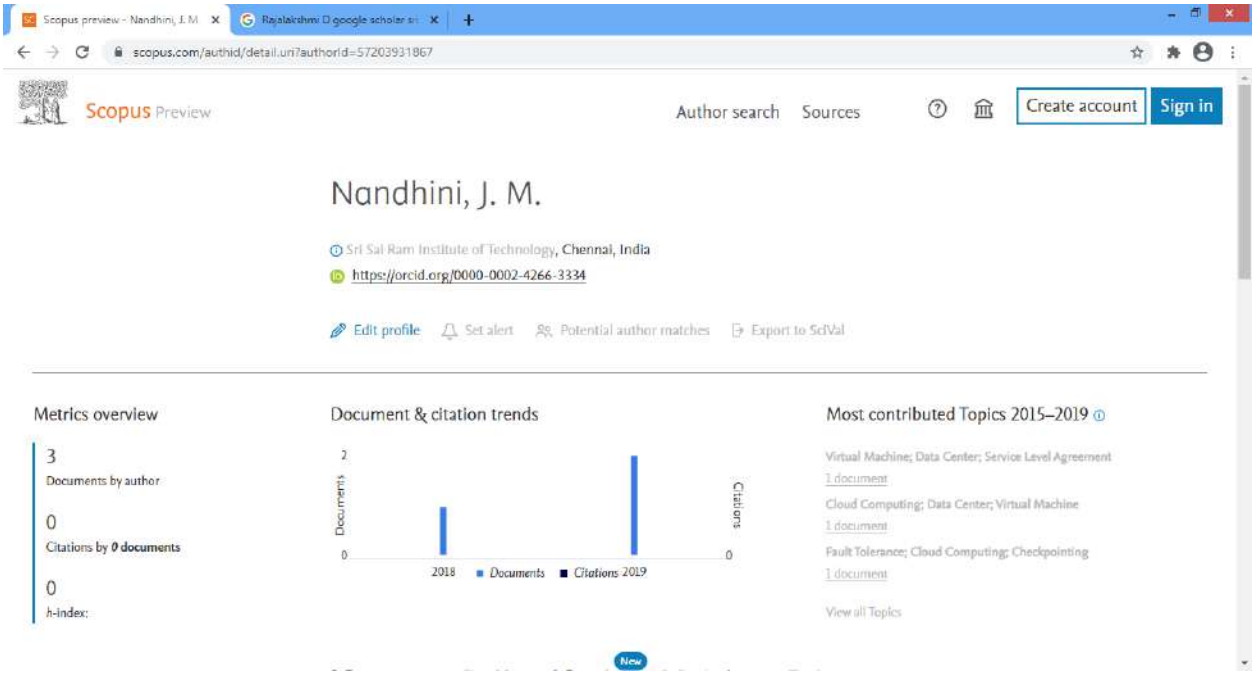
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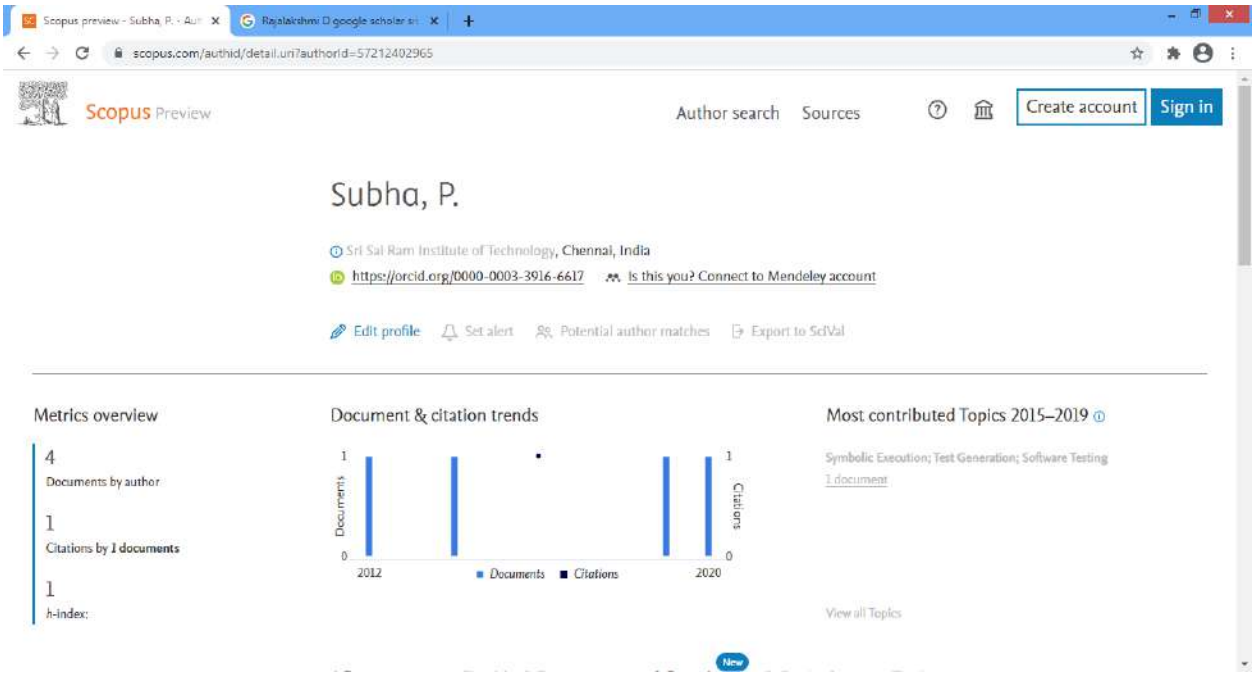
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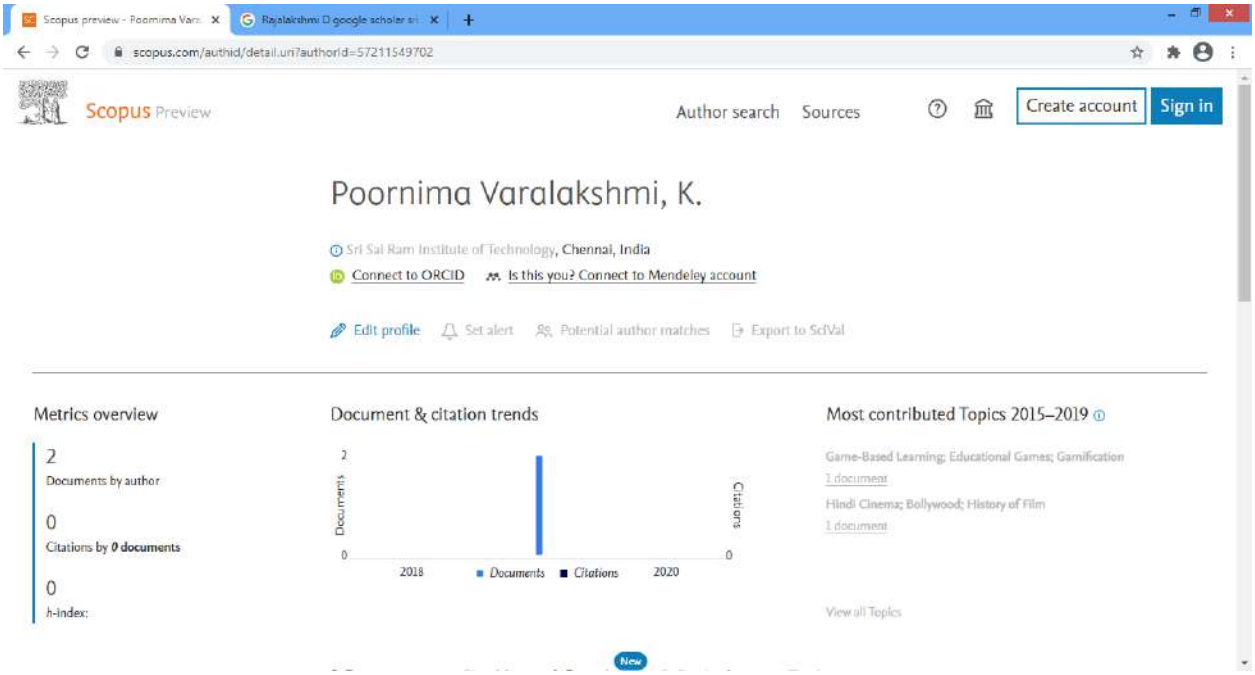
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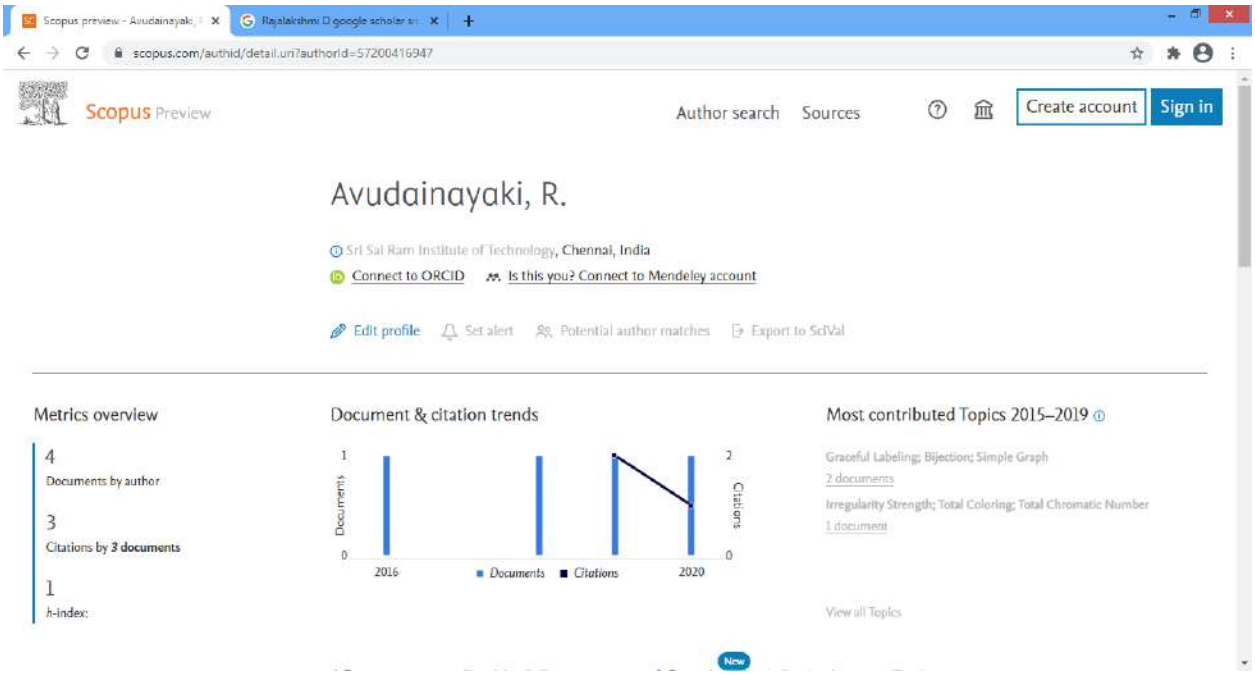
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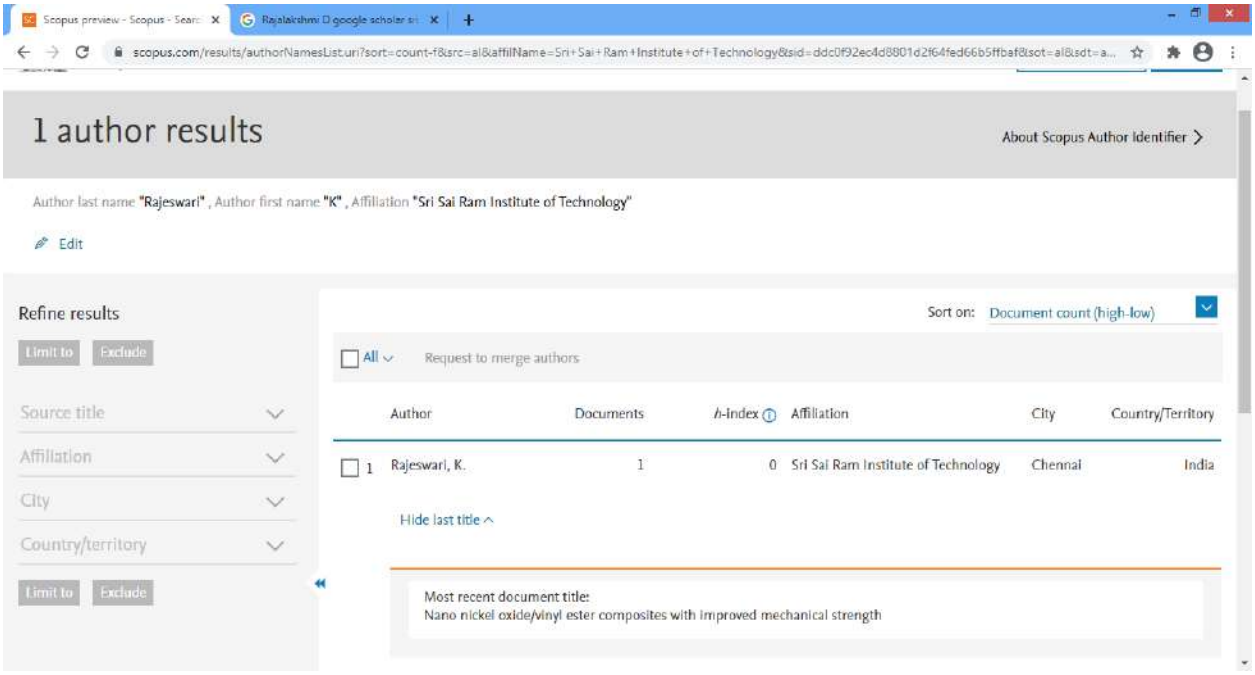
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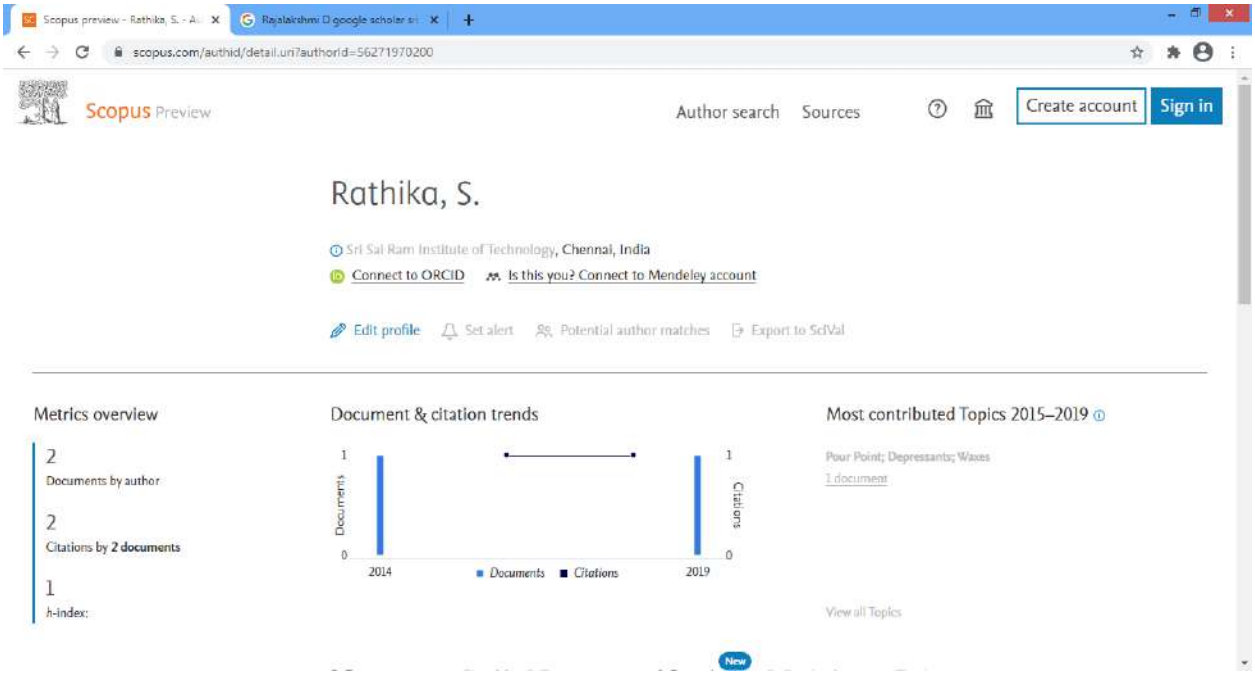
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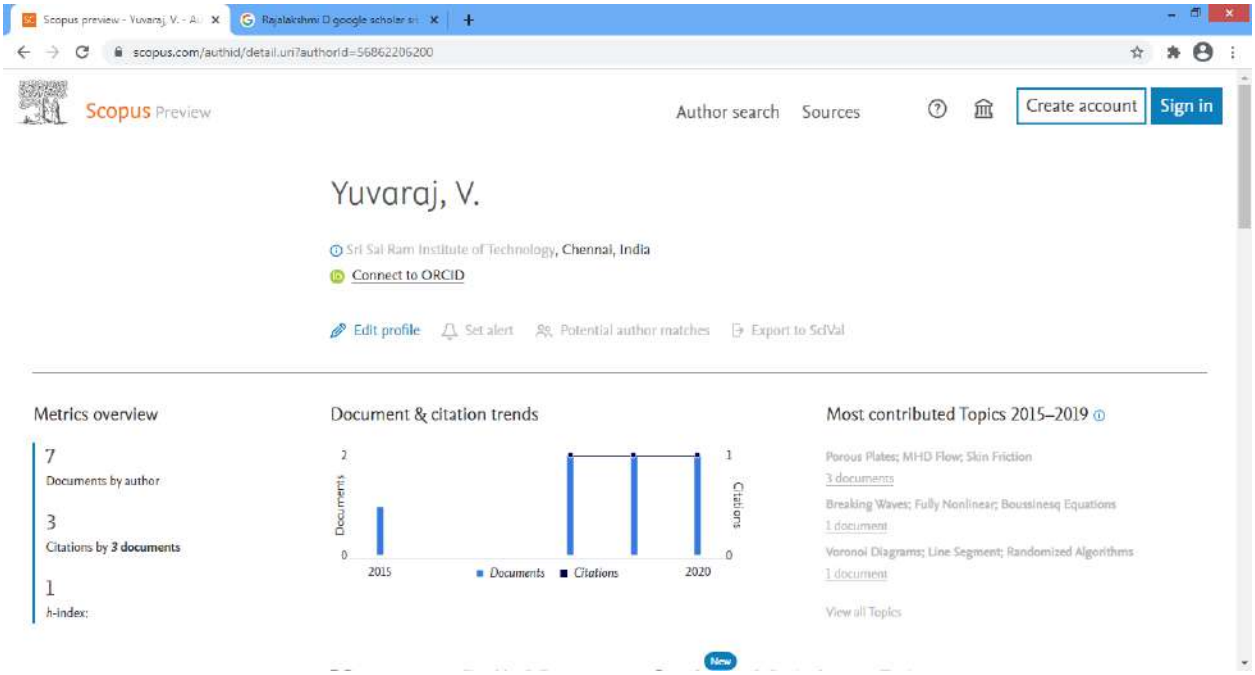
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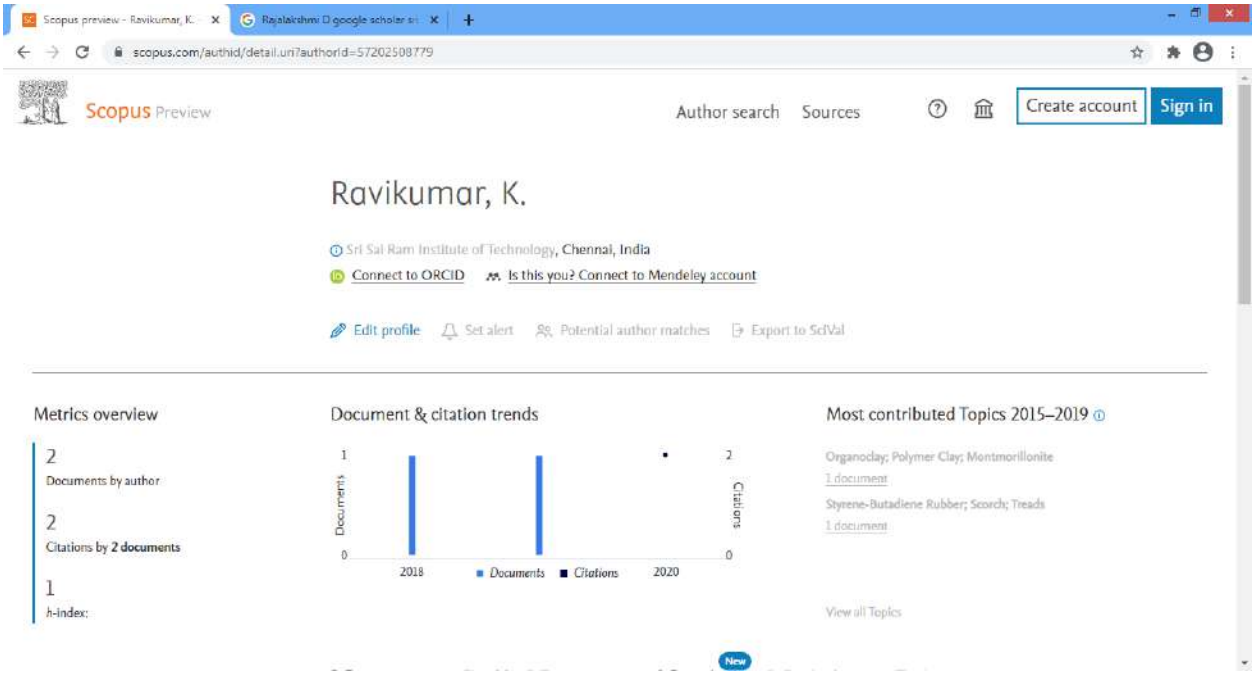
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Study on a Novel natural cellulosic fiber from *Kigelia africana* fruit: Characterization and analysis

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ABSTRACT

In recent days, there is an increasing use of green composites in composite manufacturing, where cellulosic natural fibers have been started using for this purpose. In line with this, a novel cellulose fiber was extracted from the *Kigelia africana* fruit and its physical, chemical and thermal properties, crystallography and surface morphology analysis were studied and reported in this investigative research paper. The physical analysis revealed the mean tensile strength as 50.31 ± 24.71 to 73.12 ± 32.48 MPa, diameter as 0.507 ± 0.162 to 0.629 ± 0.182 mm and density as 1.316 g/cm^3 for the *Kigelia africana* fiber. The proximate chemical analysis estimated the cellulose percentage to be 61.5 % and the existence of different basic components like cellulose, hemicellulose and lignin are confirmed by Fourier transform infrared spectroscopy analysis. Thermogravimetric analysis establishes the thermal stability of the fiber as 212 ^{0}C. The crystallinity index, 57.38 % of the fiber was determined by X-ray diffraction. Surface morphology by field emission scanning electron microscopy reveals the presence of protrusions in fiber which aid in the better adhesion with the matrix in composite manufacturing.

1. Introduction

The fast dwindling petroleum resources and changes in regulations on environmental policies have prompted researchers to focus on biodegradable, non-toxic and renewable resources (Porras, Maranon, & Ashcroft, 2015; Ramesh, Palanikumar, & Reddy, 2017). Synthetic fibers like carbon fiber, glass fiber and aramid fiber tend to cause cancer with prolonged exposure (Lee, Kelly, & Kennedy, 1983; Shannon, Muir, Haines, & Verma, 2005). Exposure to high dosage of glass fiber particles eventually leads to DNA damage by oxidative stress which was evidenced in human alveolar epithelial cell line (A549) exposed to glass fiber (Rapisarda et al., 2015). In addition, depression of lymphocytes in blood and allergies due to increase in eosinophil activators also occur (Indran & Raj, 2015). Many researchers have promoted the use of natural fibers over synthetic fibers due to their many favorable characteristics such as biodegradability, low cost of fiber extraction, less hazardous manufacturing process, low density, non-pollutant nature, low specific strength based on its texture and hydrophilic nature, acoustic and insulating properties (Senthamaraikannan & Kathiresan, 2018). The usage of natural fibers in composite manufacturing has increased recently, particularly in areas like construction, sports equipment, automobiles, aircrafts, naval, household appliances, textile and many more (Ramesh, Palanikumar, & Hemachandra Reddy, 2013). The plant parts like stem, root, fruit, leaf and bark determine the choice of extraction techniques (Mechanical, Chemical or Biological technique) which play a significant role on the quality and performance of the fiber (Belouadah, Ati, & Rokbi, 2015; Palani Kumar & Shadrach Jeya Sekaran, 2014). Researchers have focused on investigating newly discovered natural fibers from *Thespesia populnea* barks (Kathirselvam, Kumaravel, Arthanarieswaran, & Saravanakumar, 2019), *Coccinia grandis* stem (Jebadurai, Raj, Sreenivasan, & Binoj, 2019), Aerial roots of banyan tree (Ganapathy, Sathiskumar, Senthamaraikannan, Saravanakumar, & Khan, 2019), *Tridax procumbens* (Vijay et al., 2019), *Dracaena reflexa* (Manimaran et al., 2019), *Ficus religiosa* root (Moshi et al., 2020) to fulfill the growing industrial needs which are not fully met with existing cellulosic fiber production (Balaji & Nagarajan, 2017; Palanikumar & Subbiah, 2019). This research focuses on investigating the fiber extracted from *Kigelia africana* (Lam.) tree or also known as sausage tree fruit. No research work has been carried out on extraction and characterization of the physical, chemical and thermal properties of *Kigelia africana* fiber thus far, to the best of the author's knowledge. The tree belongs to the Bignoniaceae family. It is commonly found in

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Current Opinion in Chemical Engineering

Technologies in additive manufacturing for fiber reinforced composite materials: a review

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The increase in demand and high product diversification range with reduced unit quantities leads to the innovation of flexible and digitized production. The emerging concept, like Additive Manufacturing (AM), is extensively used to make a prototype with insufficient mechanical strength. For addressing this problem, advancement in the production of Fiber Reinforced Plastic (FRP) composites is introduced in AM. At present, the significant challenges are there in this area in exact fiber placement, sizing of fiber, and their reality into engineering problems through effective control of the process parameters. The growing demand for the prototype and tailored properties of FRP components leads to new inventions intending to acquire short production cycle time and low cost in the manufacturing process. This paper presents the recent advances in the Additive Manufacturing of FRP composite materials using Vat Photopolymerization and Material Extrusion techniques.

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This review comes from a themed issue on **Material engineering: principles and technologies in additive manufacturing**

Edited by **M Nadagouda**, **Thein Kyu**, and **JA Sekhar**

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Introduction

Nowadays, engineering industries face many challenges to transfer the new light weight-based products from its original phases of the new product development cycle, which extends from design to start-of-production with distinct specifications [1•,2]. A new innovative concept like Additive Manufacturing (AM) generates new openings for the widespread product development and manufacturing of engineering components [3,4•]. In AM, the products are fabricated through layer-by-layer. In this technique, digital information of part geometries is converted into the final part [5]. It is one of the disruptive technologies because it intensively affects the timeline of the products from being designed and manufactured to customer requirements. Components with sophisticated internal features are produced by AM, which is a challenging task in the traditional manufacturing processes [6,7•]. At present, AM is also used in the field of biomedical, aerospace, and other engineering industries, due to their quick fabrication of prototype without any additional tool cost or special tooling.

AM technology is extensively used to manufacture plastic products, like prototypes and end-user products. Several AM technologies are established concerning feed materials, methods, and applications. In Stereolithography (SLA), a liquid phase photopolymer is used [8•], wherein, the Selective Laser Sintering (SLS) uses powder form of polymers. Filaments of polymers are used in the Fused Deposition Modelling (FDM) process [9], which is the most extensively used technique owing to its less cost, less wastage of feed materials, and ease of use.

In the present industrial scenario, AM technology is utilized to manufacture a part using FRP composite material. The SLA technique is used to make FRP components, but most of the industries use Fused Layer Modelling (FLM) [10]. The mechanical properties of FRP composite materials are increased with the increase in length and continuous form of the fibres [11].

The Fused Deposition Modelling (FDM) is a technique in which continuously heated fibre material is fed through the extruder. These extruding components are generally fixed on CNC x-y gantry, which helps to print intricate 3D profile. In AM Technology, numerous materials have been developed for printing the components [12,13]. For example, the thermoplastic polymer filament is manufactured for Fused Filament Fabrication (FFF), which is similar to FDM [14]. A new class of polymer powder is made for the SLS process, and a unique type of polymer liquids is processed for Poly-jet and SLA processes [15,16].

Current development in AM, especially with high mechanical properties, shows the increase in the manufacture of composite materials when compared to conventional polymeric materials [17]. The fillers and fibre reinforcement increase the strength, whereas; filler materials are

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Evaluation of a Suitable Material for Soft Actuator Through Experiments and FE Simulations

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ABSTRACT

Soft actuators are generally built to achieve extension, contraction, curling, or bending motions needed for robotic or medical applications. It is prepared with a cylindrical tube, braided with fibers that restrict the radial motion and produce the extension, contraction, or bending. The actuation is achieved through the input of compressed air with a different pressure. The stiffness of the materials controls the magnitude of the actuation. In the present study, Silastic-P1 silicone RTV and multi-wall carbon nanotubes (MWCNT) with reinforced silicone are considered for the evaluation. The dumbbell samples are prepared from both materials as per ASTM D412-06a (ISO 37) standard and their corresponding tensile strength, elongation at break, and tensile modulus are measured. The Ogden nonlinear material constants of respective materials are estimated and used further in the finite element analysis of extension, contraction, and bending soft actuators. It is observed that silicone RTV is better in high strain and fast response, whereas, silicone/MWCNT is better at achieving high actuation.

KEYWORDS

Braided Soft Actuator, FEA, Multiwall Carbon Nanotubes, Nonlinear Material Constants, RTV

INTRODUCTION

The traditional robots exist in the industries are made of metallic parts, motors and fluidic actuators. In contrast, the soft robot uses compliant materials that well suit it for handling soft or fragile materials or unshaped objects. The robot that uses soft material for gripper design is ultimately called as soft robot. It could be applied in medical or industrial applications in order to handle fragile objects like organs, fabrics, papers, vegetables, meat, eggs, etc. The soft actuators are pneumatic actuators that made of polymeric materials. They have been prepared as a key component in soft mechanism in order to directly contact or manipulate the object. Many different kinds of soft actuators have been investigated in the past. The McKibben actuator is the earliest developed pneumatic actuator which

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Investigation of the effect of process parameters on surface roughness in drilling of particleboard composite panels using adaptive neuro fuzzy inference system

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ABSTRACT

Particleboard wood composites are immensely used for many general and manufacturing applications. In this study, an analysis of various machining conditions has been performed to obtain good surface quality in the hole making of particleboard by varying the input parameters. The surface roughness (R_a) values obtained are ranging from 6.03 to 28.32 µm, and the minimum value is achieved at a higher speed, lower feed, and smaller point angle combinations. From ANOVA analysis, it has been observed that the model developed is adequate, and the influence on surface roughness is strong for feed (56.68%) followed by a point angle (28.42%) and then speed (9.37%). Mathematical models have been developed using two different criteria such as response surface methodology (RSM), adaptive neuro-fuzzy inference system (ANFIS) and compared for their effectiveness. The coefficient of determination (R^2(*R-Sq*)) values of 98.5% (RSM) and 99.9% (ANFIS) indicates that the models are useful to predict R_a of particleboard. The average checking error percentage (0.20098) has been obtained for the ANFIS model trained using '*gaussmf' membership function* with 100 epochs.

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KEYWORDS
Wood; particleboard; composites; carbide; drill; drilling; roughness; SEM; speed; feed; point angle; Taguchi; modeling; RSM; ANFIS

Introduction

Particleboard (PB) is finding increased applications in wall partitions, roofing, and flooring panels. The particleboard is a composite panel product manufactured by using wood waste particles. PB is a good alternative for wooden boards or plywood if the cost is a necessary criterion than strength. Drilling is extensively needed in all fields of manufacturing, furniture and automotive industries, aerospace, and structural applications. As the material removal in the drilling process is invisible during dynamic machining conditions, the selection of proper drill material, type, and geometry is a prerequisite to obtaining a smooth and functional valued drilled surface. The board density of wood-based composites has finding an essential role in the physical, chemical, and flexural properties and also the fasteners holding capabilities of the composite panels.[1–4] The tool wear is found to be higher in the machining of wood composites than the wood machining process. The tool wear in wood composites is due to abrasion and adhesion because of the presence of resin and other filler materials, also the increase of cutting forces and temperature during machining of composites.[5] The tool life is exceptionally very short in the machining of particleboards. Even the mineral contamination influences the wear on cutting edges of the tool in particleboard machining.[6] Because of high wear, oxidation, and scraped area utilization of tungsten carbide are restricted in the cutting of PB and fiberboard.[7] The influence of feed is affecting the surface quality in drilling of SiCp/Al composite with the PCD tool.[8] The rotary ultrasonic drilling of float glass is carried out and obtained good chips.[9] The delamination developed during drilling of composite laminates is found to be more when using high feed rates and larger drill diameters.[10] Thrust force and torque in drilling are more with more massive diameter drills[2,11] and less with a tremendous chisel edge and helix angle[12] and a small point angle.[13] Delamination and thrust force developed is reduced when small diameter drills are used in the drilling of wood composite panels.[14–16] The use of cellular materials for green energy in the automotive application has been analyzed.[17]

The surface quality using flat drills with a different tip angle and a spade drill at different feed (f) at a constant speed (N) has been analyzed. They reported that an increase in feed increases delamination.[18] Standoff distance has more influence, followed by jet pressure and traverse speed on R_a in $LaPO_4$-Y_2O_3 composite.[19] The effect of speed, fly ash, feed, drill diameter has been analyzed using ANOVA for R_a of CFRP.[20] The impact of the pressure of water, standoff – distance, the flow rate of abrasive, and traverse speed was studied on the R_a of Inconel 718.[21] Tool life of gun drills made of cemented carbide is more than the drills made of steel, and surface roughness is reduced with the use of coated drills.[22] The nose radius, feed and speed are affecting the surface quality and profile errors more in turning of C18000.[23] Nose radius, geometry, etc. have more influence on surface roughness.[24] RSM can be effectively used to model, optimize, and analyze various input parameters of

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Subsurface integrity studies on the drilling of Al/B_4C/mica hybrid metal matrix composites

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ABSTRACT

When components are drilled for use in critical applications, some components might undergo surface defects and subsurface deformations. These defects arise due to microstructural and microhardness variations. This leads to sudden failure of these components. The present investigation focuses on Al/B_4C/Mica hybrid composites and Al/B_4C composites specimen with drilled surface and sub-surfaces. The goal is to identify measures to reduce surface integrity issues like microhardness, drilled surface morphology, and chip morphology on these specific components. Moreover, as a novel research, elemental and microstructural characterization of mica particles is carried out. The evaluation techniques used are Optical, EDX, SEM, and Vickers microhardness test. The stir cast specimens are drilled with process parameters of weight % B_4C and mica at specified cutting speed and feed rate. Tungsten carbide twist drill of 8 mm diameter is used. The investigation reveals that addition of mica particles causes reduction in the microhardness of drilled surfaces. The % of reduction observed is up to 13.7, 5.2 and 3 (in H_v) on 4%, 8%, and 12% B_4C reinforced Al/B_4C/3%mica hybrid composites, respectively, in comparison with that of Al/B_4C composites.

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KEYWORDS
Aluminium; composites; B_4C; mica; surface; subsurface; microhardness; deformation; drilling; characterization; surface; defects

Introduction

In the present decade, Aluminium matrix composites (AMCs) are finding application in various industries, including automobile and aviation. It is due to its advantage over aluminium alloy in terms of improved hardness, strength, modulus, and corrosion resistance. The past works of literature, reports experiments on mechanical and machining properties of AMCs reinforced with Al_2O_3 and SiC composites. In recent years, researchers focus their attention toward the investigation of wear, mechanical, and machining properties of B_4C reinforced AMCs. It is preferred over other reinforcements due to its lower density (than Al alloy), higher hardness, chemical stability, melting point, and wear resistance. According to a study by Hakami et al.[1], composites show improved hardness, strength and mechanical properties, over its base material, when reinforcements are added. While it is advantageous to have an addition of reinforcements in the composite, on the contrary, it poses threat to its machinability and uniformity in tool wear in the drilling process. As a result, surface quality is deteriorated, and there is an increase in surface roughness and subsurface deformation. Subsurface is the volume of material beneath the drilled surface. Subsurface variation in the machined surface is considered as a measure to improve the machinability in the composites.[1]

Farid et al. observed that surface integrity studies include examination on surface roughness, microhardness, microstructure, and metallurgical variation in subsurface. They also experimented drilling of Al-Si alloy with a HSS drill and identified that the drilling parameters influence the surface quality and surface integrity of the hole.[2] Machined surfaces vary from the parent material in terms of metallurgical and physical characteristics. Also, machined surfaces are subject to changes in the mechanical behavior, as a result of plastic deformation. A study by Mathew[3] reveals that metal cutting in drilling operation undergo increased friction due to clogging of the chip in between the twist drill and drill surface. There is no such hurdle in other machining processes like milling, shaping and turning. As a result of chip clogging, defects like chip fusing and material amassing in the drilled surface occur. These defects affect the surface quality of the component.

An experiment by Basavarajappa et al.[4] shows that the holes produced in the drilling process attract stress concentration in the material. Hence, added attention to be paid, to prevent failures in the material.

Griffiths et al.[5] have learned that the mechanical, metallurgical, morphological, and chemical characteristics of the drilled surface are related to the surface integrity, and these properties affect the functioning of the drilled surface. Davim et al.[6] have observed that the study on the surface integrity of the drilled hole is limited, as compared to study on operations like turning, milling, and grinding. To the best of authors' knowledge, no research has yet been carried out on the

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Natural sisal fiber-based woven glass hybrid polymer composites for mono leaf spring: Experimental and numerical analysis

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Abstract

Reducing weight and stabilizing or upgrading the strength is more important. Automotive and related industries are making a progress to replace the conventional steel leaf spring to composites material made from glass fibre, natural fibres, and so on. In this study, woven E-glass fibre, woven sisal and hybridization of woven glass and sisal fibre have been selected as materials. The resin used in this study is epoxy (B-11(3101)) VHV and the hardener is (K-6(5205)). The mono leaf spring is fabricated using hand lay-up process, which tends to be simple and cost effective. The existing dimensions of a conventional Tata Ace leaf spring are selected for modelling and analysis. Stress and deflection is tested experimentally by flexural testing. The hardness of the composites is determined with the help of Rockwell and Brinell hardness testing machine and the values are correlated with each other. Leaf spring is modeled in CREO Parametric 2.0 and introduced in ANSYS 14.5 for the numerical analysis. The results suggest that the composites have reduced weight up to 75% in comparison with the conventional one. With reduced component weight and better performance achieved by composite material, the replacement of conventional material with that of the composite is efficient. The efficiency of a vehicle will improve with a reduced component cost when composite leaf spring is used.

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Bio Caryota Chopped Fibre Reinforced Polyester Composites: Evaluation Vibration Analysis

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Abstract:
In nowadays the natural fiber reinforced composites use in automobiles, aerospace in terror parts and other application becomes raise due to less weight, low cost ,bio degradability and simple to manufacture. The natural fiber reinforced polymer composites necessary to know the vibration behavior to effectively use for the right engineering application. This work introduce the free vibration analysis of chopped caryota fiber reinforced polyester composites(CCFRPC) of cantilever beam. Also present the physical, chemical and mechanical characteristic of fiber was found by experimental methods. The vibration analysis is measured out in the beam having varying fiber lengths such as 10mm,25mm,50mm,100mm and 125mm.The 50mm fiber length of chopped fiber reinforced composites has optimum frequency than the other lenths of chopped fiber reinforced composites. Hence the 50mm length of chopped fiber reinforced composites suggested for automobile and industrial application.

Keywords: *Caryotafiber, Free vibration and Cantilever beam*

I. INTRODUCTION

Recent scenario the research is coming out in large quantum and is varied in nature in terms of its input, deliverable and utilization. It is important the quality of composite material can be used in automotive industry work flow of the improvement of natural fiber reinforced composites. V.S.Sreenivasan et al [1]identify the newely developed sansevieria cylindrical fibers,to determine the characteristic of fibers. Also studied the microstructural,XRD and FTIR analysis of fibers.Sathiskumar et al [2] found the physical , chemical and mechanical properties of sansevieriaehrenbergii fibers and also studied the thermal stability of the fibers using TGA and DTG analysis.Arthanarieswaran et al [3]. They have observed that the addition of glass fiber in the matrix along with the natural fibres increases the strength of composite material, also indicated that the performance of these materials are affected by inefficient fabrication in the composites, voids formed during the fabrication, etc.Nilza et al [4] have analyzed the characterization test such as ash content, carbon content. They have used Jamaican cellulose fibre, and indicated that this fiber can be used in interior work, also these composite may be used in structural application.Ratna Prasad and Mohan Rao [5] have tested the Jower, bomboo and sisal fibre reinforcements, and they have found that these fibres are available in large quantity, cheaper than other fiber used and renewable. Also they have asserted that the fiber arrangements and the volume fraction of fibres in the composites mainly affect the properties of this composite.Sathishkumar et al [6] They have

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Bio Caryota Fiber Reinforced Polyester Composites: A Study on Fracture Toughness Mode I

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Abstract:
The aim of the paper found the fracture toughness of caryota fiber loading with 35wt%, 40wt% and 45wt% having different fiber length of 10mm, 25mm, 50mm, 100mm and 125mm. The fiber have been used in many applications such as automotive, aircraft house hold, sports good etc. The natural fiber posses light weight, low cost and easily available. The stiffness and strength is high for the given weight. In this work caryota fiber reinforced composites were prepared by compression molding machine the chopped fiber varying length varying fiber loading ,the hardener used for the composites 10:1. The SEM analysis has conducted after the fractured specimen to found mode of failure of fractured specimen.

Keywords:*Reinforced polyester, composites, bio caryota fiber.*

I. INTRODUCTION

Recent scenario the natural fiber composites have been used in many applications such as automotive, aircraft house hold things, sports good etc.The natural fiber mainly focus on many filed ,it can be biodegradable,eco-friendly,easily available and low density.The natural fiber has high strength and stiffness for given light weight material.The natural fiber reinforced composites can be easily processing,cost reduction, increase the productivity and low environment pollution.This test can be conducted for valuable information about the toughness of material, which can be used in an engineering critical assessment. The design consideration the fracture toughness is important parameter to manufacturing the components.Santhanamet al.[1]. Banana fiber and glass fiber with varying volume fraction and 10mm chopped fiber and polyster resin used prepare the composites by hand lay- upprocess,they have reported mode one fracture toughness banana fiber reinforced polymer composites is in closeness for the glass fiber reinforced polymer composites and also banana fiber better alternative for future application.ParweenaliKhudhur et al. [2]investigated different orientation of treated and untreated sugar palm fiber reinforced epoxy composite fabricated ,they have found fracture toughness sea water treated better performance than untreated fiber.Silva et al.[3]reported fabricated the treated and untreated polyurethane composites,they have studied treated sisal fiber best performance tan the untreated composites.Venkateshwaranetal.[4] fabricated banana epoxy reinforced composites in three pattern weaving , found the tensile,flexural and impact properties plain weave pattern higher performance than other two pattern,also studied the dynamic characteristic of weaving pattern composites.Vasumathi[5] fabricated the hybrid laminate with natural fiber and with out natural

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Sustainable drilling performance optimization for Nano SiC reinforced Al matrix composites

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ABSTRACT

Metal Matrix Composites (MMC) reinforced by nanoparticles are competent materials, appropriate for functional and structural applications. Green manufacturing is a style for mechanized that minimizes dissipate and contamination. The pollution prevention resolves in manufacturing industries to expand and execute various environmentally-friendly strategies. The primary purpose of green machining is to hold up future generations by attaining process sustainability. In the present investigation, cryogenic machining (CM) of Nanoscaled SiC reinforced Aluminum (Al) matrix composites gives experimental outcomes and also the correlation of its performance with dry machining (DM) and Minimum Quantity Lubrication (MQL). The drilling tests are organized using a vertical machining center (VMC), which is directed by computer numeric control (CNC) employing carbide drills of 10 mm dia with cutting point angles of 90, 118, and 135 degrees. Experiments have planned as per the response surface methodology (RSM) based on Box-Behnken design (BBD). Teaching–Learning-Based Optimization (TLBO) is implemented to optimize the drilling criteria such as the speed of the spindle, feed rate, weight % of nano SiC, and cutting angle. Subsequently, Scanning Electron Microscope (SEM) is utilized to inspect the subsurface of the machined specimen.

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KEYWORDS
Nano SiC particles; drilling; Box Behnken design (BBD): cryogenic; LN_2; MQL; surface roughness; TLBO

Introduction

The Metal Matrix Nano Composites (MMNCs) has been exceptionally attentive over many of the years, primarily because of their broader functional and structural characteristics.[1] MMNC have high mechanical strength with higher resistance to distortion, production from these advanced class of materials with the desired dimensional, and efficient quality and performance seem to be a significant challenge.[2] Machining the ceramic reinforced composites' consequences in the generation of the substantial amount of heat and consumptions of energy. Traditional cooling agents and their practices were not adequately active enough to boost the machining efficiency of MMC .[3] Hence, researchers have been conducting the feasibility of green machining of MMNCs, to decrease the undesirable influence of machining on the environment and to reduce the pollution initiated from the machining processes.[4] The potency of conventional machining processes is highly reliant on the existence of cutting fluids to decrease cutting temperatures and cutting forces. These cutting fluids have a high impact on the environment and health issues. For overcoming these effects, a handful of researches have been explored with environmental conscious machining such as MQL, vegetable oil-based cutting, nano-filled cutting fluids, etc.[5]

Cryogenic Machining (CM) is a modern method of providing cooling in the specimen-tool interface, to decrease the tool wears, to modify the features of the material, consequently which develop machining performance and product excellence. High abrasive materials, super alloys, and novel machine tools have utilized cryogenic machining for safe and environmental-friendly method.[6] The majority of CM studies have been observed in turning. However, there were applications in other machining activities such as grinding, drilling, and turning.[7] Investigators have made an experimental investigation to recognize the effect of liquid nitrogen spray (LN_2) in atomized condition, and LN_2 assisted machining on the wear of tool while performing turning operation on Al-TiCp composites. Experimental results have proved that liquid nitrogen-based CM is the technically feasible substitute for the traditional machining approach.[8] Wang et al.[9] had explored the role of a fully submerged cryogenic machining environment on the machining performance of the component. Liquid nitrogen is used to immerse the cutting area for facilitating natural energy dissipation and work hardening. The grains get refined, thereby improving the mechanical properties of the workpiece.

Vegetable-based bio-oils are professed to be a substitute for synthetic oils as a lubricant. They posses the natural properties like, higher flash point, higher viscosity index, higher lubricating ability, lower evaporative loss and biodegradability.[10] Shankar et al.[11] have studied the performances of four different vegetable-based cutting fluids (VBCF) by performing milling operation on 7075-T6 Al hybrid MMC employing a tool of carbides. They have measured various responses, such as cutting force and vibration signals. They have

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Evaluation of mechanical properties of coconut flower cover fibre-reinforced polymer composites for industrial applications

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Abstract

In recent times, polymer composites have played an epochal role in transforming material science. Some of their properties such as toughness, strength, flexibility and rigidity have helped them supplant conventional materials such as iron, steel, and aluminium on several occasions. Apart from this, they are light in weight and more cost-efficient, which make them a viable alternative. They have found their application in several fields such as automobile industry, aerospace industry, construction and pipeline industry. Owing to its excellent impact strength, tensile and hardness, natural fibres serve as an excellent replacement. Natural fibres are an environmental friendly, biodegradable and are readily available. The present investigation uses a new fibre for manufacturing the eco-friendly composite material. Mechanical properties such as tensile strength, shear stress, flexural rigidity, impact strength and hardness of a coconut fibre-reinforced polymer composite material are evaluated as per respective ASTM standards. A surface analysis of the material using a scanning electron microscope is also performed. The results are categorized and tabulated accordingly. The values obtained appear to fall in line with the experimental data and hence can be espoused as an alternative material especially in the automotive sector.

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Measurement and analysis of thrust force and delamination in drilling glass fiber reinforced polypropylene composites using different drills

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ABSTRACT

Fiber Reinforced Plastic (FRP) composites are widely used in various engineering fields and applications. FRPs were initially fabricated using thermoset polymers owing to ease of manufacturing. Of late, FRP based thermoplastics is gaining importance due to various factors such as impact resistance, recycling, and an absence of any chemical reaction. In the present investigation, Glass Fiber Reinforced Plastic (GFRP) laminates of woven glass fabric reinforcements with Polypropylene (PP) thermoplastic matrix is manufactured using film stacking technique. To analyze the performance in machining, drilling studies are carried out using a 6 mm diameter twist drill of High Speed Steel (HSS) drill, tipped carbide and solid carbide drill. The drilling experiments are conducted on a CNC Vertical Machining Centre (VMC) to measure and assess the drilling induced thrust force and the respective exit delamination. The drill spindle speed and feed rate are considered as process parameters. To correlate the process parameters with responses, the regression models are developed. The results indicate that the most significant control parameter for process responses and also it shows the developed regression models are highly reliable. The influence of drill materials on the performance of the responses is also discussed in detail.

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1. Introduction

In recent years, FRP composite materials in engineering fields have applications in automotive, aircraft, chemical industry and many other related sectors due to their superior properties. Drilling process is the frequently used machining process for the fastening of the mechanical components used in structures. The measurement of drilling associated delamination accounts for the rejection during an assembly of composite parts. In machining, the defects associated are: material degradation, peel up delamination, push out delamination, thermal damage, and matrix cracking. These defects can be reduced by the appropriate selection of drilling process variables and associated conditions.

Kumar and Singh [1] have highlighted the various conventional and unconventional machining procedures for composite materials. Ali Faraz and others [2] have measured the cutting loads and damage mechanism with respect to control factors on hole making of FRPs. Rajesh Mathivanan et al. [3] have measured the machining force and its effects on process parameters in machining of carbon and glass fiber laminates and thereby concluded that cutting force gradually increases with an increase of spindle speed. Latha et al. [4] have measured the exit delamination in machining of composite materials and found the most significant control parameters. Palanikumar and others [5] have observed the increase of delamination with rise of induced thrust force. Kumar et al. [6] have measured and analysed the machinability on vinyl ester/fiber glass and concluded that the point angle is the top most factor which produce the better hole quality. Rajamurugan et al. [7] have measured the drilling induced delamination in GFR-polyester composites using a cemented carbide drill of 4, 6, 8, 10, and 12 mm diameter. It is observed that 6 mm diameter drill performs better than the other drill. Srinivasan et al. [8] have measured the thrust force and concluded that the drill travel speed and diameter are highly influences the machining performances. Vinodkumar and Venkateswarlu Ganta [9] have measured circularity error in drilling of GFRP and concluded that chisel edge width and spindle rotation are most significant control factors compared to feed rate and drill tool point angle for circularity error.

Eneyew et al. [10] have measured the delamination and found the effect of control parameter in drilling of CFRP and concluded that the drill tool feed rate is highly affects the machining characteristics. Kumar and Singh [11] have reported that solid

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Optimization and sensitivity analysis of drilling parameters for sustainable machining of carbon fiber–reinforced polypropylene composites

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Abstract

Machining processes face two major challenges: sustainability and cleaner production. However, the effective utilization of tool and methods of lubrication system in sustainable machining have been dealt in depth in earlier investigations. This work aims to optimize sustainable machining parameters in drilling process for recyclable carbon fiber-reinforced polypropylene (CFR-PP) composites. This work is focused on modeling and optimization of drilling parameters for sustainable machining with respect to thrust force and torque for CFR-PP composites. The response surface method based on D-optimal design of experiments is used for modeling and optimization with variables such as drill spindle speed and drill feed rate as numerical factors, which includes different drill material as the categorical factor. The influences of tool materials on the sustainable machining are also discussed in detail. Further, the sensitivity analysis is applied to compare the relative impact of control parameters (spindle speed, feed rate, and drill materials) on thrust force and torque. The scanning electron microscope images are used for analyzing the morphologies of drilled surfaces.

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Original Article

Strength and hardness studies of C44300 tube to AA7075-T651 tube plate threaded and unthreaded dissimilar joints fabricated by friction welding process

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ABSTRACT

Friction welding is an important process used nowadays especially for joining dissimilar metals in engineering and allied industries. The joining of dissimilar materials is different from the conventional materials and needs proper care and technology advancement. The objective of the present research is to investigate the strength of friction welded joints in the absence of backing block. Two conditions of tube and tube plates with thread pair and without thread pairs are considered for the experimentation. The effect of process parameters on the strength has been arrived. Microstructure at the weld joint interface indicates the high level of refinement at the weld zone. Scanning Electron Microscopic (SEM) images are used for investigating the intermolecular bonding of the tube and tube plate. Micro cracks are observed at the interface. Absence of backing block is the cause for the defect. Energy Dispersive Analysis (EDX) and X-Ray Diffraction (XRD) test are used for analyzing the material properties and quantification of crystalline phases.

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1. Introduction

Industrial sectors like power plant equipment manufacturers are involved with welding fabrication process. Different welding techniques like arc welding and gas welding are being employed to join the components. Though these techniques are highly versatile, there are some limitations like restricted suitability, limited process parameters, non-economic and process hazard. These noticeable limitations restrict wider applications. Conventional welding processes are not suitable to join similar/dissimilar non-ferrous metals at higher production levels. To overcome these difficulties, friction welding process is placed in the front line to take a prime role in fabrication. Friction Welding of Tube–Tube Plate using External Tool (FWTPET) is an economical, eco-friendly and a wider input variant method. FWTPET is a superior process to make a joint

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Influence of mica particles as secondary reinforcement on the mechanical and wear properties of Al/B_4C/mica composites

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ABSTRACT

The present investigation is to study the influence of Mica as secondary reinforcement particles on ultimate tensile strength, yield strength and elongation of Al/B_4C/mica hybrid composites of 1 and 3 weight% of mica. It also focuses on microstructure of Al/B_4C and Al/B_4C/mica hybrid composites. The investigation reveals that the mica particles improve the yield strength by 5.85% and ultimate tensile strength by 3.9% on Al/12%B_4C/3%mica hybrid composite consequently reducing its elongation by 11.62%. The scanning electron microscope (SEM) microstructure reveals that the mica particles improve the interface between the matrix and B_4C particles. Also this study focuses on the wear characteristics such as wear rate and coefficient of friction on Al6061/8%B_4C and Al6061/8%B_4C/mica hybrid composites. A dry sliding wear test was carried out at varying process parameters namely load and wt.% of secondary reinforcement. The pin-on-disc wear test was carried out at the load of 9.81 N, 19.62 N and 29.43 N on a specimen prepared by stir cast technique. The size of the reinforcement particle is 40–60 μm and 3–10 μm for B_4C and mica respectively. A study was carried out on the worn surface of the composites using SEM. Moreover, the worn surface profiles of the composites were studied by atomic force microscope (AFM). The investigation reveals that Al6061/8%B_4C/3%mica hybrid composites cause a reduction in wear rate up to 35.4% in comparison with Al6061/B_4C composites at 9.81 N load. The coefficient of friction diminishes up to 5.55% at 19.62 N loads. Mica reinforced worn surface reveals that there is an improvement in the recasting of wear debris and smoothening of the surface.

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Keywords: Metal-Matrix Composite, B_4C Particles, Mica Particles: Mechanical Properties, Sliding Wear, Surface Analysis, SEM, AFM.

Article

1. INTRODUCTION

Particles made of ceramics act as load carrying medium for composite materials. In aluminium matrix composites, if more than one element is added either as particles or as fibres, the composite becomes hybrid. Silicon carbide (SiC), aluminium oxide (Al_2O_3) and boron carbide (B_4C) are some of the familiar reinforcements normally added in the matrix material.[1–3] Among the above reinforcements, B_4C is a superior material, owing to its high stiffness, excellent hardness, high elastic modulus, low density, and better chemical stability. Hence, the B_4C particle is well suited for resisting the wear in

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International Conference on Advances in Materials, Manufacturing and Applied Sciences (ICAMMAS17)

Editorial Preface: A Special issue on Advances in Materials, Manufacturing and Applied Sciences

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Abstract

The contributions to this special issue are from young researchers to experts in their relative areas from across the world and represents a current and up to date research overview on materials and manufacturing. Participants from educational institutions, research organizations and industries presented their research work and latest developments. A Pre-conference workshop was organized on 29th March, 2017 with four sessions in area of Automotive materials and live demonstrations also given to the participants. Totally we received around 220 Articles and Selected 154 Articles for Conference presentation and for publication. The papers were peer reviewed and selected papers are recommended for publication in this special issue.

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***Keywords**:* Automotive materials, Manufacturing, Materials, demonstration

1. About the Conference

International Conference on Advances in Materials, Manufacturing and Applied Sciences (ICAMMAS'17) is organized by the Department of Mechanical Engineering of Sri Sai Ram Institute of Technology in association with the Department of Science & Humanities of Sri Sai Ram Institute of Technology. The conference will be held on 30th and 31st March, 2017 at Sri Sai Ram Institute of Technology, Sai Leo Nagar, West Tambaram, Chennai-600044, Tamil Nadu, India.

2. About the Organisers

2.1 Sri Sai Ram Institute of Technology, Chennai

Sri Sai Ram Institute of Technology, Chennai, established in the year 2008 by MJF.Ln.Leo Muthu, Chairman of Sapthagiri Educational Trust, is non-profitable, and non-minority institution. The College is functioning at Sai Leo Nagar near the well-known fascinating Theme Park, "Kishkinta". The college buildings are architecturally designed as per AICTE . The college buildings are architecturally designed as per AICTE norms. Imbibed with the message of Sri Shirdi Sai Baba, our Chairman ventured into the realm of providing quality technical education to both urban and rural students from Tamil Nadu as well as other states.

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ICAMMAS17

Analysis of Toughness in Multi-walled Carbon Nano Tubes for Resin and Resin Glass Fiber Composites

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Abstract

By adding of carbon nano-particle to composite material improves the Mechanical properties of the material leading to many more applications of these composite mixtures in various fields. Carbon nano-tubes (CNTs) are being used to enhance the performance of polymer composite materials. The two different combinations of composite polymers are manufactured with correct proportions with CNTs for better mechanical efficiency. The following two combinations of CNT's -based composites are resin carbon nano-tube and resin-glass fiber carbon nano-tube. For future studies is to create structured composites in which each composition contributes a unique function to yield a mechanically integrated, multifunctional material.

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Keywords: *Carbon Nano Tube, Polymer Composites, Glass Fibers, Mechanical properties*

Introduction

Polymer nano composites represented a new alternative to conventionally filled polymers. Because of their nanometer sizes, filler dispersion nano composites exhibit markedly improved properties when compared to the pure polymers or their traditional composites.

These include increased modulus and strength, outstanding barrier properties, improved solvent and heat resistance and decreased flammability[1]. In comparison with other commercial polymers, ultrahigh-molecular weight polyethylene (UHMWPE) exhibits increase in mechanical properties, such as high wear resistance, low density and high impact strength. Consequently, UHMWPE is widely used as a wear-resistant material in gears, seals, and bearings.

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Mechanical Characteristics and Terminological Behavior Study on Natural Fiber Nano reinforced Polymer Composite – A Review

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Abstract

In recent years, natural fibers with nano polymer composites are useful in the field of research, Engineering and Science as well it is used as an alternative reinforcement for conventional composite. Natural fibers are not only strong and light weight, but also relatively cheap and have properties like high specific strength, low weight, non-abrasive, eco-friendly and biodegradable. Generally used natural fibers like Jute, Sisal, Banana, Hemp, etc…, The reuse of waste natural fiber reinforcement of polymer is a sustainable option for the environment. The polymeric matrix materials along with suitable and proper filler and better filler/matrix create strong interaction between advanced and new methods or approaches. This enable to develop polymeric composites which shows great prospective applications in the construction of buildings, automotive, aerospace and packaging industries. Nano polymer composite shows considerable applications in different fields because of larger surface area, and greater aspect ratio, with fascinating properties. Being environmentally friendly, applications of nano polymer composites offer new technology and business opportunities for several sectors, such as aerospace, automotive, electronics, and biotechnology industries. Hybrid nano-polymer composites exploit the synergy between natural fibers in a nano-reinforced polymer-based composites. This leads to improve the properties along with the environmental appeal. The mechanical properties of a natural fiber reinforced nano polymer composite depend on parameters like fiber strength, fiber length, chemical treatment and orientation in addition to fiber-matrix interfacial bond strength. This review article aims at the clarification of the research and development in the improvement of mechanical properties of natural fiber reinforced polymer composites along with end applications.

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Keywords: Natural Fibers, nano fillers, natural fibers, polymers, nano composites and hybrid composites

1. Introduction

Natural fibers with Nano reinforced composites have been proven as an alternative to synthetic fiber in transportation such as wind turbine blades, prosthetics, smart memory, ship structures, bridge construction, automobiles, railway coaches and aerospace. Other applications include military, building, packaging, consumer products and construction industries for ceiling paneling, partition boards. Vogelesang and Vlot [1] have reported that the natural fiber nano reinforced composite is widely increased in both industrial and domestic applications and also fundamental research. They are renewable, cheap, completely or partially recyclable, biodegradable and non hazardous material.

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Some Studies on Waste Animal Tallow Biodiesel Produced by Modified Transesterification Method Using Heterogeneous Catalyst

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Abstract

This research work deals with production of biodiesel from tallow waste through the transesterification process by miniature reactor with heterogeneous catalyst. The production of biodiesel and biomass are solid waste removing process from odor environment. Now a days the biodiesel extraction from the various seeds and animal wastes are in progress to balance the fossil fuels demands. The heterogeneous catalyst are diluted sodium hydroxide (NaOH) and potassium hydroxide (KOH) with Methanol (CH3OH) as an alcohol used in transesterification reaction. In biodiesel production experimental and optimized process parameters are rated temperature at 600C, reaction time 90 mins and agitation speed 400 rpm. The functionality process parameters are 6.5:1 molar ratio, 2.5 wt% catalyst concentration. Finally the Tallow biodiesel has been yielded 62% with (NaOH) catalyst and 10% higher than potassium hydroxide (KOH) (grade-1) and also physicochemical properties are studied and compared as per the ASTM standards.

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Keywords: CH3OH, Tallow fats, Molar ratio, Transesterification, NaOH, KOH.

1. Introduction

Biodiesel is a clean and green, renewable energy source and is an alternative for fossil fuel. Many researchers have attempted to produce biodiesel because of its high advantages such as emissions characteristics, renewable and low cost comparing with the commercial fossil fuels. The micro emulsion, pyrolysis and transesterification are the common methods to produce the biodiesel [1-2] from fatty oils, new vegetable species and animal fats [3–13].

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Pitting corrosion studies on Ti6Al4V alloy weldments in marine environment

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Titanium and its alloys are widely used owing to their high strength-to-weight ratio, good tensile strength, and resistance to corrosion. The Ti6Al4V alloy is called the workhorse among the titanium alloys owing to its wide application. Even though the Ti6Al4V alloy is immune to corrosion, improper welding conditions lead to contamination, making the weldments prone to stress corrosion cracking (SCC). These weldments are susceptible to SCC if they show sensitivity to pitting. This study examines the effect of welding conditions on the pitting corrosion behavior of 3 mm thick plates of Ti6Al4V alloy. The Ti6Al4V weldments were fabricated using fusion welding methods, namely, the gas tungsten arc welding (GTAW) and laser beam welding (LBW) techniques. The pitting corrosion studies were carried out by a potentiodynamic polarization technique, using non-deaerated 3.5% NaCl solution of pH 7, to create a marine corrosion environment. The pitting corrosion studies yielded good results as there was corrosion resistance in weldments fabricated under controlled conditions.

[**Keywords:** Ti6Al4V; Pitting corrosion; Marine; Stress cracking corrosion; Weldment]

Introduction

Titanium is widely used in a variety of applications, such as aerospace, marine, offshore, surgical implants, racer cars, armaments, and chemical processing equipment. The Ti6Al4V titanium alloy designated as ASTM B265 Grade5 is the most commonly used among the 39 grades of titanium alloys[1,4]. Ti6Al4V is considered the military grade of titanium. Titanium has good corrosion resistance due to the spontaneous formation of a passive oxide film of TiO_2 at room temperature. The oxide film is very stable, continuous, and highly adherent. The oxide film may comprise a mixture of titanium oxides, such as TiO_2, Ti_2O_3, and TiO[5]. Pitting corrosion is localized corrosion resulting in the appearance of holes on the metal surface. Even though pitting causes minimal loss of metal, pitting leads to perforation, causing loss of functionality and reliability of the equipment and components. Therefore pitting corrosion has been studied in this investigation[6].

Inspite of its good weldability, Ti6Al4V is prone to contamination by the atmospheric gases, leading to hydrogen embrittlement and poor mechanical properties. Traditionally, the gas tungsten arc welding (GTAW) technique is used to weld Ti6Al4V. Owing to high heat input for a longer duration, GTAW produces a broader heat affected zone (HAZ). In critical applications, the high-energy beam technique of laser beam welding (LBW) is preferred to GTAW since it produces a smaller HAZ[7]. In this investigation, both GTAW and LBW were studied to determine the effect of these processes on the pitting corrosion of Ti6Al4V alloy. The objective of this study is to evaluate the quality of the weld and explore the feasibility of welded titanium components in marine applications.

Materials and Welding Process

The square butt joints were autogenously fabricated from cold-rolled, annealed plates of Ti6Al4V of size 50 mm × 125 mm × 3 mm along the rolling direction. The composition of the base metal was determined using a vacuum optical emission spectrometer (SPECTRO-LAB, Germany) (Table 1).

The GTAW was done manually by a highly skilled welder, using Easy Weld SSR 400/600, 3 phase, 415 V ± 10%, 50 Hz AC equipment. The GTAW was done with a root gap of 1.6 mm, while LBW was done with no root gap, since any gap between the plates allows the laser beam to pass through without any welding taking place. Proper care was taken to prevent contamination, distortions, and embrittlement, by using 99.9% pure argon with top and bottom purging and suitable clamping. The frequency of the GTAW was kept constant at 6 Hz. The laser beam-welding machine used for this experiment was a transverse-flow, carbon dioxide LASER. The LBW was done by conduction method, which is used for low-power heat

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Mechanical Property Evaluation of Hybrid Reinforced Epoxy Composite

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Abstract

Fibre reinforced polymer composites has been used in a variety of applications because of there many advantages such as relatively low cost of production, easy to fabricate, and superior strength. The use of natural fibre as reinforcement in polymer has gained importance in recent years due to the eco-friendly nature. Past studies show that only artificial fibres such as glass, carbon fibre, etc have been used in fibre reinforced plastic. Glass and other synthetic fibre reinforced plastic poses high specific strength. But their fields of application are very limited due to their inherent higher cost of production. In this study the chemical treatment of natural fibres are done with one percentage of NaOH and one percentage of sodium lauryl sulphate (SLS). The composites are developed with bamboo fibre / glass fibre /epoxy resin, caryota fibre / glass fibre/ epoxy resin , bamboo fibre + caryota fibre / glass fibre / epoxy resin, the property evaluated are tensile strength flexural strength, impact strength and water absorption. It was observed that the material treated with 1% of SLS possess high flexural strength and material treat with 1% NaOH possess high tensile strength. NaOH treated Bamboo caryota glass fibre mix offer better impact strength. The surface morphology study of the specimen has done after testing with help of scanning electron microscopy (SEM).

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Keywords: Natural Fibre , Bmbooa Fibre , Caryota Fibre ,Hybrid Composite, SEM

1. Main Text

Now a days green composites mainly focused on research and development,but green composites have medium strength used for medium load application. This paper works hybridization of two natural fibres and one glass fibre.This composites are mainly used for replacement of synthetic fibre composites. The hybridization of fibres and stacking sequence of laminates to increase the strength of composites. Because of their numerous advantages they are widely used in the aerospace industry, commercial mechanical engineering applications, like machine components, automobiles, combustion engines, mechanical components like drive shafts, tanks ,brakes, pressure vessels and flywheels, thermal control and electronic packaging, railway coaches and aircraft structuresThere are a number of investigations have already been carried out on several type of natural fibres such hemp, flax, bamboo, jute, banana and coirRaghavendra et.al.[1] studies the physical and abrasive wear behaviour of glass bamboo composite .He find out that the wear increases with increasing in load and the maximum wear occurs at 15 N subhakar et.al [2] investigate the physical, mechanical, and thermal properties of jute and bamboo fibre reinforced epoxy resin and find out that Bamboo fibre reinforced epoxy had higher tensile strength ; while jute fibre reinforced epoxy composites had higher young's modulus.

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Experimental Investigation and Surface Roughness analysis on Hard Turning of AISI D2 Steel using Polycrystalline Cubic Boron Nitride (PCBN)

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Abstract

The performance of polycrystalline cubic boron nitride (PCBN) was studied to investigate surface roughness analysis at various machining parameters. The PCBN tools were used in tool steel AISI D2 steel with hardness of 64 HRC. Machining test was performed with dry cutting condition at different cutting speed, feed and depth of cut. In order to obtain desired surface quality by machining, proper machining parameter selection is very essential. This can be achieved by higher quality and productivity in metal cutting industry. The aim of the present work is to investigate effect of process parameter on surface finish and material removal rate (MRR) to obtain the optimal setting of the process parameters. It influences the cutting parameters during machining L_{27} experimental will run based on an orthogonal array method. During the experimental process parameters such as speed, feed and depth of cut are used to explore their effect on the surface roughness (R_a) of the work piece. Chip morphology study indicates different types of chips operating under different cutting conditions.

Keywords: Machining parameter; AISI D2 steel; Surface finish; Material removal rate; Chip morphology

1. Introduction

The hard turning is nothing but the process of single point cutting of part pieces that have hardness value over 45HRC. The approach of machining hardened steel depends on degree of hardness and its depth. Hard turning is best accomplished with the cutting inserts such as Cubic boron nitride (CBN), Poly crystalline cubic boron nitride, ceramics and carbide.

Since hard turning is single point cutting, it has significant benefits to produce counters and produce intricate shapes with the inherent motion of the machine tools. For much application CBN tooling will be dominant choice. However PCBN, ceramic and carbide also have roles with this process [1]. PCBN inserts offer benefits to holds better surface finish due to fine microstructure, excellent toughness during interrupted cutting, excellent hardness provides higher edge wear, chips take heat away from the part and tool. It offers many advantages, including that lower equipment cost, shorter setup time, high accuracy, lesser process steps, higher geometry flexibility and without cutting fluid when machining hardened steel.

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Comparison & Multiresponse optimisation of drilling characteristics of bovine bones with varying density

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Abstract

Drilling in human bone is an inevitable joining process during any fracture surgery. Excessive temperatures and durations during drilling process can result in the necrosis (death) of bone, a phenomenon termed osteonecrosis, or the impairment of osteogenic capability. This work aims to check the temperature and thrust force variation in drilling process with bones of varied densities. Bovine bone is used for experimental work as it is closest to human bone. Experiments have been performed under different conditions deploying the Taguchi design of experiments. The operation parameters such as speed, feed, and density of bone and material of drill bit have been considered during drilling operation and the output responses - temperature and the thrust force acting on the bone during drilling were measured. It was found that bone with lesser density dissipated the heat generated quickly and developed lesser thrust when compared to the high-density bone. Grey Relation Analysis (GRA) is used to optimize the thrust force and temperature in drilling of bone.

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Keywords: Bone Drilling; Taguchi technique; Multi-response; Thrust force; Temperature; Grey relation analysis (GRA); Optimization; Density

1. Introduction

Bone fracture is a regular feature of everyday life. Bone fracture treatment involves restoring the fractured bones to its initial position and immobilizing them until the repair, reconstruction occurs [1]. Drilling of bone is one of the most rudimentary operations which is mostly used in bone fracture treatment to make holes for screw insertion to fixate the fractured parts. Previously, authors have studied the process of bone drilling and its effect on fracture healing [1–6], yet the problem of heat affected zone, micro level crack formation and surface finish of the drilled hole remains unsolved. Heat affected zone and the micro cracks results in damage to the bone cells which can result in their death or may extend the process of healing whereas the improper surface finish affects the proper alignment of the screws with the bone surrounding the drill site and can lead to the misalignment of the fixation.

Augustin et al [5] elaborates on the process of drilling of bone and reports that various elements of the cutting tip behave differently as the cutting progresses. The cutting lip of the drill bit creates plastic deformation across its shearing plane.

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Implementation of Effective Fuel Saving Methodology for Turbines using Air Drag in Vehicles

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Abstract

The hike of fuel price is causing an immediate threat to the economic wealth of the world. The fuels will sooner become obsolete and it is imperative to search for new technologies to save and optimize the utilization of the fuel. Innovative approaches that can be readily implemented will prove beneficial in contributing to the sustainable solution. Fuel consumption in the automobiles linearly increase with the increase in the number of fuel utilizing vehicles on road. Hence, decreasing the fuel consumed by each vehicle on road will eventually result in substantial sustaining of fuel availability. This paper focuses on decreasing the consumption of fuel by an automobile at its higher speeds. Turbines which forms the ultimate part in producing conventional energy is innovatively used in automobiles to rotate the crankshaft of the engine by utilizing the air drag against the vehicle. Vehicles (two- wheelers or four wheelers) experiences infinite amount of air drag while travelling at higher speeds. This air drag is fed to turbines and is being converted into useful form of energy. Feasibility of this system is experimented and torque along with power output is calculated and proved to be practically possible solution.

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Keywords: *innovative approaches; sustainable solution; turbines; air drag; feasibility*

1. Main text

The costs of petrol and diesel are increasing day by day due to the shortage of supply and oil companies have started to shoot out the prices. India is forecast to become the world's fourth largest oil consumer by 2025 [1].And hence the current situation needs an alternative to reduce the fuel consumption rates. The trend is now moving towards full and efficient use of available conventional energy source such as solar energy, wind energy, hydro-electric energy, etc. In order to contribute to the current trend of saving fuel, new innovative approaches have to be undertaken. The

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Some Studies on Tribological Behavior of Friction Welded Hybrid Metal Matrix NanoComposites

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Abstract

In this research work, a systematic study was made on the tribological behavior of friction welded dual Nanoparticulates reinforced aluminum alloy. The Nano Metal Matrix Composites with the reinforcements of SiCNP as 10% and Al2O3 as 5% was fabricated using the stir casting technique. Then the MMNCs were joined using a solid state friction welding process in order to achieve high strength in the weldment. Then the dry sliding wear behavior of the FW composites were examined using a pin-on-disc wear tester and to compare it with the parent metal. The wear resistance of the friction welded composites were found to be higher than the MMNCs which is attained due to the increase in hardness of the joints. Then the worn surface morphology was carried out using advanced characterization techniques to understand its nature.

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Keywords: Nanoparticles; Stir casting; Friction welding; Worn surface morphology; Characterization.

1. Introduction

The usage of aluminum alloy and its products are increasing day by day due to its availability and high performance which revolutionized the industrial sectors being the most used metal overcoming the cast iron and its products. The important aspect in the aluminum alloys are its high strength to weight ratio which attracts researchers to indulge in aluminum rather than focusing on others but with the increasing demand in the market, the slight improvement is needed in achieving good combination of strength, stiffness, toughness and density [1-3]. To overcome these shortcomings and to meet the ever increasing demand of modern day technology, composites are most promising materials of recent interest. It has many features and has been attaining the rapid growth in many sectors especially in automotive and aerospace sectors due to its light weight and high strength [4].

The production of such composites are very challenging since during pouring, air envelopes may form between particles, which can alter the interface properties between particles and the melt, retarding the wettability between them. The stir casting technique proved to be a promising technique for fabricating the composites because homogeneity in particulate distribution would be achieved due to the continuous stirring action occurred during the process [5-6]. The MMNCs are widely adopted and are used in each and every sectors but they are not utilized completely because the joining of composites are very difficult which alters the grain structures and leads to uneven settlement between the matrix and the reinforcement because of high heat generated during the joining process [7].

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ICAMMAS17

Developing an Empirical Relationship to Predict Maximum Strength on Friction Stir Welded (Mg+ CNT) Nanocomposites.

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Abstract

Now-a-days, most of the investigating research works are focused on developing the material that can substitute the metal that are excellent building materials because of their high toughness, high strength, high melting temperature and chemical reactivity and for this reason, metal is preferred for constructional applications. So far, in this research work a magnesium based new Nanocomposite (MgAZ91D+CNT) were produced by the emerging stir casting method. And also the produced Nanocomposite has been welded by the Friction Stir Welding (FSW) process in order to understand its strength of the joints. Finally, the empirical relationship was developed to predict the maximum strength of the FSW joints of produced Nanocomposite using Design of Expert.

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Keywords: Mg AZ91D grade Magnesium alloy; Carbon Nano Tubes; TIG Welding; Microstructure.

1. Introduction

The need for lightweight, high strength materials has been recognized since the invention of the airplane. As the strength and stiffness of a material increases, the dimensions, and consequently, the mass, of the material required for a certain load bearing application is reduced. This leads to several advantages in the case of aircraft and automobiles such as increase in payload and improvement of the fuel efficiency. With global oil resources on a decline, increase in the fuel efficiency of engines has become highly desirable. The inadequacy of metals and alloys in providing both strength and stiffness to a structure has led to the development of metal matrix composites (MMCs), whereupon the strength and ductility is provided by the metal matrix and the strength and/or stiffness is provided by the reinforcement that is either a ceramic or high stiffness metal based particulate or fiber.

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ICAMMAS17

A novel approach for Joining Armor Grade AA7075 Metal Matrix Nano Composites using Various Welding Processes

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Abstract

In this research work, the dual reinforcement of SiC (10%) and Al2O3 (5%) Nanoparticulates were added with the AA7075 aluminum alloy for fabricating the Hybrid Metal Matrix NanoComposite (HMMNC) rods with the help of advanced stir casting technique. The produced composite rods were joined using fusion and solid state welding processes with an aim to understand the suitable welding process that contributes to better performance on the joints with reduced defects. Finally, the integrity of the joints were evaluated using advanced characterization techniques.

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Keywords: AA7075 – T651 aluminum alloy; Metal Matrix Nano Composites; Fusion welding; Solid state welding; Characterization.

1. Introduction

The composites are offering excellent contribution in defense, automotive and aeronautical industries which offers enhancement in properties due to addition of reinforcing ceramics in which the Nano composites are exceptional due to their better bonding between the matrix and reinforcement which forms uniform and compact grain boundaries [1-2]. Stir casting was found to be the most promising and emerging route for fabricating metal matrix composites because the mechanical stirrer action would ensure the hard ceramics to be uniformly distributed throughout the surface upon adding. Also, the composites fabricated through stir casting technique are possessing unique qualities which is the reason for its superior properties compared to other casting processes [3-5]. Though the composites are extensively used in every sectors, yet it has not been fully utilized in the field of joining which is a major concern.

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ICAMMAS17

Sensitivity Analysis of Friction Stir Welded Aluminum Based High Strength Metal Matrix Composite Joints

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Abstract

The metal matrix composite materials are a class of materials which are finding applications in automobile, aeronautical and defense sectors. Friction Stir Welding (FSW) is an emerging solid state welding process which is capable to weld a wide variety of metals. In this research work, an attempt was made to identify the sensitivity of tensile strength for the dominating parameters such as Rotation speed (N), Transverse speed (V) and Downward force (F) respectively during the welding process. Also the nature of the joint efficiency was evaluated using OM, SEM at different zones of the weldment.

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Keywords: AA6061 Aluminum alloy; MMC; Friction Stir Welding; Sensitivity.

1. Introduction

Friction Stir Welding (FSW) became a widely researched topic around the globe since its invention by The Welding Institute, UK during 1991 [1-2]. FSW is categorized under solid state metal joining processes. It has the benefit of producing less defective joints which were otherwise not possible by conventional fusion welding techniques. Extensive research activities on FSW around the globe resulted in this technique to become able to join wide verities of metals, alloys and composite materials. The capability of FSW to join aluminium alloys and also composite materials containing aluminium alloys is a major milestone in the history of FSW [3]. Aluminium alloys and its composites are used for many industrial and scientific applications such as automobile wheels, space vehicles, aero structures and building materials [4].

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Enhancing the Fatigue Properties of Friction Welded AISI 1020 Grade Steel Joints using Post Weld Heat Treatment Process in Optimized Condition

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Abstract

Fatigue life is the most important criteria in each and every areas subjected to loading. The prediction of fatigue life is essential in the field of engineering sciences and it only defines the quality and life time of the materials subjected to loading. Therefore, the ultimate aim of this research work article is to predict the fatigue life of friction welded AISI 1020 grade low carbon steel joints before and after Post Weld Heat Treatment (PWHT) process for which the welding parameters have been optimized by Response Surface Methodology (RSM) as per ANOVA design matrix in order to obtain the maximum strength in the joints. The different size of the grains encountered due to the variation of temperature, pressure and solidification at various zones during the process before and after the post weld heat treatment in As-welded and post welded conditions were analyzed using an optical microscope. The microstructural features and the fracture surfaces of friction welded AISI 1020 grade steel joint using optimized parameters with parent metal microstructure are compared and analyzed.

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Keywords: AISI 1020 grade steel; Friction welding; Post weld heat treatment; Fatigue.

1. Introduction

Carbon steels are alloys of iron and carbon, with carbon as the major strengthening agent. They are used in mass production products such as automobiles and appliances but they also play a major role in machine design for base plates, housings, chutes, structural members and countless machine components. But in fusion welding process there had been lots of defects like porosity, incomplete fusion, undercut and cracking occurs. Also cracking is the most serious defect and in steel it is almost invariably caused by hydrogen.

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ICAMMAS17

Assay of Machining attributes in Drilling of Natural Hybrid Fiber Reinforced Polymer Composite

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Abstract

In the accelerated competitive manufacturing world, the vital objectives of the manufacturer are to generate high quality products at least cost and in fewer time. The utilization of composite materials is mounting at a fast rate, because these materials have many constituents and each has its own unique characteristics like environment friendliness and light weight, with high precise properties. The above requirements are inculcated by incorporating the natural fibers namely kenaf, sisal and aloe vera fibers as reinforcing material in the polymer resin matrix in hybrid manner. The drilling of composite materials is intricate when compared to metals, because the tool has to go by the matrix and reinforcement alternately, which have dissimilar properties. The aspiration of this work is to highlight the drilling characteristics of four different types of fiber plates namely polyvinyl chloride reinforced hybrid composite, polyvinyl chloride reinforced hybrid with boron carbide compound, vinyl ester reinforced hybrid composite and vinyl ester reinforced hybrid with boron carbide composite by varying the cutting speed and feed rate.The drilling process is carried out on a radial drilling machine using HSS drill.The fabricated composites are subjected to drilling in order to identify the extent of delamination. The delamination in drilling is higher for the poly vinyl chloride polymer when compared to vinyl ester polymer, showing that vinyl ester is better suited as resin for the hybrid (kenaf, sisal, aloe vera) fibers. The study of thrust force, torque, and temperature developed during drilling reveals that HSS is better suited to drill vinyl ester reinforced with hybrid fiber at lower speed.

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Keywords: Hybrid composites, Thrust force, Torque, Delamination

1. Introduction:

The material that has more than one constituent within it to combine different physical or chemical properties of those individual components is known to be a composite material. Their properties like high strength to weight ratio in comparision with conventional metals make it preferable to be used parts where weight reduction is required.This makes them to be used in in the aerospace, defence and automotive industries, due to their higher specific strength, stiffness and fatigue characteristics.

The employment of natural fiber in reinforced composites is in rapid growth, owing to their intrinsic properties of light weight, easy availability, and environment friendliness.Because of low density, less cost, non-abrasiveness and high modulus, Natural fibers are implemented in many application compared to synthetic fibers. Composite components are joined by mechanical fasteners; and accurate, precise high quality holes need to be drilled to ensure proper and durable assemblies. The drilling in composite materials may cause de lamination, fiber-pull out, edge chipping, uncut fibers, and others. It causes poor assemblage and tolerance, reduces the structural

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Comparative analysis of cashew and canola oil biodiesel with homogeneous catalyst by transesterification method

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Abstract

This research work deals with cashew and canola non-edible oil biodiesel with an aim to identify the maximum yield and physiochemical properties at minimum cost by newly formulated segment process of transesterification method. The diluted sodium hydroxide (NaOH) were used as a catalyst because of its enhancing nature on yielding the biodiesel from oil. The predominating factor such as catalyst, molar ratio, temperature, agitation speed and reaction time are consider as a process parameter to yield the maximum biodiesel with optimum physiochemical properties. The canola oil has been yielded 85% of biodiesel and also it is 30% higher than the cashew oil biodiesel. The optimized parameter obtained to yield the canola oil biodiesel which is transesterification temperature at 700C, time at 120 mins and agitation speed up to 550 rpm. © 2016 Elsevier Ltd. All rights reserved.
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Keywords: Cashew nut oil and canola oil Bio-diesel, methanol, NaOH, molar ratio.

1. Introduction

Biodiesel is the alternate fuel, its try to replace the fossil fuels like diesel, petrol. The need of biodiesel is to reduce the usage of fossil fuels, because this fossil fuels emits toxic gases such as carbon monoxide (CO), Nitres oxide (NOX), sulfur dioxide (SO2) and Carbon dioxide (CO2) which will create the pollution and affect the human cycle environment.

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ICAMMAS17

Empirical Modeling of Roughness Parameters in Drilling Composites- A Response Surface Approach

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Abstract

Particle composite panels are alternative to traditional wood because of their superior advantages in furniture industry. The present study describes the development of mathematical models to predict the surface roughness in drilling particleboard composite using forstner carbide drill bits. Plain Particleboard panel of IS 3087 grade was selected as work material to conduct experiment. Experiments were planned as per Taguchi L_{12} orthogonal array. Experiments were conducted under different drilling input parameters of spindle speed, feed rate and drill diameter. A mathematical model on surface roughness has been developed in terms of input parameters. Residual plots were constructed to analyze the variation between the experimental values and predicted values. Analysis of Variance (ANOVA) was employed to find the effect of various drilling parameters on surface roughness. It showed a high coefficient of determination (R^2) value, which ensures perfect fit of the second order regression model with experimental data.

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Keywords: Analysis of variance (ANOVA); contour plots; drilling; Forstner drills; particleboard; Regression equation; Surface Roughness.

1. INTRODUCTION

The demand and need for wood composites from waste wood products has been increasing as timber resources in natural forests decline. Out of the many wood composites in use, particle board has found typical applications as flooring, wall and ceiling panels, office cabinets, furniture, counter tops and desk tops [1].

The particle panel is a product manufactured by pressurizing the particles of wood or other lignocellulose material with an adhesive. This has been widely used around the world for furniture manufacturing, house construction, including flooring [2]. More recently the need for the particleboard has continued to increase for house construction and furniture industries [3].

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Investigation of Glass Fiber influence on Mechanical characteristics and resistance to Water absorption of Natural fiber reinforced polyester composites

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Abstract

Composites have a greater influence in recent development of materials with high strength to weight ratio. In the present scenario an effort is on to identify the different and specific properties which are to be possessed by the same material to attain the possibility of using it in various applications. The composite materials play a major role in achieving that requirement. Most of the natural fiber composite materials possess good mechanical properties but it is now becoming necessary that it should possess other properties as well like resistance to water absorption, fire proof, etc,. Here in this investigation an attempt has been made to study mechanical properties and the resistance to water absorption in Kenaf, Aloe-vera and Sisal Fibers reinforced by addition of Glass fiber.

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Keywords: Natural fiber reinforced composites, Polymer matrix, Mechanical properties

1.Introduction

A composite material is the combination of two or more materials that results in better properties than those of the individual components used alone. The constituents of a composite are commonly referred to as reinforcement and a matrix. The major advantages of composite materials are their high strength and stiffness, combined with low density allowing for a weight reduction in finished part. The strength and stiffness is contributed to a large extent by the reinforcing phase. [1-7]

Glass fiber, also called fiberglass, is made from extremely fine fiber of glass. Fiberglass is very light in weight, extremely strong robust material. Its bulk modulus and weight properties are also very favorable when compared to metals, and it can be easily formed using molding processes. [8-11]

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Assessment and Analysis of Roundness Error in Drilling GFRP-Armour Steel Sandwich Composites

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Abstract

The use of composite metal stacks has been increasing and in this work, armour steel, sandwiched between two GFRP panels, is drilled with Tungsten Nitride coated drills and the roundness error in the top panel and the bottom panel are measured with the help of CMM. The effects of the input parameters on the roundness error are analyzed separately for the top and bottom panels. The values of roundness error are very less for the bottom GFRP panel and this is because of less vibration experienced by the drill due to the guided action of the middle metal panel.

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Key Words Drill Diameter;Spindle Speed; Delamination;Armour Steel;Design of Experiments

1. Inroduction

Composites have been finding new avenues of application in aerospace and automobile industries mainly due to their superior properties like good specific strength, low cost, light weight etc. Armour steel, finds an extensive application in defense industries especially in the manufacture of battle tanks, armoured vehicles and in the construction of underground shelters. In this present work armour, steel is sandwiched between two GFRP laminates. Normally these materials are joined by drilling of holes and fixing with screws. Drilling of composite material poses a serious problem and drilling it with armour steel necessitates special cutting conditions and parameters that will satisfy the requirements of drilling of both the dissimilar materials. Many researchers have done lengthy work in drilling composites [1,2] but very few have done work on drilling metal-composites stacks [3,4].

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ICAMMAS 17

Study on Drilling of Woven Sisal and Aloevera Natural Fibre Polymer Composite

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Abstract

Natural fibre reinforced polymer composites are the materials formed by a matrix and a reinforcement of natural fibre. Natural fibre reinforced polymer composites are light in weight, economical, low density, high specific strength, modulus relative no abrasiveness, ease of fibre surface modifications wide availability and are available in variety of forms. They have low densities, comparable material properties, and high moulding flexibility and are environmental friendly. By modifying either the resin system or the natural fibre, natural fibre composites can be designed for different applications ranging from products of commodity to aerospace applications. In this work composite laminate was prepared with natural fibre such as sisal and aloevera with epoxy resin using hand layup technique. The present investigation is an attempt to study the factors that influence the delamination of drilled sisal and aloevera natural fibre reinforced composites using (ϕ 6mm, ϕ 8mm, ϕ 10mm) carbide tip drill bit. Surface roughness test and delamination is carried out on drilled natural fibre composites.

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Keywords: Sisal, aloevera, drilling, delamination and surface roughness.

1. Introduction

Fibre reinforced composites are being used widely today, owing their use to superior mechanical properties like high strength to weight ratio, high stiffness to weight ratio and design flexibility. Increased use of composites has meant there is demand for joining of some of the parts together. Adhesive bonding is the method used most often for joining most composites. On the other hand, mechanical joints can be assembled and disassembled as many times as wanted. Numerous methods have been used, but conventional drilling still remains the un-avoidable process for making holes in composite laminates.

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ICAMMAS17

Role of Calcium Carbonate($CaCO_3$) in improving wear resistance of Polypropylene(PP) components used in automobiles

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Abstract:

Compounds of Polypropylene (PP) will continue to play as an important materials for automotive applications because of its good mechanical properties including mold ability combined with excellent appearance, colorability ,environmental suitability and high performance at low cost. PP compounds are used in automotive interior parts, instrumental panels, door panels, pillars, Loading platform for light pick-up trucks, battery boxes, indoor carpets. These parts easily porn to wear because of its frequent usage. In this work calcium carbonate($CaCO_3$) has been blended with PP in different proportions using twin screw extruder machine and tested it in Pin-on-Disc machine for varying load, speed and sliding distance to study its wear characteristics. The wear phenomenon has been investigated and discussed based on wear loss of the material and microstructure of worn surfaces.

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Keywords: Polypropylene (PP); Calcium Carbonate ($CaCO_3$) ;Twin screw extruder; Pin-on-Disc; Wear loss; microstructure.

1.Introduction

Automobile industry requires materials having high fluidity and thin-wall molding is demand nowadays to reduce the weight of the vehicle . In response to that demand, the use of polymeric materials is constantly increasing and this trend is expected to continue because of its low density,greater freedom in design,lower production costs compared to ferrous materials and most importantly increased possibility of compounding with additives . Such enhancements can be done in PP. Because of these enhancements, the engineering plastics which finds its usage in the automobile currently be replaced by PP compounds. As a result of this improvement , PP-based material automotive applications has continued to increase.

PP is used in loading platform of a light pick-up truck, for the manufacture of the protection for the bottom floor in the car, for internal lining and coating of electric cables in the vehicle because of its good absorbent of impacts and vibrations.[1]

Fuel tank in automobiles of irregular shape using polymeric materials (PP, PE) can be achieved by extrusion blow molding process and the same is the complicated process made up of ferrous materials.[2]

polybutylene-terephthalate (PBT) and polyester (PES) composites possesses good resistance to temperature (up to 240° C), abrasion resistance and low absorption of humidity; makes perfect choice for manufacture of automobile bumpers, radiator grilles, door-handles.[3]

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ICAMMAS17

Optimizing the Plasma Arc Welding Process Parameters to Attain the Minimum Corrosion Rate in the AISI 409M grade Ferritic Stainless Steel Autogenous Joints

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Abstract

The combination with good mechanical properties and manufacturing characteristics, makes stainless steel an indispensable tool for the designer. Stainless steels become susceptible to localized intergranular corrosion when chromium carbides form at the grain boundaries during high temperature exposure. This depletion of chromium at the grain boundaries is termed 'sensitization', because the alloys become more sensitive to localized attack in corrosive environments. Stainless steels like AISI 409M grade, which are having low chromium content (approximately 11%), are susceptible to localized corrosion. The susceptibility of these alloys are strongly affected by welding processes and filler metals, which change the microstructure of the alloy in order to have optimum mechanical properties. Hence, the present investigation has been carried out to understand the effect of Plasma Arc Welding (PAW) process on pitting corrosion behavior of AISI 409M grade stainless steel joints. Also, the PAW process parameter such as welding speed, voltage, heat input were optimized with help of Response Surface Methodology (RSM) to attain the maximum tensile strength and minimum corrosion rate in the welded joints.

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Keywords: PAW; AISI 409M SS; Pitting Corrosion; Optimization; Tensile strength.

1. Introduction

The stainless steels are sensitive to small metallurgical variables and their applications put significant demands on the mechanical and corrosion behavior of the weldments. The AISI 409M is one of the typically utilized ferritic stainless steel alloy which has a titanium addition for its usage in automotive exhaust system, quenching racks, tanks for agricultural sprays and cases of transformer.

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Nano Indendation Hardness Testing Of PP-CNT Composites

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Abstract

Hardness is an important mechanical property which determines the applicability of polymer composites. Carbon Nano Tubes (CNT) invented by Iijima by arc-discharge technique. It possess some unique properties like Young's modulus the values varies from 0.42 to 4.15 TPa,tensile strength of 1 TPa, density varies between 1.3 -3 g/cm^3 comparatively lower than commercial carbon fibers. CNTs have thermal stability up to 2800°C in vacuum. CNT present in Polypropylene (PP) has good impact on the hardness properties of the composites. Montmorillonite (MMT), a layered silicate clay, has been the focus of extended research for the preparation of polymer nanocomposites.Nano indentation hardness testing had been used to measure the hardness of the PP-CNT, PP-MMT system.

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Keywords: Polypropylene(PP); Carbon nano tube(CNT);Montmorillonite (MMT); hardness,Nano indendation.

1. Introduction

The discovery of nanotubes paved the path for numerous researches in their co-related composites [1].Carbon nanotubes (CNT) are sheets of grphite hollow cylinders and it is used as the most promising modifiers of the conventional polymers. This causes the material matrix system to increase its multifunctional properties. Carbon nanotube has been well recognized as one of the ultra-strong materials in the World [2]. It can be embedded into any type of light weight and soft materials as reinforcements to form strong and light nanocomposites because of its extremely small size. Dispersibility of the multi-walled carbon nanotubes the key in enhancing the mecanical properties of the composites [3]. Grimmer and Dharan [4] discovered the cyclic delamination crack propagation rates significantly minimized by the little fraction addition of CNTs, with an related increase in both critical and subcritical inter-laminar fracture toughness, because of shift in the fracture behavior of CNTs. Ashok Gandhi et al [5, 6] has proved that inclusion of nano materials increases the wear resistance of the whole system. Wear and hardness are interrelated. To have a wear resistant material then it should posses better hardenability. Its observed that the good functionality of these materials were affected by poor dispensability of CNTs in most of solvents and low stability of

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Delamination Analysis in Drilling of Carbon Fiber Reinforced Polypropylene (CFR-PP) Composite Materials

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Abstract

Carbon Fiber Reinforced Polymeric (CFRP) composite materials are widely used in the fabrication of major structural parts in aerospace engineering application owing to their specific stiffness and high strength to weight ratio. The drilling process is often used machining operation in order to assemble the parts made by Fiber Reinforced Polymeric (FRP) composite materials. In this work the effect of drilling process variables such as spindle speed and drill feed rate on the drilling induced delamination at exit during drilling of Carbon Fiber Reinforced Polypropylene (CFR-PP) thermoplastic composite is studied in detail. For this study, CFR-PP laminates are fabricated using hot compression molding machine with film stacking technique. The fabricated laminates are tested for physical and various mechanical properties as per the relevant ASTM standards. To analyze the machining performances, the drilling experiments are conducted on a CNC Vertical Machining Center (VMC) using three type of twist drill made with high speed steel (HSS), tipped carbide (TC) and solid carbide (SC) of 6mm diameter. The main objective of this work is to analyze the influence of spindle speed and drill feed rate with respect to drilling induced delamination of drilled hole in CFR-PP composite materials. The empirical relation between machining variables and process responses are developed to predict the process outcome. The observations indicted that the developed regression model is highly suitable to predict the process responses during drilling of CFR-PP composite material. The developed mathematical model may be helpful to reduce the delamination damage which is the most significant undesirable failure during the drilling of CFR-PP material. The influence of machining parameters and their interactions are examined. The significance role of tool materials on the machining characteristic is also discussed in detail.

Keywords: Film stacking; compression moulding; thermoplastics; polypropylene; carbon fiber; delamination;

1. Introduction

The applications of FRP composites are finding in various fields of engineering like automotive, aerospace, machine elements, chemical industry and many other areas. Machining of FRP composite material differs with conventional machining due to their non-homogeneous and anisotropic property. Drilling is the most commonly used machining process for assembly of the components used in main structure. The induced force along the direction of drill axis during the drilling process is called thrust force. The thrust force induced delamination is the

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Effect of Carbon Nano Tubes (CNT) on Hardness of Polypropylene Matrix

R. Ashok Gandhi, V. Jayaseelan, K. Palani Kumar, B. K. Raghunath and S. Krishnaraj

Abstract Hardness is an important mechanical property which determines the applicability of polymer composites. Carbon Nanotubes (CNTs) invented by Iijima by arc-discharge technique. It possesses some unique properties like Young's modulus, the values varies from 0.42 to 4.15 TPa, tensile strength of 1 TPa, density varies between 1.3 and 3 g/cm^3 which is comparatively lower than commercial carbon fibers. This makes CNT as a potential reinforcement with metal and polymers for enhancement of properties. This work describes about preparation of PP-CNT composites with different ratios. Hardness of the composites were measured using Nanoindentation method and found that hardness of the PP-CNT system increases significantly with the increase of CNT proportion in the PP matrix.

Keywords Hardness · Corbon Nano Tubes (CNT) · Poly Propylene (PP) Nanoindentation

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Influence of Primary B_4C Particles and Secondary Mica Particles on the Wear Performance of Al6061/B_4C/Mica Hybrid Composites

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Abstract
The present investigation is carried out on the wear properties of particle-reinforced Al6061/B_4C/Mica hybrid composites in comparison with Al6061/B_4C composites and Al6061 aluminium-based alloy. The dry sliding wear test is used to evaluate the wear rate and coefficient of friction for the specimen. The pin-on-disc wear tester is used at a load of 10 N, 20 N and 30 N. The specimens are prepared by stir cast method. B_4C particles of 70 µm and mica particles of 3–10 µm are used for the experimentation. The worn surfaces of the specimen are studied by using scanning electron microscope. Further, the surface profile is studied by using atomic force microscope images. The analysis shows that, Al6061/B_4C/Mica hybrid composites cause a reduction of wear rate up to 36.23%, a coefficient of friction up to 11.73%, average surface roughness (R_a) up to 46.57% in comparison with Al6061/B_4C composites.

Keywords Metal–matrix composite · B_4C particles · Mica particles · Sliding wear · Wear testing · Surface analysis · AFM

1 Introduction

Aluminium is one of the important matrix materials found suitable in many engineering applications like automotive, aerospace, marine engineering and construction due to its low density, castability and formability. Veeresh Kumar et al. [1] have observed that Al6061 is an excellent series because of its high corrosion resistance and moderate strength.

Wear resistance has a highly inevitable behaviour for components subjected to friction. Hence, many authors have investigated wear and friction behaviour on Aluminium Matrix Composites (AMC) reinforced with Al_2O_3, SiC, B_4C, CNT, TiB_2, Fly ash, Sb_2S_3 (Stibnite), cemented carbide, granite dust, Mica, kaolinite, rice husk ash and Gr, TiO_2, etc. [1–10]. Among these, Al_2O_3, SiC and B_4C are predominant abrasive-reinforced composites. Recently, many researchers have found that Boron Carbide (B_4C) possesses many appreciable characteristics like high hardness (next to diamond and boron nitride), high elastic modulus, low density and better chemical stability. Alizadeh et al. [2] have indicated that, addition of B_4C particles in the composite increases its resistance to wear and the presence of CNT causes delamination in the composite. Yuan et al. [3] have reported that, wear and mechanical properties are improved in Al/AlB_2 composites in comparison with the base metal. Elango et al. [10] have exposed that, Boron Carbide (B_4C) is suitable to be applied to materials subjected to wear and neutron absorption. Dou et al. [11] have observed that, the increase of the load and wear time increases the wear loss on Al/B_4C composites at varying load, sliding time, slide speed and heat treatment parameters. Lashgari et al. [12] have conducted experiments on Al/B_4C composites with a varying load of 20 N, 40 N and 60 N and they have observed that, increase of the load increases the wear. A marginal benefit is recorded for the addition of strontium in the composites.

Recently, many researchers have shown an interest in exploring incremental tribological benefits in reinforcing with the secondary materials. Kaushik and Rao [13] found that hybrid metal matrix composite (HMMC) yields better wear characteristics on reinforcing softer and harder abrasives on the soft matrix material. Graphite is one of the leading secondary reinforcements used in the composites.

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Article Detail

Design and Fabrication of Intelligent Gas Stove for Indian Women Safety

Author: G.SHANMUGASUNDAR , R.YOKESH, S.YUVARANJITH, R.BARATH, S.BALASUBRAMANIAN

Abstract: The Primary aim of the stove is to minimize the ill effects and accidents in every kitchen. This project is economical to produce & assemble, which may be readily available. This Fabrication system can be used in school and college canteens, homes, and hospitals. Our work consists of MQ2 gas Sensor, Arduino board, DC gear motor along with gas stove. Gas monitoring sensor detects the leakage of the percentage of the gas and properly sends signal / Feed back to the attached high accuracy Arduino / electronics board. The Arduino board is programmed to actuate the DC motor which runs the gas knob off so we have to monitor that leakage of the gas is to be prevented and gas accidents are reduced. It also adds ease to cooking zone which helps to reduce concentration on cooking zone. Features to avoid milk spilling, cooker whistle counting and timer are added to enhance the ease of cooking. It makes every activity related to stove with more ease and highly safe. These modes are activated with the help of temperature sensor and limit-switches. This paper deals about the Design and Fabrication of Intelligent Gas Stove for Indian women safety.

Keyword: Gas Leak, Whistle Count, Milk Spilling, Timer, Arduino.

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DESIGN, FABRICATION AND ANALYSIS OF PERSONAL VACUUM ASSISTED CLIMBER

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Abstract—There are various instances where a human as to climb the walls of a high-rise building. Some of them are inspection of high pipes and wall, fire rescue operations, painting and repairs. Unlike the traditional method of using grappling hooks used for wall climbing, this device uses the principle of vacuum to scale the walls. The major motive of this project is to make the manufacturing and usage of this device simple. The suction is produced using the vacuum motor setup and a release valve mechanism is used to help the climber take successive steps. The suction force produced by suction pads is designed by considering both the external conditions and the loads of working equipment. In this research work we have performed a basic experiment on the vacuum suction force of suction pads attached to a vertical wall under various load conditions

Keywords—suction pad, vacuum pump

1. INTRODUCTION

It has been a dream for man to scale heights. In order to make this dream come true, mankind as invented equipment such as Rope, Carabiners, Quick draws, Harnesses, Ascenders, Sling etc.., But still this equipment may not be handy for day to day usage in domestic and industrial purposes. These could only be used if there is a strong support at the elevated destination and also needs immense training to master the usage of this equipment. This makes the activity of climbing walls a problem to those who lack the effective training.Vacuum assisted wall climber will assist climbing vertical surfaces against gravity. It is equipment which uses its vacuum pumps to produce a grip against the wall surface. The assembly is enclosed in a backpack, which helps us to climb heights over the flat surface. So we came up with the idea of vacuum assisted wall climber, which consist of two suction pads and household vacuum pump. To have an air tight seal we used rubber material so that lip of the suction pad creates a friction against the wall surface. The larger the suction pad more weight it can hold. This could also be used as a lifting device to carry the things which are heavy with ease. But the object which we are lifting needs to have flat surface and it should be within the suction limit. If the air inside the cup is removed thus creating a perfect vacuum seal inside the cup whose pressure is very much lesser than atmospheric pressure. The method of using concept of vacuum to climb the walls is technique that has been developed in recent years. It is mainly designed to meet the stated requirements.

2. APPLICATIONS

A. Military Applications

Military applications could include fighting environments where climbing over large obstructions was necessary. Stealthy operations might also be used for Covert Operations.

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ARCHIVES

Design and Fabrication of Solar Powered Multi-Purpose Agricultural Vehicle with IOT Control

G. Shanmugasundar, G. Fenneth Moses, S. Jayachandran, V.D. Rathnavel Subramanian and R. Rajagopalan

Abstract

Agriculture allows to satisfy the primary needs of human and its civilization by giving shelter, food, recreation, clothing and in pharmaceutical industry. Therefore, the most significant organization in the world is agriculture. It is an efficient occupation in which the freebies of nature viz - land, air, rainwater, light, temperature, etc. are co-joint into a single group quintessential for human beings. Animals which is also an important productive unit next to agriculture feast on these primary units and yield products like milk, eggs, silk, wool and meat. The aim of this project is to develop a machine to carry out the agricultural procedures with the least human effort.

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Friction factor, Load and Displacement Studies of AA6063 in forward Extrusion process with Equal Channel Angular Pressing (ECAP) Preprocess

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Abstract

Friction between the die and work piece plays a major role in metal forming process. The Effect of Friction factor, Load and Displacement were studied and analyzed in forward extrusion of AA6063. The Effect of grain size on friction factor during forward extrusion process were also studied and compared. Friction factor values vary much in high area reduction when compared with minimum area reduction . In this work AA6063 Specimens were extruded for a reduction ratio of 4:2. Specimens are also processed through Equal Channel Angular pressing (ECAP) process before extrusion and results are compared without ECAP Processing. Specimens are heated in a muffle furnace with 350°C. Friction factor between the die and work piece was calculated. Extruded specimen, microstructure was also compared with and without ECAP preprocessing.

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Keywords: Load; Friction factor; ECAP; Displacement; ANSYS.

1. Introduction

Extrusion is the process by which a block of material is reduced in cross section by forcing it to flow through a die orifice under pressure. In general extrusion is used to produce cylindrical bars or hollow tubes, but shapes of irregular cross section may be produced from the more readily extrudable metals like aluminum, lead, tin etc., because of the large forces involved, most metals are extruded under hot conditions where the deformation resistance of the metal is low. However cold extrusion is possible for many metals and has become an important commercial process.

Aluminum Alloys AA6xxx series are commonly used for automobile and engineering applications. Some examples of products include Frames, rails, mullions, heat sink (electronic devices). Moreover aluminum alloys are used for aerospace and aircraft applications because of its light weight. It is necessary to study the friction factor and deformation characteristics for determining the extrusion force and also to reduce the power required for the machine tool. Reduction of friction factor leads to the following advantages in extrusion process.

- Reduction of tool and die wear at the tool and die interface.
-Reduction of extrusion force.

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Effects of Fly Ash, Calcium Carbonate Fillers on Mechanical, Moisture Absorption Properties in Poly Vinyl Chloride Resin

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Abstract

In recent years the demand and applications of synthetic resin (PVC) has got increased manifold. This study is aimed at the enhancing the properties of PVC by adding fillers like fly ash and calcium carbonate with it. There after the synthesized composite has been tested for moisture absorption property, compression property, hardness and hygrothermal ageing. The moisture content test is conducted as per ASTM D570 standard, where the specimen under study has been heat treated and cooled in desiccators. Then the weight of the specimen is measured and thereby calculating the moisture absorption characteristic of the material. The test setup for compression a follows the ASTM D790 standards in which the load with standing property is conferred by means of UTM (Universal Testing Machine). Hardenability of specimen is evaluated (as per ASTM D2240 standards) by shore D hardness test in durometer scales . The hygrothermal test procedure is similar to that of moisture content test where the ability of the specimen to transfer heat is measured . The results from the test indicate that the PVC resin with 33.05 percent fly ash is the most suitable for practical applications.

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Keywords: Fly Ash ; ASTM Standard ; PVC resin ; Calcium Carbonate

1. Introduction

Ferry L[1] studied the hygrothermal ageing of glass fibre reinforced polyethylene terephtalene(PET) composites and found that due to interfacial debonding that induces osmotic pressure in area , there is water uptake for long ageing times. The study also showed chemical degradation step of composites occurs immediately and it follows random chain mechanism. Daniel Saida [2] conducted a study on the influence of hygrothermal ageing on damage mechanisms of flax fibre reinforced epoxy composite and found that hygrothermal ageing influenced mechanical properties and damage behavior .The tensile strength and young's modulus decreased with water absorption. Results showed that the hygrothermal ageing mainly damaged the matrix. Robert L[3] investigated on the water immersion effect on swelling and compression properties of PVC foam and balsa wood which are core materials in sandwich structures for weight critical applications. The three core materials were subjected to water immersion test in both tap water as well as sea water and their resistance to change in property were determined .The result showed that Eco-core is a good PVC foam in resisting swelling, water absorption and changes in compression. Sireerat Charuchinda [4] prepared a PVC film filled with microcrystalline cellulose from cotton fabric waste and studied their biodegradability and mechanical property. The results from tests like XRD , TC shows that the MCC has a fibrous structure with average particle size of 40 μm that is blend with PVC in amount of 5-30 parts per hundreds of resin and rolled tensile

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Review of Friction Stir Processing of Aluminium Alloys

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Abstract

An advancement to the principles of friction stir welding is the friction stir processing, a technique for modifying the surface, which involves the modification of the local microstructure by refining the microstructure and through localized plastic deformation of the specimen material. The tool that is involved in the process consists of a rotating tool which has a shoulder and pin inserted into the single piece of material. The area which needs to be examined with this process is traversed by this tool in a desired direction. When the shoulder of the tool and the workpiece comes into contact with each other, with the tool traversing at a particular travelling speed and an optimal rotational speed, friction is developed between the two surfaces. This in turn increases the heat of the material to a limit where the material undergoes plastic deformation. Hence when such an exposure occurs localized plastic deformation and the thermal property increase leads to a drastic change in the local microstructure. Various properties have been examined when the material undergoes friction stir processing which involves the production of nanograin, the surface hardness increases followed by the the fatigue strength, wear property and tensile strength of the material. This review paper focuses mainly on the change in microstructure and mechanical properties of Aluminium alloys and their composites and the effect of FSP process through the study of the current trend and the development of FSP to various parameters.

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Keywords: Friction stir processing; Microstructure; Parameters; Aluminium alloys;

1. Introduction

Friction stir processing was created to enhance the change in surface according to the welding technique in strong state. A rotating tool which is non- consumable is used. The material is softened by the rubbing action which produces adequate heat and also gives sufficient load. Due to the stirring activity, the tool pin is inserted into the material therefore delivering refined microstructure. This paper primarily focuses on the various process parameters and the tools used in the friction stir processing or friction stir welding of the various grades of aluminium alloys.

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ELEMENTAL ANALYSIS OF BRAKE PAD USING NATURAL FIBRES

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Abstract:
Brakes have been advanced in the recent years through many developments. Previously all these years brake pads were made of asbestos fiber which are very harmful in many ways. When vehicles apply brake, the asbestos gets wear down and releases asbestos dust into the ambience and surrounding. This asbestos dust also gets entrapped inside the brake housing which is also a vital problem to be considered. Hence when there is requirement to open the brake housing, the asbestos dust is released into the air and the workers may accidentally inhale it without consciousness. It also posed a risk during manufacturing in industries as the workers are exposed to asbestos risk when they knowingly or unknowingly come into contact with asbestos. Thus a new development is introduced with certain natural fibers such as jute, KENAF and aloe vera along with additives such as epoxy resin and hardener. All these fibers are used to make brake pad material which posses certain properties and the results of various analysis done have been obtained to make a good use for manufacturing brake pads in the upcoming future.

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Keywords: Brake Pad, Asbestos Fiber, Asbestos Dust, Asbestos Risk, Natural Fibers, Additives

1. Introduction

1.1 Composite Materials

A composite is formed by the combination of two materials. One material is in the form of particles, fibers or sheets called the reinforcing phase and the other is called the matrix phase onto which the reinforced phase is embedded. All these combinations of the matrix phase and the reinforced phase can be made into a polymer, metal or ceramic. Generally fibers are the main load carrying members in the composites which have a particle phase which is more stiffer and stronger in relation to continuous matrix phase.

The fiber composites are classified to their types accordingly as natural fibers and synthetic fibers. The natural fibers are considered for many applications due to their features of bio- degradability, cheap, renewable and partial recyclability. The natural fibers are used as an alternative to glass, manmade fibers due to their well defined properties and are more environmental friendly where they are used for many application such as building industries, transportation etc. They are usually obtained from various mineral sources, animals as well as plants. They have been used in the automotive industry to make the parts more environment sustainable.

Synthetic fibers are another form of fibers which is an improved result of the plant fibers as well as the animal fibers. These came into existence when fibers were manufactured using polymers and plastics formed into threads through various methods. The matrix material is classified for the composites into three types namely metal matrix composites(MMC), Cermaic matric composites (CMC) and Polymer matrix composites(PMC). The metal matrix composites have properties and featuressuch as higher strength, stiffness and fracture toughness. They can also be able to withstand high temperatures better than polymer composites in a corrosive environment. These are primarily used in aircraft application and the most commonly used type of matrix metals are aluminium, magnesium and titanium. Ceramic fibers on the other hand offer greater toughness and stiffness than metal matrix composites. The polymer matrix composites have lesser strength and stiffness in comparison to ceramics and metals. But these can be overridden through reinforcing the polymers with other metals. The manufacturing of polymer matrix composites are simpler when compared to others.

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Optimization of Process Parameters in TIG Welded Joints of AISI 304L -Austenitic Stainless Steel using Taguchi's Experimental Design Method

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Abstract

Tungsten inert gas (TIG) welding is a fusion welding process having side range of applications in current industry. The TIG welding process parameters plays a very significant role in estimating the quality of a welded joint. So appropriate selection of welding process parameters is very much necessary to attain weld joint with increased tensile strength value. In the work, experiments were carried out on Austenitic Stainless Steel (AISI 304L) using Tungsten inert gas (TIG) welding process. In this study Butt welded joints have been made by using three levels of current, gas flow rate and nozzle to work piece distance. The quality of the weld has been estimated in terms of ultimate tensile strength of the welded specimens L9 orthogonal array of Taguchi`s experimental design method was utilized for optimization of welding current, gas flow rate and nozzle to work piece distance on welded joints.

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Keywords: AISI 304L Austenitic stainless steel , Tungsten inert gas (TIG) welding , Taguchi`s experimental design method , ANOVA.

1. Introduction

1.1. AISI 304L Austenitic stainless steel

Austenitic stainless steels have been invented in the beginning of the 20th century. They were been developed in Germany, who now characterize more than 3/4 of the total production of Stainless Steel in world. These austenitic stainless steels are widely used in almost all types of important in industries. Stainless Steel are used in typical areas such as piping systems, heat exchangers, tanks and process/Pressure vessels for the food, chemical, pharmaceutical, pulp and paper and other process industries [1,2] . The most important characteristics of AISI 304L corrosion resistance, good weldability, formability, toughness, ductility and strength, which is an austenitic Chromium-Nickel stainless steel. The process of TIG welding (also called the gas tungsten arc welding (GTAW)) being used in austenitic stainless steel is one of the most important area where an extensive number of researches have been carried out, in order to control the process of welding in a precise manner to improve the acceptance and quality of weld in an efficient way.

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Mechanical behaviour of Natural and Glass fiber reinforced with polymer matrix composite

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Abstract

Natural fibres are renewable resources in many developing countries of the world. The interests in natural fibre-reinforced composite materials are rapidly growing due to their industrial applications and fundamental research. Such composites are termed as green Composites, by using sisal. Banana, bamboo, coir, pineapple leaf fibre, etc. Research revealed that the behavior of hybrid composites appears to be simply a weighted sum of the individual components in which there is a more favorable balance between the advantages and disadvantages inherent in any composite material. It is generally accepted that the properties of hybrid composite are controlled by factors such as nature of matrix; nature, length and relative composition of the reinforcements; fibre–matrix interface; and hybrid design.

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Keywords - Composite Materials, Natural Fiber, Glass fibre, Orientations, Mechanical properties, ASTM Standards.

1.Introduction

Generally fibre reinforced plastics are classified as glass fibre reinforced and carbon fibre reinforced plastics. When it comes to matrix, the composite materials are further classified as, Long fibre thermoplastics and Short fibre thermoplastics. There are certain high performance polymers known as shape memory polymer composites. These types of composites exhibit different characteristics based on temperature fluctuations. At low temperatures they show good stiffness and hardness where as when treated at higher temperatures they show a special property of regaining its shape before treatment. The different types of natural fibers are shown in fig 1. Vijaya Ramnath et al fabricated Abaca-Jute fiber reinforced Epoxy composites and evaluated its mechanical properties. The fabricated was done by hand layup technique. The percentage elongation of the individual fiber during the tensile testing is low when compared to that of the hybrid fiber indicating that the hybrid composite withstands more strain before failure in tensile testing than the individual fiber composite. The Abaca fiber and Jute fiber having the superior mechanical properties and it can be used in the future to get excellent results[1].

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ICAMMAS17

Experimental evaluation on Mechanical Properties of Natural Fiber Polymer Composites with Human Hair

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Abstract

In this experimental work, Bamboo fiber, Sisal fiber, Hemp fiber and is used as the reinforcing material in the composite and Epoxy resin with a suitable hardener is used as the matrix. The composite material is fabricated by hand layup technique. The fabricated composite material is tested for its mechanical properties such as Tensile Strength, Flexural Strength and Impact Strength. The composite specimens for the above mentioned test are prepared as per the ASTM standards.

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Keywords - Composite Materials, Natural Fiber, hair (men and women), Mechanical properties, ASTM Standards.

1. Introduction

The composite materials are used in widespread application in defense industries, automobile industries, aerospace and marine. Since composite materials are having low fabrication cost, good mechanical properties been researches on the use of natural fibres as reinforcements in composites for various applications over the conventional materials. The majority of the research has been directed towards sisal, jute, hemp and pineapple. Composite is a sum of matrix and reinforcement matrix, is a thermo set property and includes vinyl ester, epoxy and polyester. It is an eco-friendly fibers as bio-degradability, economical, easy processing makes natural fiber a popular reinforcing material among the researchers as well as engineers working in the field of composites.

COMPOSITE = MATRIX + REINFORCEMENT

Those advanced composites are used in many industries like aerospace, automotive, energy, important sports/recreation and just about everywhere low weight and other special properties are needed. They are rapidly becoming a way of achieving high structural performance at a low cost. They are found in most of the cars we drive, in all busses and trains, boats, and recreation and sports equipment such as skis or canoes we use on the weekends. As the natural fiber is easily available and having greater mechanical properties more research work are going on it. The polymer fiber composite has better properties than the other composite material it is widely used in large number of applications.

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ICAMMAS17

Review of Friction Stir Processing of Magnesium Alloys

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Abstract

The paper is entitled to see the factors affecting the magnesium alloy during friction stir processing(FSP).The factors included in this are affect of tool material, tool rotational speed, tool profiles effect on material during Submerged friction stir processing(SFSP),design of tool. The factors such as tool material, rotational speed and design of tool have been carried out with different materials, different speeds and different design

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Keywords: Friction stir processing; Microstructure; Parameters; Magnesium alloys;

1. Introduction

Friction stir processing is the process of carrying out intense plastic deformation for changing the properties of the material. By other means changing the confined characteristics of the material. It can be performed on various metals and metal matrix composites. FSP is preferred because the fine grain structure can be achieved without changing the thickness of the sheet[1].The FSP process consist of non consumable rotating tool with shoulder and pin in order to provide a plasticised region. Some of the materials on FSP are carried out are Aluminium, Magnesium it's related alloys etc. Magnesium Alloys are preferred in this review. Preference of magnesium is due to their light weight material, they are fancied in auto industries because they minimize fuel consumption and enrich the performance of the automobile. FSP removes welding defects such as cracks, porosity, evaporative loss are eliminated. Solidification problems are eliminated [2].No fillers material is used so problems related to metallurgy are eliminated. Weld quality depends on the shoulder pin design. Geometrical configuration of the tool is major link in process development [3].The plasticised material is obstructed from the weld region by the shoulder. FSP is highly energy saving and promotes green environment [4]. Preparation of fine grain material can be done by combining FSP with rapid cooling. It can be achieved by joining Al 6061 in submerged condition.FSP is a intense plastic thermo mechanical process[5].Grain refinement helps to boost the strength and ductility of magnesium alloys [6].

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Study of Damage Mechanism on OMT Nanoclay Polymer Hybrid Sandwich Laminates

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Abstract

In this paper, the effect of modified (OMt) nanoclay polyester resin on low velocity impact damage area and damage tolerance capability of untreated woven jute and glass fabric hybrid sandwich laminates have been investigated experimentally. The Hybrid Sandwich Laminates are prepared by hand lay-up manufacturing technique (HL) for investigation with a total of 10 layers. For comparison of the composite with hybrid composite, jute fiber reinforced composite laminate is also fabricated. Low velocity impact and Compression After Impact (CAI) tests are carried out on all the fabricated laminates to evaluate damage area and damage tolerance capability respectively. X-ray Diffraction (XRD) results have been obtained from the samples, where the nanoclay has indicated that intergallery spacing of the layered clay increases with matrix. The results of the study show that the damage tolerance capability of the nano polyester hybrid sandwich has been greatly increased and the damage area is decreased at 4% of nanoclay loading.

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Keywords: Nanocomposites**;** sandwich composite**;** Damage tolerance;

1. Introduction

In recent years, there has been a keen interest in hybridization of natural fibers with synthetic fibers as reinforcement in composite materials. These hybrid composite materials provide high specific stiffness, strength and lightweight which make them as an attractive material for secondary load bearing applications [1]. The properties of composites are significantly related to the properties of composite constituents, i.e., fiber, matrix and the interphase between fibre &matrix [2]. The utilization of nanoclay as fillers in polymer composites has attracted considerable attention of researchers due to the improved static, dynamic, thermal, flame retardant and gas barrier properties of the resulting composites. Since natural fibres offer significant cost advantages and benefits associated with processing when compared to the synthetic fibres such as glass, nylon, carbon, etc, during the last few years, a series of work has been done to replace the conventional synthetic fibre with natural fibre composites [3,4]. It has been already proved that, the hybridation of glass fiber with jute fiber in polymer matrix leads to an enhancement in the static properties of resulting jute–glass hybrid composites [5]. Sabeel Ahmed et al [6] have explored the effects of hybridization of glass fiber on low velocity impact behavior and also the damage tolerance capability of woven jute fabric composite.

The results of the study indicate that, the jute laminates have better impact energy along with absorption capacity than the jute–glass hybrid laminates; however their damage tolerance capability is less than jute–glass hybrid laminates. Incorporation of nano particles (clays, carbon nanotubes, etc.) in the matrix system for fiber reinforced composites has been recently studied by several groups [7,8] to improve the static and the dynamic properties.

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ICAMMAS17

Enhancement of Heat Transfer in Double Pipe Heat Exchanger

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Abstract:
The point of this present work is to improve warm execution attributes in a warmth exchanger tube by contemplating: (i) curved tapes in various courses of action; (ii) Cu-nanoparticles with various fixations as the working liquid. The tube embedded the turned tapes indicated prevalent warm execution consider when contrasted with plain tube due with persistent different whirling stream and multi-longitudinal vortices stream along the test tube. The higher number of curved tape embeds prompted an upgrade of warm execution that come about because of expanding contact surface territory, living arrangement time, whirl power and liquid blending with multi-longitudinal vortices stream. Additionally, game plan of contorted tapes in counter current was unrivaled vitality sparing gadgets for the commonsense utilize, especially at low Reynolds number. This was particularly the case for fourfold counter tapes in the cross bearings where warm exchange upgrade with generally low contact misfortune punishment was merited. . Utilizing water with Cu-nanoparticle as a working liquid yielded a higher warm execution than utilizing unadulterated water. It is watched that the most elevated general warmth exchange coefficient is accomplished by Cu nanofluids, which is 1705.686 W/m2K in 3% nanoparticle fixation at 5000 and 4000 Reynolds number for coolant and air individually contrasted with 992.649 W/m2K for the basefluid.

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Keywords: thermal performance, twisted tapes, Cu-nanoparticles, Reynolds number, base fluid.

Introduction

A warmth exchanger is a gadget used to exchange warm between a strong protest and a liquid, or between at least two liquids. The liquids might be isolated by a strong divider to counteract blending or they might be in direct contact. They are generally utilized as a part of space warming, refrigeration, ventilating, control stations, compound plants, petrochemical plants, oil refineries, petroleum gas handling, and sewage treatment.
The exemplary case of a warmth exchanger is found in an interior burning motor in which a circling liquid known as motor coolant moves through radiator loops and wind currents past the curls, which cools the coolant and warms the approaching air. Another illustration is the warmth sink, which is a latent warmth exchanger that exchanges the warmth produced by an electronic or a mechanical gadget to a liquid medium, frequently air or a fluid coolant.

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ICAMMAS17

Mechanical Characterization of Natural Fiber Polymer Composites

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Abstract

In this experimental work, Bamboo fiber, Sisal fiber, Hemp fiber and Sugar tree fiber is used as the reinforcing material in the composite and Epoxy resin with a suitable resin is used as the matrix. The composite material is fabricated by hand layup technique. The fabricated composite material is tested for its mechanical properties such as Tensile Strength, Flexural Strength and Impact Strength. The composite specimens for the above mentioned test are prepared as per the ASTM standards.

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Keywords - Composite Materials, Natural Fiber, Bamboo fiber, Sisal fiber, Hemp fiber, Sugar tree fiber, Mechanical properties, ASTM Standards.

1. Introduction

Composite materials are materials in which two or more different materials are combined together. Composite is defined as the sum of matrix and reinforcement matrix, is a thermo set property and includes vinyl ester, epoxy and polyester. Reinforcement is the fiber like glass, aramid, carbon and graphite. Aerospace industry and Automobile Industry are the major users of composite materials. This is due to the fact that composite materials are light in weight and also possess mechanical properties which are in par with the properties of the conventionally used materials. Many researchers have begun to show interest in the field of natural fiber composite. Features such as bio-degradability, economical, easy processing makes natural fiber a popular reinforcing material among the researchers as well as engineers working in the field of composites.

Though there are several merits in favor of natural fibers, an equal amount of limitation do exist. These limitations should be overcome to explore the full potential of natural fiber composite. At first proper fiber surface treatment should be developed and implemented at industrial scale. Secondly, the use of mats should be investigated and the hybridization of mats with different textile further improved by analyzing the effects of different layup and manufacturing techniques. Finally, the use of advanced textile based on twisted yarn should be developed further by optimizing the yarn manufacturing and realizing 3D architectures which are still missing from the market. In comparison with the mechanical properties of Jute-Epoxy composite and Jute-Polyester composites

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Experimental Analysis of Vapour Absorption Generator integrated with Thermal Energy Storage system

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Abstract:
A vapour absorption Air-conditioning system can run replacing the compressor by a pump, absorber and a generator. The generator can be operated by the low thermal energy like solar, exhaust heat of IC engines etc. But all the period this heat energy will not be available. In this present research the generator part alone considered for experiment. A new model of generator heater is designed and fabricated. The heat transfer capacity and the thermal energy charging and discharging were calculated for analysis. The suitable capacity of generator is integrated with Phase change material is designed to operate a vapour absorption system in the capacity of 3.5 KW. The generator design is modified for Phase change material containment. The average temperature of the heat energy available will be around 60°C to 80°C. In this temperature range suitable Phase change material is selected for thermal energy storage tank. The experiment is conducted on this storage tank for thermal energy charging and discharging by varying the material composition.

Keywords: Generator, Charging and Discharging, Storage tank, Phase Change Materials,etc

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Introduction

Day by day the demand in power consumption, we all are responsible to find the alternate source of power. The one of the major power consumption is refrigeration and air conditioning. In order to reduce the power consumption on refrigeration and air conditioning, one of the best choices is vapour absorption refrigeration system. To run the vapour absorption system the generator maximum input temperature has to be 70° C to 90° C, it depends upon the capacity and stages of generator. The sources of thermal energy available are waste heat recovery systems like IC engine exhaust, low thermal energy like solar system etc. even though the coefficient of performance is low compared to vapour compressor system; the power consumption is very less to all [1].

The only disadvantage is the waste heat thermal energy we are depending is the intermittent type of energy. We cannot achieve it by continuously. To rectify this problem the phase change materials can be added as latent heat thermal energy storage system. If the generator and the latent heat thermal energy storage tank are connected separately means, the design will be too complicated [2]. So a suitable design of generator integrated with latent heat storage system is designed.The experiment will be conducted for the generator setup.

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Structural Optimization of an Five Degrees of Freedom (T-3R-T) Robot Manipultor Using Finite Element Analysis

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Abstract

5-DOF (Five degrees of freedom) palletizing robot is widely used in India, which is playing a more and more important role in all manufacturing and automation industry. The important selection parameter of five degrees of freedom robot arm for welding application includes Reach, strength, stiffness, robot weight, which mainly depends on the structural optimization design of desired robot. So it is of importance to study on the structural optimization design by means of conventional finite element analysis (FEA) using ANSYS. In this paper, the framework of structural optimization design is proposed. Secondly, taking welding robot as research object, its structure is described and the finite element (FE) model of the robot is developed for the finite element analysis. The results show that structural optimization design can reduce the total mass of robot manipulator by using the finite element analysis.

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Keywords: Topology optimization, FEA , Design procedures of robot arm, Static analysis, T-3R-T configuration.

1. Introduction

Industrial robots are the most widely manufactured and utilized type of robots, whose design process if improved would lead to a further development in robotic industries as well as other industries were robots are been used would be benefited. And hence, Efforts are been put to develop a design proving the effectiveness and reliability, for which studies of various field is required. The design of a robot should be in such a way that the robot framework made should be simulated to ensure the performance of the robot with the help of various tools that are been available in the Engineering software, which are been used for dynamic simulation, optimization control, structural analysis [1,2].

The main goal of this work is to investigate the static stability of the robot arm with modified topology design of robot arm from different material usage, with a view to obtain an optimized as well as a better robot design. The time consumption for the process of design can also be optimized by using Meta modelling. In this method the finite element analysis with the tools have proved to be a good work with the optimization of the design process. A holistic framework for design of robots with several degrees of freedom is introduced at the end.

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Playing Games in Computers without Physical Interaction Using Electroencephalography for Differently abled

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Abstract. Mind Controlled gaming for the Differently Abled aims to open up the arena of gaming entertainment to those that has special needs. The project is modelled in such a way that it facilitates playing games without the need for physical interaction with the game itself such as operating a keyboard. The project uses the capability of the human brain to facilitate this kind of physical interaction less gaming. It uses the principle of Electroencephalography, an electrophysiological observing technique to record electrical movement of the brain. We utilize noninvasive situation of electrodes along the scalp. EEG estimates voltage variances coming about because of ionic current inside the neurons of the brain which are then mapped to certain activities that can be performed within the games.

INTRODUCTION

Electroencephalography is a method for recording and deciphering the electrical action of the brain [1]. The nerve cells of the brain create electrical motivations that vary musically in particular examples. In 1929 German researcher Hans Berger published the results of the first study to employ an electroencephalograph, an instrument that measures and records these brain-wave designs. The account created by such an instrument is called an electroencephalogram, generally abridged EEG.

To record the electrical action of the brain, 8 to 16 sets of electrodes are connected to the scalp. Each match of electrodes transmits signals to one of a few account channels of the electroencephalograph. This signals consists of the distinction in the voltage between the match. The cadenced change of this potential contrast is appeared as pinnacles and troughs on a line graph by the account channel.

The EEG of a typical grown-up in a completely cognizant however loosened up state is comprised of normally repeating wavering waves known as alpha waves. At the point when an individual is energized or startled, the alpha waves are supplanted by low-voltage quick unpredictable waves. Amid rest, the brain waves turn out to be amazingly moderate. Such is likewise the situation when an individual is in profound extreme lethargies. Other strange conditions are related with specific EEG designs. For examples, unpredictable moderate waves known as delta waves emerge from the region of a limited territory of brain damage.

Electroencephalography gives a methods for concentrate how the brain functions and of following associations between one a player in the focal sensory system and another [1]. In any case, its viability as an exploration instrument is restricted, in light of the fact that it records just a little example of electrical movement from the outside of the brain. A considerable lot of the more perplexing functions of the brain, for example, those that underlie feelings and thought, can't be connected near EEG patterns. Moreover, the EEG is of no utilization in diagnosing mental sickness. Electroencephalography has demonstrated increasingly helpful as an indicative guide in instances of genuine head injuries, brain tumors, cerebral infections, sleep disorders, epilepsy, and various degenerative diseases of the sensory system.

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Predicting the Severity of Blood Vessel Tissue Damage in Retinal Images Using Support Vector Machine Classifier

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Abstract. In recent years many of the people are suffering from diabetics which may result damaging the human eye sights by damaging the blood vessels of the retinal by form exudates around the optic disc. In this paper, we intend to build retinal exudates from fundus image to predict the severity of diabetics resulting in blood vessels tissue damages. In order to analysis the blood vessels damage and diabetic severity initially we use appropriate image pre-processing techniques to remove any noise from the retinal funds image, to remove the noise in this paper we use wavelet transform and first order Gaussian derivative and matched filter to segment the fundus image by rotating the original image by certain angle. The filtered data is stored in the matched filter bank, then by applying k-NN clustering technique to identify minimum value in each filter bank and marking such minimum value center of k- nearest neighbor value. Further, Support vector machine a supervised learning algorithm is applied to the identified k-nearest neighbor values thereby predicting the severity of blood vessel tissue damage from the fundus image.

INTRODUCTION

With the recent advancement in the technology there are many computer aided diagnosis systems are available to analysis the diabetic retinopathy one such diagnosis system is the Computer-aided diagnosis (CADx) used to analysis the retinal fundus image. Such system is used by ophthalmologists to identify various retinal diseases caused by increase in sugar level in the body such as diabetics. The ophthalmologist can analysis the fundus image by extracting blood vessels, the optic disc, and macula. Fig .1 shows the retinal fundus image showing various diseases such as diabetic retinopathy, glaucoma, micro aneurysms and hypertension. Such disease may cause blind vision if unnoticed.

Generally, non-invasive tool is used by ophthalmologist to analysis the retinal fundus imaging to analysis various diabetic retinopathy diseases as shown in Fig. 1. In order to analysis the diseases proper image pre-processing technique must be applied to the retinal fundus image to extract the curved blood vessels so as to identity the any exudates are projected near the retinal fundus image. Such pre-processing may involve various filtering techniques such as median, mean and Gaussian filters. Further, the extract of blood vessels is analyzed based on the curves of the blood vessels and its histogram values.

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Smart Scrutinizing System to Detect Trespassers and Alarm Ascendancy

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Abstract

Nowadays, where everyone needs to protect their valuables safe and secure, bank is the place that indicates higher security level for common people. So the locker room in the banking industry needs to be monitored continuously. Thus our smart scrutinizing system is specially designed to detect the illicit entrance of the intruders in the locker room of the bank that mostly happens during robberies. The major drawback of present system is that the CCTV cameras in the bank locker room are needed to be continuously monitored by a human being to find the illicit intruder which is a very difficult task. The video that are recorded using the webcam which consumes large amount of storage space and are also used only as the evidence to find the robbers after the robberies, though it cannot prevent thievery. To trounce this problem, we have come up with a new idea of smart scrutinizing system. Our system is mainly builded to ensure safety of the bank locker rooms in an better way by recognizing and monitoring illicit action in the bank locker room. In our system, webcam can continuously capture a frames for references instead of taking videos. It captures the frame and compares it with foreground frames using absolute differential method .As soon as any motion was found, system can instinctively activate the alarm to notify the alert the bank authorities. The system will communicate the image data continuously to the Data Processing Officers (DPO) and it send the alert short message service (SMS) to the user using Firebase Cloud Messaging(FSM) technique. So the user will feel more delighted and secure and be able to respond earlier when illicit entry is detected in locker room of the Banking Sectors. Using this system, user is able to recognize and capture the intruder red-handed.

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Keywords: *Cauchy Distributive Function, Absolute Differential Method, Firebase Cloud Messaging.*

I. INTRODUCTION

In day to day life, bank refers to the place which requires a high level of security and we do banking transactions daily nowadays. For example, to secure jewellery, documents or cash, we use bank locker rooms, which has become an important part in our day to day life. So these banking sectors should provide high level of security. As we know that variety of branches are opened daily and they need high security. So there required a more number of camera surveillance system. At present we would have seen that all the branches are under the control of CCTV cameras, alarm, emergency buttons, etc., In this CCTV cameras are used to observe any unauthorized activity. In general it has to be monitored by the person continuously which is a very difficult task, mainly in nights. The alarm or emergency button needs to be pressed personally, which requires a lot of man power. The main drawback is manual monitoring, storage required is more and high consumption of power. To address all these problems, we arise with an automated smart surveillance system. The main goal of our system is to monitor the intruders mainly in more secured place. The intruders are detected using the method Cauchy Distribution and Absolute Differential Estimation. The incoming video frame is compared with the foreground frame using Absolute Differential Estimation to identify whether any

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A HYBRID INTRUSION DETECTION SYSTEM FOR MOBILE ADHOC NETWORKS USING FBID PROTOCOL

D. RAJALAKSHMI *AND K. MEENA †

Abstract. A Security in a mobile ad hoc networks is more vulnerable and susceptible to the environment, because in this network no centralized environment for monitoring individual nodes activity during communication. The intruders are hacked the networks either locally and globally. Now a day's mobile ad hoc network is an emerging area of research due to its unique characteristics. It's more vulnerable to detect malicious activities, and error prone in nature due to their dynamic topology configuration. Based on their difficulties of intrusion detection system, in this paper proposed a novel approach for mobile ad hoc network is Fuzzy Based Intrusion Detection (FBID) protocol, to identify, analyze and detect a malicious node in different circumstances. This protocol it improves the efficiency of the system and does not degrade the system performance in real time. This FBID system is more efficient and the performance is compared with AODV, Fuzzy Cognitive Mapping with the following performance metrics: Throughput, Packet Delivery Ratio, Packets Dropped, Routing overhead, Propagation delay and shortest path for delivering packets from one node to another node. The System is robust. It produces the crisp output to the benefit of end users. It provides an integrated solution capable of detecting the majority of security attacks occurring in MANETs.

Key words: Security, Intrusion detection, AODV, MANET, Fuzzy, Cognitive Map

AMS subject classifications. 68M15

1. Introduction.

A Mobile adhoc network is a complex wireless network, it consist of collection of mobile nodes, which forms a spontaneous network without the physical infrastructure, it allows individual, group of members and organizational members work together and communicate without the stable infrastructure [1]. Limitation of mobile adhoc networks are bandwidth and energy consumption.

A mobile adhoc network is shown in cf. Fig.1.1. It's an infrastructure less network because the mobile nodes in the network dynamically change the paths with other nodes and transmit the data packets provisionally. In a MANET, nodes within the region or specified boundary means, it communicates with other nodes directly, otherwise it needs to rely on some other nodes to relay the messages from source to destination. The major security goals that need to be addressed in order to maintain a reliable and secure ad-hoc network environment. There are confidentiality, availability, non-repudiation, authentication and integrity. The security attacks in MANET can be roughly classified in two types: 1) Active Attacks and 2) Passive Attacks.

Hosts may misbehave or try to compromise security at all layers of the protocol stack. In Transport layer to provide secure end-to-end communication [2]. For that need to know keys to be used for secure communication, then it anonymity the communication. In Network layer, the misbehaving hosts may create the hazards; in terms of it disrupt the route discovery and maintenance. Due to that hazard, Delay, drop, corrupt and misroute the packets. It degrades the networking performance. In MAC layer, the misbehaving nodes may not cooperate to each other. Because disobey the protocol specifications for selfish gains.

Mobile Ad hoc networks are collections of mobile nodes that may enter and leave the network dynamically. No centralized controller and infrastructure. A major issue in Mobile ad-hoc network is security. This also aims of the work in MANET. To detection of malicious nodes forms a very essential one of the part an approach to security [3]. The main objective of this work is to detect the intrusions through Fuzzy logic that prevents the network from denying the active session or extract the confidential information that is being shared. The

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Comparative Analysis of Mechanical Properties in Aluminium Based Metal Matrix Composite

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Abstract

Composites are focused on introducing a product made up of lightweight material which could replace conventional ferrous and non-ferrous alloys. Aluminium is one of the most commonly used metals for the production of metal matrix composites. Aluminium-based metal matrix composites are sought over other matrix-based composites in the field of aerospace, automotive and marine application due to its valuable mechanical properties. The usage of Aluminium lowers the density, coefficient of thermal expansion, Improves the corrosion and wear resistance as compared to the conventional counterparts. Al-Zr system is used to form a thermally stable strengthening phase in high-temperature aluminium-based casting alloys. These alloys have good strength at elevated temperatures. Zirconium strengthens the alloy by a precipitation hardening mechanism and chromium further enhances the strength of the alloy. Different specimens are fabricated with varying the composition of Zirconium to achieve optimum performance of the alloy for the required application. A comparison of properties between the different alloys is performed by various testing methods and analysing the results with mathematical values of the standard component.

Keywords; *Metal matrix composites, thermal expansion, Al-Zr, precipitation hardening.*

I. INTRODUCTION

A composite is made up of two or more different materials which are unique in physically and as well as chemically. The formed composite will have superior physical and chemical properties when compared to that of the parent component. As a solution to modern material requirements composites are more preferred over traditional monolithic components. There are many ways to form a composite, the individual constituent's materials combine to form a composite. The matrix materials are the base materials, the reinforcement are the materials which lie between the matrix materials. The matrix so formed is termed as Metal Matrix Composites. The metal matrix composites are preferred for performing research and new products are developed throughout the globe which has a diversified area of application. The composite so formed will have high strength, energy absorbing capacity, and good wear resistance compared to reinforced alloys. The recent trends in MMCs is the particle reinforced type of composites The composite where aluminium is used as the matrix material and reinforces with other suitable materials for enhancing the property of aluminium. Aluminium is preferred for its properties like availability, low cost, castability and its property to combine with other materials to form a composite. Aluminium based MMCs which are reinforced with particulate matter have superior properties than

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Detection of flood disaster system based on IoT, big data and convolutional deep neural network

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Abstract

Natural disasters could be defined as a blend of natural risks and vulnerabilities. Each year, natural as well as human-instigated disasters, bring about infrastructural damages, distresses, revenue losses, injuries in addition to huge death roll. Researchers around the globe are trying to find a unique solution to gather, store and analyse Big Data (BD) in order to predict results related to flood based prediction system. This paper has proposed the ideas and methods for the detection of flood disaster based on IoT, BD, and convolutional deep neural network (CDNN) to overcome such difficulties. First, the input data is taken from the flood BD. Next, the repeated data are reduced by using HDFS map-reduce (). After removal of

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Classification of Gene Expression Data with Optimized Feature Selection

T.Ragunthar, S.Selvakumar

Abstract*—There are different types of fatal diseases that could possibly outspread to various parts of the body. It thus becomes obligatory to predict the existence of such anomalies, in order to prune the extent of their spread. Examining the characteristics of genes provides a deep intuition about the disease classification, as they play a vital role in influencing how an organism appears, behaves and survives in an environment. The detection of the abnormal genes could be efficiently modelled using statistical methods and machine learning approaches. Gene expression data derived from a microarray could act as an aid for this statistical computation. Microarray being a recent leap in molecular biology, provides a scope for hybridization of DNA samples that can be interpreted as values based on the gene expression level that the genome possesses. We propose an idea to select a subset of features from the huge number of samples retrieved from the gene expression profiles using Boruta feature selection algorithm. A comparative study with various supervised classification algorithms is made to categorize this subset to a normal and deviant gene. This serves to discover the most appropriate algorithm to classify the gene expression data. Hence assorting the abnormal genes in future could be accelerated with ease.

KEYWORDS- Boruta algorithm, DNA samples, Feature selection, Gene expression data, Kernel, Machine learning, Microarray, Random forest, SVM.

I. INTRODUCTION

A. Gene Expression Data And Microarray Technology

Diseases are caused because of division of cells or uncontrolled growth due to cellular changes. In order to form new cells usually cells receive information to die. On the other hand, the cancer cells would lack the component which would instruct them to stop dividing and instead die. As a result, they can form tumors, impairing the immune system. Genetic factors can contribute to various deadly diseases, as it is a person's genetic code that instructs if a cell has to divide or expire. Every cell in our body consists of same no. of genes as well as similar type of genes.

It is the gene expression of each cell that distinguishes between normal and affected cells. Based on the environment, the gene expression varies. To check the gene expression the two-phenomenon involved are i) Produce microarray ii) Measure transcriptome. There are many technologies such as microarray, illumine bead array, nylon membrane, serial analysis of gene expression (SAGE), high-densities oligonucleotide arrays etc. used to express the level of genes.

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The varying gene expression can be efficiently analyzed using microarray where all the genes of a particular organism are placed in different grooves on a slide. Microarrays are group of DNA spots on a solid surface, like glass or silicon in which hybridization of DNA samples can be made ordered arrangement of samples done using base pairing rules wherein matching familiar and unfamiliar DNA samples is followed, forms the microarray. Each microarray consists of thousands of pores known as probes. The two key terms for microarray synthesis are the blocking agent and the mask. The blocking agent prevents the binding of a nucleotide with some other nucleotide. This blocking agent can be removed using a laser. Masking leaves behind gapes in the microarray spots while the rest of places are masked and never be bind. On observing the colour of each probes in microarray using analyzer, the attributes of gene expression data are determined. Biological interpretation of gene expression data can be made using heatmaps. The heatmap can be combined with clustering techniques for grouping similar genes. Identifying similarly regulated genes can thus become easier.

B. Classification Of Genome Profiles Using Statistical Methods

The gene expression data usually has got very high dimensionality due to which biologists find it difficult to handle them [1]. Hence classification of such microarray data can be cumbersome. Also, there might be noisy data present in the gene expression dataset along with some irrelevant features. Statistical approaches could be an optimal solution to this problem[2]. In recent years, there have many statistical approaches with various level of complexity to analyze genotype data and detect variations in gene. In order to avoid the manual computation difficulties and errors that are likely to occur in such huge datasets it is advisable to automate the statistical computation. Such an approach can be obtained with the help of machine learning. This method would make the system learn through experience and later make the predictions based on the learning.

Machine learning is mainly classified into three algorithms namely supervised, reinforcement and unsupervised learning. Supervised learning is helpful in predicting the target resultant variable based on the input independent variables. Unsupervised learning does not have such target variable instead they form clusters to group similar data together. Past experience is used to predict the future based on trial and error approach in reinforcement learning. Firstly, before handling the gene expression dataset for classification or clustering it is mandatory to reduce the dimensionality. There might be many irrelevant attributes present in the dataset along with noise and disturbances. Thus, pre-processing becomes mandatory.

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An optimization algorithm-based resource allocation for cooperative cognitive radio networks

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Abstract

In cooperative cognitive radio networks (CCRNs), resource allocation can be viewed as a multi-objective optimization issue in terms of channel capacity as well as, among numerous others, the transmitted power, and the QoS limitations. Many researchers have been undertaken to overcome individual problems, not multi-objective problems. In this paper, we investigate multi-objective problems, such as energy consumption, queuing problems, priority levels of traffic classes, fairness, throughput, and user quality requirements. We propose a hybrid optimization algorithm for CCRNs (HCCRN), which enhances the resource allocation. The first contribution of this paper is to propose the load balance enhanced particle swarm optimization algorithm for energy-efficient cluster formation, which overcomes queuing problems. In the second contribution, we consider multiple factors as the input of a multi-factor differential evolution optimization algorithm for prioritizing the traffic levels. The third contribution is that the fair routing path is computed by a modified gravitational search algorithm that enhances resource allocation throughput. For testing purpose, the proposed HCCRN algorithm applied to IEEE 802.11 WLANs. Simulation results show that the users achieve required resources via the proposed HCCRN, thus providing energy efficiency, fairness, throughput, and QoS.

Keywords Multi-objective problems · Hybrid optimization algorithm · Cooperative cognitive radio networks (CCRNs) · Modified particle swarm optimization · Multi-input differential evolution optimization algorithm · Modified gravitational search algorithm

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SPECIAL ISSUE PAPER

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An efficient scheme for secure feature location using data fusion and data mining in internet of things environment

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Summary

Feature location (FL) is performed to find the relationships between domain concepts and other software artifacts. One major problem in maintaining a software system is to understand how many functional features exist in a system and how these features are implemented. Also, poor security is the prime problem in the FL system. However, the existing recent FL techniques use a textual and dynamic approach, which is not found to be secure, keeping in view the changes in the description of security attacks. To overcome this drawback, this work proposed a novel secure approach for FL utilizing data fusion as well as data mining for the internet of things environment. Firstly, the repeated test cases (TC) are eradicated as of the labeled TC. Next, important attributes are selected using the artificial flora optimization algorithm from the removed labeled TC. Then, association rule mining is performed to ascertain closed attributes. Subsequently, encrypt the closed attributes utilizing Caesar Cipher-Rivest, Shamirs, as well as Adelman algorithm. After that, the score value of the closed attributes counts was found utilizing entropy calculation. Finally, the score value is given as input to the normalized-K-Means (N-[K-Means]) algorithm, where the score value is normalized utilizing min-max normalization and then grouped utilizing K-Means algorithm (KMA). It proffers better results for FL in the source code. The proposed N-(K-Means) performance is found better in comparison to the KMA and latent semantic indexing methods. The proposed system proffered better FL results in comparison to the other prevailing methods.

KEYWORDS

artificial flora optimization, latent semantic indexing, normalized K-means, Caesar Cipher-Rivest; Data mining, association rule mining

1 | INTRODUCTION

In software systems, a feature represents functionality that is defined by requirements. Software maintenance as well as evolution includes giving new features to programs, enhancing existing functionalities, and eradicating bugs that are analogous to eradicate unnecessary functionalities.[1] For instance, location in source code (SC), it is associated with other fields of research, like, fault localization, traceability link recovery between software artifacts, etc. The request for maintenance is commenced by the person (user) with the help of a software interface which has many features associated. All the features in the domain are utilized in line with the knowledge of the user where it is seen as an operational outcome

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A Security Model for Web-Based Fuzzy-Logic Direct Torque Control of Induction Motor Drive

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ABSTRACT

A web-based fuzzy-logic direct torque control of induction motor (IM) simulation program in a distributed client/server architecture and its implementation steps are discussed in this paper. The client program is a web page developed in java software, which accesses remotely simulated IM dynamics program by executing it in the server through the internet. The proposed IM simulation program offers a convenient remotely accessible which can work on any computer platform and simulation environment, implemented in a distributed client/server architecture, for a standalone motor simulation programs. This architecture has two major parts: graphical user interface (GUI) program in the client side and simulation engine in the server side. In the client side, the GUI program is developed in java software typically run in any computer platforms in client, allowing us to access the simulation program in the server using any browser and to send the data's to the server, and to retrieve/exhibit the outputs from the server using different sets of parameters and configurations.

KEYWORDS

Client–server systems; Graphical user interfaces; Rijndael algorithm; Security model; Simulator; Torque control

1. INTRODUCTION

The direct torque control (DTC) method offers a very fast, accurate, reliable speed control and torque responses of an induction motor (IM) drive by calculating the motor's magnetic flux and the torque by using the voltage and current sensors [1]. The DTC method operates in the stationary reference frame and acts directly on the inverter switches to produce the necessary stator voltages. Hysteresis controllers are used to constrain the electrical torque and stator flux magnitude within certain bounds. The presence of ripples is the major problem in a DTC-based motor drive in the motor-developed torque and stator flux. However, there are two key techniques to reduce the torque ripples, one is multilevel inverter and the second is the Space vector modulation. The multilevel inverter will provide more precise control of motor torque and flux though the complexity and cost of the controller increase comparably. Fuzzy logic based DTC of IM is based on the non-linear approach, an attractive choice which can accommodate the parameter variations of the induction machine. In the fuzzy logic controller, an accurate mathematical model of IM is not required as in the case of classical controllers in achieving the desired dynamic response. The simulation engine (MATLAB/SIMULINK) is in the server computer and the graphical user interface is in the client computer which sends a code to run the simulation program and to access the output from the server. The work is towards the development of a security model for sending the code between the client/server machine securely using Symmetric-key algorithms, vulnerable to plaintext attack and to avoid insecure communication between the client/server and to return the result as static data with the image tag. Figure 1 shows the web-based distributed DTC-IM dynamics simulation setup was developed in java software in the client side and MATLAB/SIMULINK for simulation in the server side.

A java applet is a java class which runs on the client's Java Virtual Machine (JVM) via a browser plug-in. A java servlet runs on the server-side in a servlet container, like apache server and the client receives the results in the form of plain HTML. To simulate IM dynamics with simulation parameters, the client sends input parameters to the web server through the internet and receive the simulation output data after finishing the simulation, to the client computer and it can be visualized graphically. For this control, the client runs a java applet and sends the data to a webserver that runs the MATLAB simulation program. In addition to this, the server computer has more sophisticated software programs as listed below:

(1) Executable FL-DTC-IM simulation program
(2) Data transfer handler
(3) Database
(4) DTC- IM dynamics model

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A Modified Static Gain
SEPIC Converter Renewable Applications

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Abstract. A high static gain venture up dc– dc converters dependent on the adjusted SEPIC Converter is introduced in this paper. The proposed topologies present low conversion voltage and high effectiveness for low info voltage and high Output voltage applications. The arrangements with attractive coupling and without attractive coupling are introduced and examined. The attractive coupling permits the expansion of the static gain keeping up a decreased switch voltage. The hypothetical examination and trial results demonstrate that the structure is reasonable for high static gain applications as an inexhaustible power sources with low dc output voltage. The test models were produced with an info voltage equivalent to 15 V and a Output control equivalent to 100 W. The effectiveness at ostensible power became with the model without attractive coupling was equivalent to 91.9% with a Output voltage of 150 V and with attractive coupling working with a Output voltage equivalent to 300 V, presents proficiency equivalent to 92.2%. In private applications, most research is centered around the module-coordinated converters where the vitality created by a single PV module. A portion of the fundamental points of interest of this PV stage structure are the measured quality, permitting a simple increment of the introduced power, the individual MPPT and decrease of the halfway shading and board confusing impacts, accordingly enhancing the vitality reaping capacity.

INTRODUCTION

Power hardware is the field of electrical building identified with the utilization of semiconductor gadgets to change over power from the shape accessible from a source to that required by a heap. The heap might be AC or DC, single-stage or three-stage, and could conceivably require segregation from the power source. The power source can be a DC source or an AC source (single-stage or three-stage with line recurrence of 50 or 60 Hz), an electric battery, a sun oriented board, an electric generator or a business control supply.DC-DC converters are electronic gadgets utilized at whatever point we need to change DC electrical power proficiently starting with one voltage level then onto the next. They are required in light of the fact that dissimilar to AC, DC can't just be ventured up or down utilizing a transformer. From numerous points of view, a DC-DC converter is what could be compared to a transformer. DC-DC converters changes over unregulated DC input voltage into directed DC Output voltage. In a DC-DC converter, a transistor or MOSFET works as an electronic switch: either totally on or totally off. Power consumed by a perfect switch ought to be zero. By and by, misfortunes will happen in a genuine change because of exchanging and conduction misfortunes. Proficiency of a DC-DC converter is very high contrasted with a direct controller. A few sorts of DC-DC converters are: buck converter, support converter, buck-help converter and single finished essential inductance (SEPIC) converter.

Another exploration incline in the private age structure is to utilize the PV parallel-associated arrangement instead of the arrangement associated design to fulfill the wellbeing prerequisites and to make full utilization of the PV produced control. The most effective method to accomplish high-advance up, ease, and high-productivity dc/dc change is the significant thought because of the low PV Output voltage with the parallel-associated structure. The confinements of the ordinary lift converters in these applications [1] .This survey centers around inverter innovations for interfacing photovoltaic (PV) modules to a solitary stage lattice. The inverters are ordered into four groupings [2] .An appropriate for air conditioning module applications. So as to analyze the most possible arrangements of the inspected topologies, a benchmark is set. This benchmark depends on a normal air conditioning module application thinking about the necessities for the sun oriented boards and the grid.[3] .An sepic single

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Design of a Simplified 7 Level Inverter

Mohd Abdul Kareem, Maheswari.E, Pavani Parachuri, Durgam Srinivas

Abstract— In this paper a multi-stage inverter new configuration to growth the quantity of tiers switching voltage the usage of less studied. The proposed inverter includes H-bridge cells in conjunction with an active rectifier and switches. Using PWM modulation technique and collective enter dc supply capacitor series. The validity of the inverter is projected completed using MATLAB software program simulation tools and additionally the applicable theoretical evaluation executed. Capacitor voltage imbalance conquer by way of presenting a modified switching method.

Keywords Multi-stage, voltage unbalance, THD.

I. INTRODUCTION

General study of a multilevel converter is to utilize the electricity semiconductor switches are connected to the low dc voltage source to compensate for the voltage waveform stair case close. High first-rate output voltage, reduced voltage stress at the switching device power and higher performance. More currently, this dc-ac kind of multilevel acquired wonderful attention from business use electric home equipment that lead look at thought inverter. Secondary converter concept is to supply the identical output voltage of sinusoidal kinds. Output voltage degree of great this is green, which defines the deformation of harmonics (THD) and coffee-voltage exchange with respective times of strain and measurement minutes from the clear out output.

H-bridge cellular, which has lots of variety of switches and freelance ++ enter dc voltage supply. In one exceeds the one in every of the solutions to scale back the amount of parts in CHB is to apply asymmetric dc voltage supply [8], [9]. After a dc voltage is scaled in 3 watts, it'll maximize the amount volt output stage. However, they'll boom the direct contemporary voltage supply is casual to come up with the output voltage stage is better. The disadvantage to finish the electrical converter tool structure using energy flows brought in [10]. It also uses a aggregate of normal volt supply to make the shape of the output voltage. Mostadvantageous action inside the future is that it simplest employs one dc voltage supply. However, the electrical device flows create huge structures as a result of the operation at very low frequencies. To alleviate these drawbacks, the exploitation of four power converter shape watt balanced deliver changed into delivered in [11]. This device is usually tailored and evolved from the CHB. In [12], packed gadget U-available cellular. However, increasetransfer losses when growing any voltage degree for passing a cutting-edge of 3 rotating switching element in an man or woman stage.Moreover, massive ripple volts produced across the capacitor, however the capacitor 5000 uF ranked. The device uses a two-way switch with a capacitor collection connected. Mathematically, they are able to produce a variety of greater than the output voltage stage of more than a hundred twenty five stages with fewer additives.However, every capacitor mutual want dc-dc converter to gain a dc voltage supply. It has the characteristics of accurate; thus, it is simple to extend the excessive voltage degree.

II. PROPOSED LEVEL SEVEN SIMPLE PWM INVERTER

Picture. 1 shows the real circuit configuration 7- Pulse Width Modulation stage converter. Having a single dc voltage source, that is divided into three capacitors connected in series. Imagine all of the additives are best. Each capacitor voltage is VDC / three. Then, we will acquire a seven-degree output voltage waveform, 2VDC / three, VDC / 3, 0, -Vdc / 3, -2Vdc / three, and -Vdc. Switch in cells H-bridge (S1 to S4) are working to determine the polarity of the out-put volt with a most voltage level, ie Vdc (or -Vdc). Other voltages evolved with the aid of S5, S6, and S7.

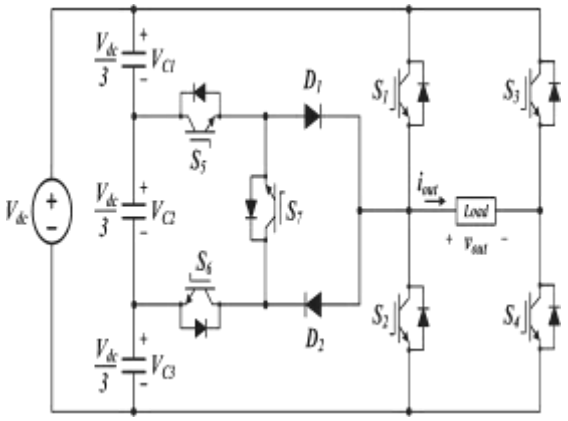

Fig. 1. Circuit configuration of the proposed seven-level PWM inverter.

A. Modes Of Operation

Level Vdc:

An electron path when the output voltage i

Vdc. 3 capacitors coupled in series give energy to the load.It discharges from S1 to *S*4. For inductive load, current direction is reversed, it is from DS1 to DS4, energises capacitor stack.

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Design of 31-level Asymmetric Inverter with Optimal Number of Switches

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Abstract— In this paper, 31-level asymmetric inverter is designed using optimal number of switches which produces higher output voltage levels with low harmonic distortion. The voltage sources used in this multilevel inverter is asymmetric in nature to generate output voltage with reduced distortion. By using six asymmetric voltage sources and 10 switches, 31-level inverter is simulated and the results of the inverter topology are studied in view of reduced harmonic components.

Keywords— Asymmetric structure, reduction in switch count, Voltage sources and Total harmonic reduction.

I. INTRODUCTION

DC-AC control transformation is famous in each part of electrical design because of the more degrees of opportunity in controlling all parameters such as voltage, current and frequency. Such DC-AC converters are having an important role in variable frequency drive systems, uninterruptible power supply, HVDC frameworks, sustainable power source (sun oriented, wind and energy component), FACTS and some more. The inverters were invented by Toshiba and Samuel Grels Barnes in 1997. Inverters are power electronic circuits which are capable of converting DC voltages to AC voltages. Inverters do not generate any power; they rather utilize the power given by DC sources. The output waveforms are generally sine wave, square wave or quasi square wave [1].

Presently, multilevel inverters are getting to be prominent in view of their various applications in high-power and high voltage applications. If there should be an occurrence of multilevel inverters, the favored yield voltage is delivered by suitable blend of a few low voltage dc sources associated at the supply side. Multilevel inverters offers various points of interest, for example, improved yield voltage, lower pressure voltage over the switches, lower electromagnetic impedance, more power handling capacity. Multilevel inverters utilize controlled semi-conductor switches in the inverter to choose at least one of various dc voltage sources to make a staircase output voltage waveform. Condenser and sustainable power sources can be utilized as the different dc voltage sources [2].

Cascaded multilevel inverters have pulled in more consideration mostly in light of straightforward structure and effectively of reaching out to more number of voltage levels. Symmetric inverter with same abundance of voltage source and asymmetric inverters with various amplitudes of dc sources are the two distinct designs of this sort. While utilizing asymmetric design, yield voltage with more advances will diminish the harmonic distortion [3].

In light of the advantages [4]-[6], MLI pulls in many research academic and industry for advancement. The recent topologies of multilevel inverters find application in grid-connected photovoltaic system, smart grid operation, high-frequency AC micro grids, enhanced drive train operation and adjustable speed drives [7] – [14].

This paper is informed with the accompanying areas; in section II the topology of 31 level MLI with its structure is explained also elaborates the switching of MLI. The simulation circuit and results are discussed in section III. Conclusion is given in section IV.

II. 31 LEVEL MULTILEVEL INVERTER

The multilevel inverter topology [15] shown in the fig.1 consists of 6 DC voltage sources and 10 power electronic switches. The voltage sources are selected as variable in nature to obtain maximum number of voltage levels at the output with minimum number of circuit components. This decreases the circuit intricacy and expense of the inverter. A framework is obtained to find the amplitude of voltage sources.

In the fig 1, Switches S_X, S_Y, T_1, T_2, T_3 and T_4 are unidirectional, where the conduction of this switches are in one direction. Switches S_1, S_2, S_3 and S_4 are bidirectional where the conduction of this switches are in both the direction.

The selection of variable DC sources plays a vital role. Lower values of variable DC voltage sources are used in designing the circuit.

A. Design Aspects

A framework is given to define the value for V_{dx} (x = 1 to 6) and obtained as follows,

$$V_{d1} = V_{dc} \quad (1)$$

The voltage sources V_{d2} and V_{d3} selected same as V_{d1} ie.,

$$V_{d1} = V_{d2} = V_{d3} = V_{\mathrm{dc}} \quad (2)$$

The voltage sources V_{d4}, V_{d5} and V_{d6} are calculated as follows,

$$V_{d4} = (ni) * V_{dc} \quad (3)$$

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Novel Control Scheme for Z-Source Inverter based Wind Energy Conversion Systems

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Abstract

Z-source inverter (ZSI) based wind energy conversion systemprovides both the DC link voltage boost and DC-AC inversion in single stage with added features. Traditional maximum power point tracking (MPPT) control algorithm generates the required shoot-through interval to output maximum power to the Z-network. At this instant, the voltage across Z-source capacitor is equal to the MPP voltage of DC link voltage. The capacitor voltage cannot be further increased if it is demanded by the load. This paper presents an improved MPPT control algorithm along with modified MPPT algorithm to achieve both the MPPT as well as capacitor voltage control at the same time. Development and implementation of the proposed algorithm has been carried out by MATLAB/Simulink software and the results are provided.

Keywords:

Z-source inverter (ZSI);Wind Energy conversion system (WECS); pulse width modulation (PWM); maximum power point tracking (MPPT); capacitor voltage control (CVC)

I.Introduction

With India's electricity demand increasing exponentially every year, demand for the renewable energy sources are also increases drastically. Wind, a free and clean energy sources is increasingly competitive with other energy sources in India in the coastal and southern states of India.In one of the southern states of India, Tamilnadu, the installed capacity of windmill is 8,344 MW, which is 35% of the total installed capacity in that state. Whereas the total installed capacity of windmill in India is 28,214 MW, which is around 8.5% of totalinstalled capacity. but the available potential is double the time of installed capacity now and, due to the lack of proper technology all the potentials are not properly tapped. The wind energy conversion system (1) is in general costly and is a vital way of electricity generation only if it can produce the maximum possible output for all weather conditions.

Two level converters were used to boost the DC link voltage to the desired level and convert DC into AC for controlling the AC loads. The number of switching components, total volume of the system and overall cost of the system are increased while adapting the two-stage converter based WECS. Z-source inverter (ZSI) has been proposed to overcome the disadvantages of the traditional inverters with unique impedance network [1]. A ZSIbased shown in Figure 1 created a center of attention for researchers since it offers DC boost and DC-AC inversion in one single stage. Due to its unique features and advantages, it is much suitable for various applications which are much sensitive for supply voltage sags/fluctuations [2-5].

Operating principle of ZSI based and their advantages over the traditional two stage converters have been discussed in [9]. Simple power feedback method is used to achieve MPPT in [9]. The same study has been extended for grid connected WE system in [10]. A simple control method for two-stage utility grid-connected is proposed in [10]. This approach enables maximum power point tracking (MPPT) control with post-stage inverter current information, which significantly simplifies the controller and the sensor. A power conversion circuit for a

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Analysis Of Various Pwm Schemes For The Design Of Asymmetric Single Phase 31 Level Cascaded Mli

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Abstract

Multilevel inverter is most fashionable due to bargain switching losses, low costs, minimum harmonic distortion and high voltage capacity while compared with conventional PWM converters. A latest family of multilevel inverters that are emerged with less number of isolated DC input sources is asymmetric multilevel inverter. This work comprises of design and analysis of various PWM modulation schemes available for thirty one level asymmetric multilevel inverters. The relative case study is offered to authenticate the tested modulation scheme through harmonic spectrum analysis, total harmonic distortion (THD), and distortion factor (DF). The chosen single phase ternary DC source based multilevel inverter is demonstrated via MATLAB simulation. Finally the experimental result shows that APOD PWM offers relatively distortion-less AC output. It is also realized that the COPWM strategy output waveforms as it delivers fundamental rms AC output voltage with high magnitude.

Keywords*—Single phase multilevel inverter, Multi carriers, Sixty Degree PWM, Twenty seven levels, Cascaded multilevel inverter, and Distortion Factor.*

I. INTRODUCTION

Renewable energy sources are noticed as a fast developing power generation system because of the availability in wide range. Electricity generation by PV systems causes no environmental pollution, no material depletion and has no rotating or moving parts[1,2]. The output characteristics of PV system depend on the ambient temperature and the solar irradiance. Moreover, the PV system output provides single operating point, when the irradiance is uniform and the generated power is high [3-5]. Also the output power is affected by shading due to clouds, buildings, birds, plants and dusts. Hence the conversion efficiency and reliability are decreased [6-9]. So as to boosts the conversion efficiency, various tracking techniques are developed to extract maximum power from the solar panels. Few of the most popular methods are P&O incremental conductance and hill climbing method [10-13].

The simple, low cost and easy implementation of the conventional methods made them suitable for practical applications. But during power tracking process, there is a delay in reaching extract tracking direction. Therefore PV voltage and current are measured after a single sampling time using these methods. Also the change in atmospheric parameters will produce incorrect tracking direction before the tracking path is reached [14]. Artificial intelligence (AI) methods and optimization algorithms are developed to overcome the drawbacks of conventional methods. AI technique uses FLC and ANN individually or as a hybrid method [15]. The exact operating point is obtained by these techniques without exact mathematical model. These techniques work depending on the system behavior and the PV characteristics. The operating point in the complete operating region is stable using these techniques [16]. The PV panel power characteristics are affected under partially shaded operating condition. In order to optimize the global maxima evolutionary algorithms like P&0, INC, HC are used. The tracking efficiency is reduced considerably due to the use of random variables in these algorithms. The uncertainty of solution is increased and hence the desired operating point cannot be reached. The power converter control variables such as voltage, current and duty cycle performance

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DIRECT AC/DC POWER CONVERTER USING AUXILIARY CIRCUITS

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Abstract

The Direct AC to DC power converter is proposed for energy harvesting from low voltage supply. The conventional power converters uses diode bridge rectifiers and they are inefficient in operating at high switching frequency. The modified power converter avoids the use of bridge rectifier and directly converts ac input to the required dc output. The operation of the converter is based on Discontinuous conduction mode which increases the efficiency. The auxiliary circuit is added with the proposed converter to store the charges. The advantages of the converter are ripples are minimized, maintain the unity power factor and can effectively reduce the energy storage capacitance.

1. INTRODUCTION:

AC/DC Converter serves as rectifiers. They convert AC to DC in a number of industrial, domestic, agricultural and other applications [1, 2]. Rectifiers are used as standalone units feeding single and multiple DC loads and as input stages of AC systems because of their virtually unlimited power and controllability [3, 4]. Our objective is to develop the power converter working in high switching frequency with minimum switching losses. The conventional power converter uses the diode bridge rectifier and results more switching losses operating at high switching frequency [5-7]. For example the output of micro-generator is in milli watts. The power converter process the low voltage supply is two stages: Firstly the low voltage supply may not feasible for rectification. Secondly the large forward voltage drop occurs at diodes causes high voltage losses. The output voltage may not feasible to work on any equipment [8-10]. This paper concentrates to process of low voltage supply conversion. The proposed converter maintains the unity power factor, thus the losses are minimized.

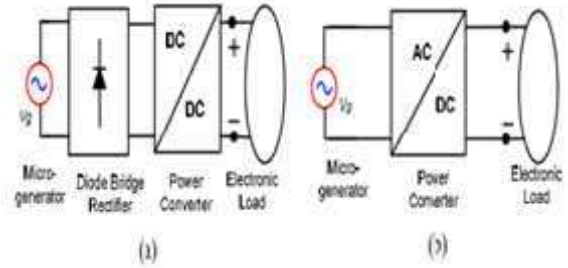

Figure 1 (a) block diagram of conventional two-stage power conversion considering diode-bridge rectifier (b) direct ac-dc power conversion

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PERFORMANCE ANALYSIS OF PV BASED DC-AC CONVERTER FOR DIELECTRIC HEATING

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ABSTRACT: This paper proposes a new PV based DC/AC converter for a dielectric application which consists of a solar panel, SEPIC DC/DC converter, resonant inverter and a dielectric application such as dielectric heating. The output of the solar panel is low voltage hence SEPIC DC/DC converter is used to boost the voltage which is later fed to the resonant inverter to converter the DC/AC and the converted AC voltage is utilized for dielectric heating. This system is used for high power applications and provides a better performance in terms of rise, time settling. The comparison between open loop with and closed loop system along with and without disturbance is presented in this paper.

KEYWORDS: Dielectric heating, PV source, resonant inverter and SEPIC converter.

I. INTRODUCTION

Solar energy is considered has one of the most effective and promising source of energy due to its infinite power and availability. Even though fossil fuels as been the primary source of energy, their availability is limited on earth. Also, they deplete the environment. When it comes to cleanliness and safety solar energy is always the right choice. Now-a-days, most of the applications use AC power. Hence power conversion interface has become a basic need as solar panel that generates DC power output. Here, the generated solar power is utilized for the dielectric heating which is a high frequency load. Over the years many power circuits were proposed for these PV based configurations. Jinn chang wu et al[1] proposed a solar generation system which consists of solar cell array, DC-DC boost converter, transformer to split the boosted dc voltage which is then fed to capacitor section where the voltage is converted to three level voltage. This voltage is applied to full inverter circuit where it is converted to seven level. Soft switching is not available in this system hence the switching losses is more also this system not suitable for high frequency applications. Surya Kumari et al [2] proposed a PV energy conversion system with MPPT to track the maximum power point in which total harmonic distortion is measured. Samer Alsadi et al[3] proposed a MPPT simulation for PV based system using perturb and observe under different climatic conditions to verify the accuracy. It is observed that the maximum power point varies slightly with respect to the climatic condition which reduces the performance of the system. Shen et al[4] proposed grid connected power converter with negative grounding of PV generation system without transformer. More number of electronic switches is used and hence switching losses are high. Lekshmy Rajan et al[5] proposed a PV based system with cuk and PWM inverter using MPPT algorithm. This system also consists of high switching losses and has low efficiency.

Sowmya Smitha Raj et al[6] proposed a MPPT based zeta converter fed from PV cell array with a PWM inverter. The number of cycles used in PWM inverter to control the voltage is more so the performance of the system is affected. Mastramauro et al[7] proposed a PV system with power quality conditioner functionality with maximum power point tracking to control the phase of the PV inverter voltage. This system cannot be used for high power applications. Kumaresh et al[8] proposed a literature review on solar MPPT system which clearly explains the importance of MPPT in solar based system. Esram et al. [9] proposed incremental conductance method based MPPT technique to get the maximum power poin at all conditions. Jitty Abraham et al [10] proposed a pwm modulated and power factor correction of zeta converter for open loop and closed loop. It is to be noted that the performance of open loop system is poor compared to closed to system. Christo shijith et al[11] proposed speed control and power factor correction of BLDC motor using zeta converter. Swati et al.

Implementation of Twenty seven level and Fifty one level Inverter using constant voltage sources

B. Ganesh, N. Murugan, M. Nallaswamy, K. Rajkumar, L. Vijayaraja, S. Ganesh Kumar and M. Rivera

Abstract—**A inverter to produce more output voltage levels using constant voltage sources fed to a resistive-inductive load is presented. Cascaded multilevel inverter structure is modeled and studied for various levels of voltages by implementing proper turn on and turn off states. Simulation for fifty one level inverter design structure is carried out using MATrix LABoratory and percentage of harmonic content in the load voltage is examined. Further, real time development of twenty seven level cascaded inverter structures is implemented and the results are obtained using digital storage oscilloscope. A 15V, 500mA transformers are used to step down the voltage from 230V to 15V and further rectifiers are used to convert AC to DC voltage and used as source for multilevel inverter structure and field programmable gated array.**

Keywords — **Inverter structure, Field Programmable Gated Array (FPGA), Voltage sources and Harmonic content.**

I. Introduction

A power inverter, or inverter, is an electrical power converter that changes direct current (DC) into alternating current (AC). Solid-state inverters have no moving parts and are used in a wide range of applications, from small switching power supplies in computers, to large utility high applications that transport bulk power [3] – [6]. Inverters are commonly used to supply AC power from DC sources such as solar panels or batteries. But in normal inverters the THD is much higher.

Electrostatic capacitor, energy bank and sustainable power generators are utilized as the various dc voltage sources. The easy commutation of the power switches make addition of multiple DC sources possible to achieve high voltage at the output. A multilevel converter has a few focal points over a traditional converter that utilizations pulse width modulation (PWM) with high time period. The attractive features of a multilevel converter can be summarized as follows.

- Stair-step plot condition: Staggered converters not exclusively can create the yield voltages with low bending, yet in addition can decrease the dv/dt values; accordingly electromagnetic similarity (EMC) issues can be diminished.
- Common-mode voltage: Multilevel converters produce smaller CM voltage; therefore, the stress in the bearings of a motor connected to a multilevel motor drive can be reduced. Furthermore, CM voltage can be eliminated by using advanced modulation strategies.
- Input current: Multilevel converters can draw input current with low distortion.

The idea of staggered inverters was first presented in late 19's. The term staggered started with the three-level inverter. In this way, a few staggered inverter topologies have been created [1] - [2]. Up to now, several topologies of multi-level inverter system have been proposed. Recently, several multilevel DC-AC converter designs were introduced [7] – [9].

The constraints of staggered arrangements over the two-level inverter design are, the expansion in the quantity of design parameters required and the circuit multifaceted nature, which requires complex control conspires that include its expense and diminishes the dependability of the converter. This may lead the general framework to be progressively intricate. Consequently, for the experimentation, lessening the quantity of switches and driver circuits plays a vital role. Design of constant source inverter is investigated in this paper.

This study is categorized with the various areas; in area II the design structure of nine level inverter with various output states are explained. Design work of fifty one level inverter structure is discussed in area III. Real time development of twenty-seven level inverter with the results is elaborated in area IV. Summarized the paper in area V.

II. Nine Level Inverter Structure

In this chapter the design explanation of cascaded multilevel inverter is presented. Various states of operations for nine level design structures shown in fig. 1 are discussed.

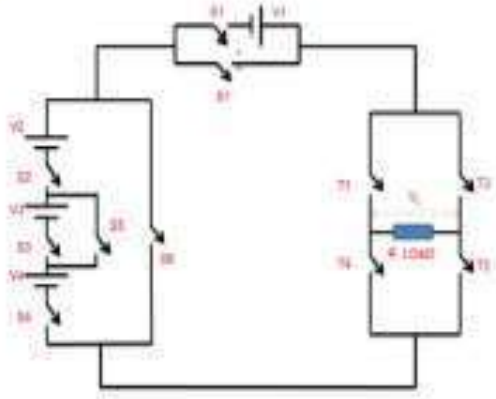

Fig. 1. Nine level inverter structure [10].

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Fire Detection using Artificial Intelligence for Fire-Fighting Robots

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***Abstract*— Fire-fighting robots are used in indoor environments to detect fires and extinguish them. Sensors such as flame sensors are currently used to detect fire in fire-fighting robots. The disadvantage of using sensors is that fire beyond a threshold distance cannot be detected. Using artificial intelligence techniques, fire can be detected in a wider range. *Haar Cascade Classifier* is a machine-learning algorithm that was initially used for object detection. The results obtained using *Haar Cascade Classifier* were not very accurate, especially when multiple fires had to be detected. Transfer learning from a pretrained YOLOv3 model was then used to train the model for fire detection to improve accuracy. The benefits and drawbacks of using deep learning for object detection over machine learning are highlighted. The algorithm used to obtain the target location the robot must move to use bounding box coordinates is also discussed in this paper.**

Keywords*— *Fire detection, Machine Learning, Deep Learning, Location finding

I. INTRODUCTION

Fire accidents cost lives and damage property. Having an autonomous fire-fighting robot that can detect fire and extinguish it will be extremely helpful in such situations. Most of the fire-fighting robots constructed in the past used sensors such as flame sensors [1] to detect fire. Fire-fighting robots also had ultrasonic sensors to detect obstacles in its path. The time taken for the pulse emitted by the sensor to travel from the object back to the sensor was used to determine the distance of the obstacle from the robot [1]. This distance was compared to a threshold value. If the distance was less than the threshold value, the robot turned in the direction of the least obstacle path and continued to move forward towards the fire.

IoT has been included in these robots [2] to communicate to the authorities about the incident. A water-based extinguisher is used for ordinary combustible material such as paper or wood and a carbon-dioxide based extinguisher is used for fires in flammable liquids such as petrol. Fire-fighting robots have been designed to have both types of extinguishers so that an appropriate type of extinguisher can be used [2][5].

Whether the sensors detect fire or not depends upon the distance between the sensor and the fire. Sensors cannot detect fire when it is beyond a certain threshold distance. Using artificial intelligence techniques, fire can be detected at a wider range which is the motivation behind exploring object detection using machine learning and deep learning techniques for fire detection. Object detection is used to find whether the object of interest is present, the location of the object, the number of objects of interest detected and the relative size of the objects.

Haar Cascade Classifier is a machine learning algorithm proposed by Paul Viola and Michael Jones that can be used to detect objects from images, video and camera feed [4]. *Haar Cascade Classifiers* have three important stages- *Integral image*, *AdaBoost* and Cascading Classifiers. The classifier is initially trained with a lot of positive and negative images. Haar features such as the two-rectangular, three-rectangular and four-rectangular features are identified for the particular object to be detected. The use of *Integral image* makes fast feature evaluation of these features possible. *AdaBoost* is then used to select the most important features from a large number of features extracted since all of the features are not useful. The use of *integral image* and *AdaBoost* ensures that the *Haar Cascade Classifier* works efficiently.

The Cascade Classifier has several stages. Different stages of the classifier are responsible for detecting different features. A strong classifier is formed combining the results of the weak classifiers. A window is slid over the image to identify positive regions containing the object using the features of the object it has been trained to recognize previously. If that particular region fails a stage, the window slides to the next region of the image and this region is no longer considered. In this manner, the *Haar Cascade Classifier* can be used to detect objects.

Deep learning-based algorithms can also be used for image classification to detect objects. *Convolutional Neural Network (CNN)* is a type of deep learning neural network [5]. Filters or kernels are applied to an input image. The purpose of each filter is to determine a particular characteristic such as the shape of eyes, ears etc.

The sliding kernel matrix is convoluted with each input matrix obtained from the image to produce an output kernel map. Several filters are used to obtain all the important features which are essential for classification. Different feature maps obtained due to the different convolution operations are combined to obtain the output. It is essential to add padding or zeros around the original matrix image accordingly to ensure that the size of the output feature map is the same as the size of the input image.

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In *CNN*, a large number of regions are needed to find whether the object is present. This is because the object may have different spatial locations within the image. This increases the computational time. *R-CNN*, *Fast R-CNN*, *Faster R-CNN* and *You Look Only Once (YOLO)* were subsequently developed to reduce the testing time. *YOLO* [6] is the fastest algorithm compared to the other algorithms and is hence widely used for real-time detection. Although *YOLO* is fast, it isn't accurate as *Faster R-CNN*. The *YOLO* algorithm was developed in subsequent years to improve its accuracy. The latest development, *YOLOv3* shows substantial improvement in accuracy especially in small environment of fire detection affected the accuracy of measurements obtained.

Shen *et al* [9] had researched and performed deep learning for object detection. Deep learning was used rather than colour-based, motion-based or shape-based models alone as different flames may have different properties. Deep learning could be used to identify all these properties instead of a single property alone for fire detection. YOLO was used to perform flame detection. YOLO created an *n by n* grid where each grid was responsible for obtaining the probability and bounding box for the object that was present in it. The training procedure was divided into pre-training

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Military Support and Rescue Robot

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***Abstract*— In this era of a politically unstable world, there is a growing demand for the use of military robots to aid the soldiers to perform perilous missions. This paper focuses on the design and build of a semi-autonomous, unmanned robotic system used for various military and rescue operations. Dangerous tasks such as bomb disposal, enemy territory surveillance, search and rescue can be efficiently carried out by the *MSRR*, Military Support and Rescue Robot. This reduces the risk of losing the lives of both soldiers and civilians. With the help of live feed from the wireless camera and data analysis of environmental composition by various sensors, of the area under surveillance, the soldiers can better prepare for their missions. Using Arduino and Zigbee technology, the above-mentioned tasks can be achieved. The different sensors and the robotic arm are connected to the Arduino mega which in turn is connected to the Zigbee. Data transmission and receiving are through Zigbee technology. This prototype design overcomes the weakness of the existing models and thus provides better support for military operations.**

Keywords*— *Military robot, Semi-Autonomous, Search and Rescue, Pick and Place Arm, Arduino, Zigbee.

I. INTRODUCTION

In today's technologically proficient world, technology plays an important role in drastically changing warfare tactics. More than advancement in weaponry, the advancement in technology gives a country superiority and the capability to counter an enemy attack in the most effective manner. Nowadays, robots are used in places which are dangerous for humans and thus, carry out the missions more effectively and obediently than human soldiers.

The military support and Rescue robot help to locate survivors in hazardous conditions unfavorable to human rescue teams. This reduces casualties and helps plan the rescue more effectively by using the data provided. The utilization of military robots for this very purpose is used by many countries around the world. The robots are robust, daring, obedient and have no fear of death. These robots may not be humanoids and need not carry lethal weapons, they are just machines instilled with advanced technology to aid the military.

The many advantages of military robots are driving all militaries around the world to opt for the use of robotic technology. *MarketsandMarkets* conducted an analysis which concludes that the military robot industry is expected to reach USD 30.83 billion by 2022, at a CAGR of 12.92% from 2017 to 2022 [1].

Military robots can be affected due to hardware and software malfunctions. Even though the military robots are built for adverse conditions the robotic system might face challenges due to adverse climate, software malfunction, components breakdown and much more. These types of robots are either fully human controlled, semi-autonomous or fully autonomous. Autonomous robots face more challenge under moral grounds for use in the military. A fully autonomous robot is considered as a killing machine under many country laws. The use of automated machines has a lot of restrictions due to the lack of human feelings and emotions. Hence, it is preferable to use semi-automated robots for certain safety precautions [2].

The *MSRR*, Military Support and Rescue Robot can be used for many different applications in the military. Among which a few are discussed in this paper, such as Intelligence, Surveillance and Reconnaissance (ISR), Search and Rescue, Mine Clearance and Bomb Disposal.

(i) Intelligence, Surveillance and Reconnaissance

This is the most important task bestowed upon military robots. The robots used for surveillance and reconnaissance are usually small and invisible to the enemy. The robot takes pictures, records conversations and sends videos back to the ground stations from areas that are difficult to access for the soldiers.

(ii) Search and Rescue Robots

Another important role that is carried out by military robots is search and rescue. There are a lot of restrictions for a human to enter a rescue area after a calamity. Robots can rescue victims from radioactive, biological and chemical environments. Robots don't have limitations like humans and hence can help in reducing the response time by saving maximum lives. Usually these robots are controlled by humans at base, but sometimes can work autonomously.

(iii) Explosive Ordnance Disposal (EOD)

Millions of lives of soldiers are lost while diffusing a bomb or disposing a mine, to avoid which, robots are used instead of humans to diffuse these explosives. The robots can be controlled from base or can be programmed to identify an explosive. This feature instilled in military robots has reduced the loss of lives of soldiers and civilians to a great extent [3].

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MSRR is a semi-autonomous, unmanned ground vehicle developed with the most important features required for use in the military. The robot is instilled with a wireless camera used for reconnaissance and surveillance missions, a pick and place arm used for explosive disposal and a sensory circuit for data collection of the environmental gas composition of the area under inspection. The data collected by the sensory circuit and wireless camera are transmitted to the PC, Personal Computer at the base. The controls for the motion of the entire robot as well as the pick and place arm are given by the GUI, Graphical User Interphase on the PC. Arduino and Zigbee technology are used for data receiving and transmission.

This paper has been organized into sections. Section 2

The robot can only identify a human being but cannot help them without a rescue worker.

Nirout and *Zhang* [6] used a USAR abbreviate application to perform a very important task of exploring the uncluttered area and going to the aid of people. This model uses deep reinforcement machine learning that allows the robot to autonomously explore the unknown cluttered environment. The robot uses frontier-based exploration along with the memory of the places visited before and is known to cover more area at a given time than robots working only based on random exploration technique. The objective of this model is to maximize the information gained to allow the robot to find trapped victims as quickly as possible. The testing of the robot

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SOLAR ENERGY BASED LAPTOP CHARGER USING QUADRATIC BOOST CONVERTER

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Abstract

A quadratic boost converter is designed to get the Laptop charger rating 63.5W in this research. This converter is energized with solar energy as the input source. The output of the solar has been given to the quadratic boost converter (QBC). The energy from the quadratic boost converter is stored in the battery. When the laptop is going to be charged, the energy from the battery is stepped down using the Buck converter. The voltage regulation of the converter is obtained using inner current control loop and outer voltage control loop method. The simulation results are presented for the quadratic boost converter.

Key words: *Quadratic Boost Converter (QBC), Two loop control method, Buck converter, Battery.*

I. INTRODUCTION

In recent year's different types of dc to dc converter topologies are designed which plays a major role in different applications with renewable energy as the source. In this system, the DC-DC converter topology of high gain is implemented with low output characteristics. In PV array and fuel cells the dc output voltage should be maintained as per the desired output voltage. But voltage stress can be increased through the transient period of the switches. The converter used in Photovoltaic arrays and grid applications are chosen based on the Zero voltage crossing with high output voltage with wide variation in low input voltage. The wide variation in duty cycle ratio can be limited by choosing the different values of passive components. Hence the QBC provides the high voltage output with low voltage stress and more efficiency [1-2]. QBC operates with high gain conversion ratio compared to normal boost converter. The single stage converter is better choice than two stage converters in most of the renewable energy applications. The QBC has more switching components with equal switching stress by the way of boost converter. But the QBC gives high output voltage than the normal boost converter on same duty ratio [3-5]. This increased gain makes this converter to be more suitable to be a part of the power system which integrates Photovoltaic systems and wind energy systems and in micro grid applications. To reduce the high voltage stress and to enhance the voltage gain, normal inductors are replaced by coupled inductor, in QBC. To improve the total power efficiency, passive clamping circuits are used to scale back the high voltage stresses caused by leakage inductance of the coupled inductor [6-8]. Hence, in this paper QBC is selected to get the desired voltage rating of the Laptop charger with solar as input energy. The output voltage produced from the QBC is stored in the 60W battery. The buck converter are used to step down the voltage based on the Laptop voltage rating as 19.5V.

This research work is organized in six section as follows: Section 1 reviews the advantages of QBC, the operation of the converter is discussed in Section 2. In section 3 gives the design of the QBC converter, section 4 reviews' the simulation results of open loop and closed loop circuit. The hardware results are offered in section 5 and conclusion is presented in section 6.

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Investigations on On-Board Charger with Simultaneous Charging of Low Voltage Battery for Electrical Vehicles

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***Abstract*:**

In this research, electrical vehicles (xEVs) are incorporated with on-board battery charger (OBC) and a low voltage dc/dc converter (LDC) for charging the low voltage (LV) battery. The OBC-LDC power unit (OLPU) step-down the number and size of the circuit components and increases the overall power density. Besides, in the unified OLPU, internal wiring of the xEVs is improved by sharing common apparatus of the two portions, to rule out the price of high-voltage cables. The unified OLPU fulfils the performance of standard on-board battery charger and LDCs for charging the batteries (both propulsion and LV), in three operating modes. In addition, this work describes the characteristics and design considerations for the integrated circuit structure along with possible solutions for the complications in the circuit. The simulation results of the electrical vehicle charger with the proposed power unit are presented.

Keywords **:** *High frequency transformer (HFTR), charging mode, electric vehicle (xEVs), on-board charger (OBC), dc/dc converter.*

I. INTRODUCTION

In recent years, eco-friendly vehicles with significant potential to meet the market demand of reducing fossil-fuel consumption, co_2 emissions are electric vehicles (xEVs) and plug-in hybrid electric vehicles (PHEVs). These EVs are driven by an electric motor, instead of an internal combustion engine (ICE), and the batteries supplies power to the motor to run. EVs are installed with an on-board charger and a rechargeable battery pack. The rechargeable batteries are charged through the ac power outlet and the charger is installed in the EVs, it should have long-life, light-weight and small in size. The battery charger performance is assessed by the power conversion efficiency and power quality. The on- board charger has to attain a high-power density and thus to achieve the high-efficiency power conversion. Since the battery charger is mounted on the EV itself, the charger should be small in size, light in weight, and long in lifespan. EVs are recognized as zero emissions vehicles (ZEVs) and are eco-friendly than LPG powered or ICE-driven vehicles. EVs are far more energy efficient than gasoline engines, since there is very fewer moving part and silent operation. The batteries have to be charged frequently by plugging into the mains. Eco-friendly vehicles such as, electric vehicles (xEVs), battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs) are by large effectively developed. Several investigation on batteries, on-board chargers, dc/dc converters, motors, etc., on xEVs aspired to improve the electric vehicle technologies. For the performance improvement of the on-board chargers and LDC, the component of xEVs which are focused are the batteries. The on-board battery charger use ac grid as source, to charge the High Voltage (propulsion) battery, over a wide range of ac/dc transformation. At present, almost all xEVs transfer energy between the ac source and the battery by the principle of induction, the converters are accomplished by the isolated topology. Henceforth, LDCs with isolated transformers use propulsion battery /supply power to charge the LV battery through the electronic devices in electric vehicle.

A single-phase OBC for PHEV functioning in different operating modes [1] [2], PHEV using ac power for battery charging [3], Reactive power compensation in Vehicle to grid (V2G) [4], using the PEV propulsion machine and its traction converter [5] are studied. An onboard charger for PHEV with cascade structure of a high-frequency resonant converter for charge control [6], dual cascaded control strategy [7] for the two-stage three-phase integrated onboard charger. A modified PWM-LLC with reduced magnetic component size [8], A three-phase onboard charger of a PHEV with power factor correction and battery voltage/current regulation integrated with PMSM [9] and a phase-shift

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Energy Efficient Light Monitoring and Control Architecture Using Embedded System

P. Rathnavel, T. Baldwin Immanuel, P. Rayavel

Abstract--- In this paper, we propose an energy efficient RF-based outdoor light monitoring and control system that can monitor and handle outdoor lights more efficiently as compared to the conventional systems. The proposed system uses the RF-based wireless devices which allow more efficient lamps management. The designed system uses sensors to control and guarantee the optimal system parameters. To realize effectiveness of the proposed system, the prototype has been installed inside the University, where the experimental results proved that the proposed system saves around 70.8% energy for the outdoor street environment because of using sensors, LED lamps, and RF based communication network. To implement wireless control system of lights, several comparable architectures have been applied for outdoor lighting. In the design of the intelligent lighting system by considering the system cost as the main factor beside the energy saving. In, the author tries to reduce the number of sensors on each lighting nodes, but this reduction will result in less accuracy of the system due to more packet loss and hence will result in performance degradation. Furthermore, the authors in and designed the energy efficient lighting controls system by utilizing the WIMAX and GPRS as backbone technology, respectively, to communicate with the control center. One of the drawbacks of utilizing WIMAX and GPRS is the utilization of licensed spectrum, which will result in interference with the existing WIMAX and GPRS users. Hence, the lighting system will also require efficient interference avoiding algorithms to cope with interference, but this is not suitable for the lighting systems. These systems also have no capability to change the light intensity according to the users' requirement because they statically control the energy consumption and do not consider the user requirements in the sense of light intensity and the user's presence while dimming or turning off the lamps. In order to fill this research hole, we design the energy efficient RF TRANSRECEIVER-based outdoor light monitoring and control system. In addition to all these things ,an additional led is given as backup light, which will be used during main led light failure or when the operating temperature of main led exceeds the optimum range.

Index Terms--- WSN (Wireless sensor Network), MSD (Mass Storage Device), HID (Human Interface Device), LDR (Light Depended Resistor).

I. INTRODUCTION

Energy efficiency is one of the key factor while designing indoor or outdoor lighting systems. The street lights consume almost 30-40% of the entire city power consumption. Thus, control system able to efficiently manage the lighting is absolutely advisable. For this aim, because of its design based on the old lighting standards and inefficient instruments and devices, the traditional lighting systems are not suitable resulting in energy losses, frequent replacement of devices. Moreover these traditional systems suffer from the lack of pervasive and effective communications, monitoring, automation, and fault diagnostics problems.

To address these challenges, many technologies has been utilized in the literature to save energy such as: the utilization of the light emitting diode (LED) instead of metal halide (MH) lamps. But the systems based on these technologies need further improvement to increase the energy efficiency.

To further reduce the energy consumptions and to simplify the wiring structure, numerous lighting control systems have been proposed to solve that problem such as: occupancy sensing approach, light level tuning, and power line communication (PLC). Despite of reducing the wiring structure in PLC based designs presented in, occasional drops may occur in PLC networks operating on low voltage power lines.

These drops are caused by noise and attenuation, and can last from a few minutes to few tens of minutes. Due to carrier signal attenuation, there may be high latency or communication failure in PLC based design. On the contrary, deploying communication infrastructure based on wireless sensor networks (WSNs), such as low power ZigBee or RF, eliminates wiring overheads and save lots of energy.

To implement wireless control system of lights, several comparable architectures have been applied for outdoor lighting. In the design of the intelligent lighting system by considering the system cost as the main factor beside the energy saving. In this, the author tries to reduce the number of sensors on each lighting nodes, but this reduction will result in less accuracy of the system due to more packet loss and hence will result in performance degradation. Furthermore, the authors in and designed the energy efficient lighting control system by utilizing the WIMAX and GPRS as a backbone technologies, respectively, to communicate with the control center. One of the drawback of utilizing WIMAX and GPRS is the utilization of licensed spectrum, which will result in interference with the existing WIMAX and GPRS users. Hence, the lighting system will also require efficient interference avoiding algorithms to cope with interference, but this is not suitable for the lighting systems.

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PV Powered Standardised Irrigation System Using Soil Moisture Sensor

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***Abstract*— This system proposes a solar powered soil irrigation system and it reduce the wastage of watering during wet weather condition. Water scarcity is more and more increasing in day to day life. This system creates a revolution in modern agriculture to deterrent the barriers in agriculturist. A photovoltaic power generation system become more popular in today's world. Also its enormous growth has not left agriculture. During fair weather condition the soil moisture sensor senses the moisture content in soil and determines whether it is acceptable rate or not. Depending upon the moisture content the motor feed crops. A continuous power generation from the PV panel energise the battery during day-time. If it fails, the action is completely performed by distributed power supply.**

Keywords— Photo-Voltaic(PV); Motor; Irrigation system.

I. INTRODUCTION

Essentiality of water is an emerging problem in agriculture. There are lot of ways suggested by central and state government toovercome the necessity of water. But there is no improvement in it. Because,the weather condition and human behavioural activities may demolish the water level. After the analysis of water scarcity, they framed an irrigation system to impart and regulate the level of water pumping to the agricultural land.Few decades ago irrigation becoming more popular due to its level of using water is to be low. At the same time it fulfils the need. Plants and other organisms absorb nutrients via root nodes. It needs water to dissolve nutrients and minerals before they reach the node. For every stage the water is more essential. After understanding the requirement of water the irrigation system more popular. Irrigation system is ancient. Even though no other system can replace irrigation system.

Lot of techniques in day to day life takes irrigation system into another step. The manmade process is completely turned over into machine made process.According to the survey,embedded system rules the reforms of agriculture and it works independently.It cannot study how to supply water to the crop and field. Action of the system found moisture level before supplying water. Thus soil moisture sensor examines the moisture and nature of soil.

We introduce a PV powered soil moisture sensor to know the water level in underground.To drain water during morning and evening. This system operates on the amount of power generated from PV system. In day-time a battery stores the power and it act as a main source to the entire system. If it fails the AC supply from complete the action. During morning the sensor senses the level of water in underground and feed the garden or crop.At evening it drops water. A relay regulates the function. Without man functioning this will continue even fora year.

The Real Time Clock (RTC) maintains a day (or) a month (or) year information. So, the process is continuously performed without any change in it. A microcontroller based system design has been well known among people. In modern agriculture everybody choose to reduce the work and earn more. Advancement in every field makes the entire process within a hand. The same strategy is also followed in this solar powered soil moisture sensor to draw water.

There are plenty of advantages in this system. Some of them are listed below:

- Less expense
- Eco-friendly power generation
- Unusual power flow to the motor is limited
- Presence of RTC could not allowcollapsing the day-by-day process.

II. METHODOLOGY

A technique resolvedand proposed is revealed in figure 1. The ac source and dc source are seperated by a relay. Arduino is the key to perform storage function and relay function. PV panel produce adequate amount of power needed to function both Arduino and motor. An DC-DC converter boost the voltage before it reaches the pump. The sensor predict the weather condition.

It send an signal to intikate the water level. Ater the completion of this process, the system decides whether the water pumpiung is essential or not for a paticular period. If it needs water then the relay connection supplies power to the motor. In such condition it starts to pump. If there is an excess of moisture in the soil is noted; then the motor would not function.

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Improved Speed Control of BLDC Motor using Luo converter By Sliding Mode Control

R. Dhanasekar, S. Ganesh Kumar and M. Rivera

***Abstract*-The classical buck converter for BLDC motor applications do not meet the load requirement containing more ripples on the output voltage and parasitic effects. In order to overcome this effect, the additional filter elements are added in the Luo-converter to eliminate the output ripples and effectively enhance the output voltage level. The output stage of the Luo converter is comprised of an inductor and capacitor so it naturally acts as filter. The output stage stores and delivers energy to the load and smoothens the output voltage to produce a constant output voltage. The Luo Converter acts as both buck and boost converter by varying the duty cycle. Thus this Luo Converter is used for the proposed BLDC Motor Drive. The Sliding Mode Controller is used to make the speed of the System constant in a small amount of time.**

***Keywords*— Brushless DC Motor, Luo Converter, Motor Speed, Sliding Mode Control.**

I. INTRODUCTION

BLDC motor is a synchronous motor that synchronizes the rotor magnetic field with stator magnetic field which develops the mechanical torque. The stator windings are separated 120^0 degree electrical [1]. Also due to its construction the BLDC motor does not have brushes nor electromechanical commutator therefore its commutation is electronic and its operation is more complex. One of the main challenges in this field of drives was to achieve a perfect control for speed regulation even under the disturbances and parameter variations [2-4].

One of the prominent methods for the control design is the SMC (Sliding Mode Control) approach. Sliding mode controller is suitable for a specific class of nonlinear systems. This is applied in the presence of modeling inaccuracies, parameter variation and disturbances, provided that the upper bounds of their absolute values are known. Modeling inaccuracies may come from certain uncertainty about the plant (e.g. unknown plant parameters), or from the choice of a simplified representation of the system dynamic. Sliding mode controller design provides a systematic approach to the problem of maintaining stability and satisfactory performance in presence of modeling imperfections.

This paper consists of five sections including introduction. Section II discusses about the existing system, Section III discusses about the proposed system, Section IV discusses the simulation results and Section V discusses the Hardware results.

II. EXISTING SYSTEM

In general, BLDCM fed PID controller with Luo converter experiences ripples at the output of converter. Therefore, it is essential to eliminate the ripples in the output side to enhance the efficiency of the system. Limiting ripples in current restricts lead to well enhanced voltage output. This consequently necessitates a Sliding Mode Controller (SMC), for enhancing the output voltage at the output of converter. A conventional BLDCM drive with PID controller scheme will require a constant DC supply based VSI with Pulse Width Modulated (PWM) scheme for speed control. The high frequency switching in VSI will lead to large switching losses. The existing system has also high conduction losses due to oscillations while the speed of the BLDCM is dependent on the DC voltage measured across the front-end of the inverter, a variable speed operation can be employed by adjusting the DC link voltage of inverter with fundamental frequency switching. The Luo converter with SMC has additional elements comprised of an inductor and capacitor so it naturally acts as filter**.** In [5] the control of dc motor trajectory tracking is attained by Luo converter currents and voltages. The BLDCM fed with Luo converters designed under front-end BL configuration is utilized for a wide range of applications. The BLDC fed conventional PID has huge no of ripples, harmonic currents and parasitic effect when compared to the BLDC fed SMC controller [6-7]. The existing system has more chattering effect than BLDC fed SMC. The existing system has also a problem of maintaining stability and satisfactory performance in presence of modeling imperfections.

III. PROPOSED SLIDING MODE CONTROL OF LUO CONVERTER FED BLDC MOTOR

The proposed system consists of an AC source, filter, Luo converter, three-phase Inverter, BLDC motor, saw tooth generator, PWM generator, sliding mode controller,

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Power Quality Research On Three-Phase Pfc Rectifier (Minnesota Rectifier)

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Abstract—The Minnesota rectifier is a well established topology, however, no serious attempts have been made to explicitly investigate the improvement in power quality by the use of this rectifier. This paper discusses the harmonic reduction in the line currents of a three-phase diode bridge rectifier by third harmonic current injection technique. The improved performance of the current injection technique is validated by comparing the simulation results of a rectifier unit with and without current injection technique.

Keywords—THD, third harmonic, zig-zag transformer, ZCS Quasi-Resonant Converter.

I. INTRODUCTION

Power electronics component plays a vital role to energy conversion with improved efficiency and improved operating characteristics. Most of the converter systems are affected by the non linear characteristics. Harmonic distortion caused by these nonlinear loads leads to degradation in the power quality. IEEE 519-1992 [1] and the IEC-555 are the recommended standards for the limitation of harmonic currents at ac side to meet the power quality standards. To achieve those standards, it is essential to obtain the nearly sinusoidal current with low distortion and desired power factor at the ac mains to meet the high power quality standards.

Use of six-switch PWM rectifier [2] reduces the harmonics, but the problems of PWM technique are EMI and switching losses. In comparison to this approach, dc link current is modified by 3rd harmonic injected current component , fed through the rectifier input side requires only two controllable switches on the dc link side as shown in the Fig. 1. Zero-current switching or zero-voltage switching [3]-[8] of these switches overcomes the problems of PWM technique. Zig-zag transformer can be used as a third harmonic current injector [7] or a simple LC circuit [8]. Apart from the current injection network, the presence of source inductance is the added advantage to obtain the sinusoidal line currents with lower value of harmonic [8].

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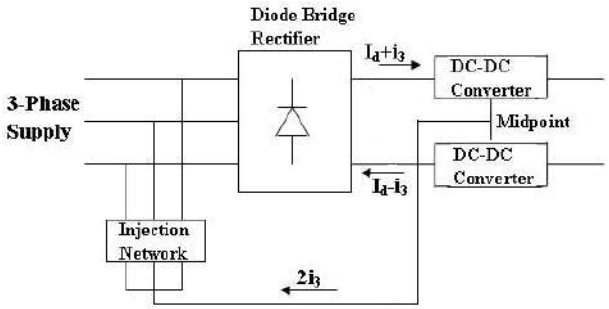

Fig. 1.Rectifier with Injection network

II. OPERATION OF THE RECTIFIER TOPOLOGY

A. Current injection device

Zig-zag transformer is used to give the 3rd harmonic current as a feedback to the utility interface from dc link interface to reduce harmonics. Three phase wye transformer is the basic model to obtain the zig-zag transformer. Three phase wye transformer has three windings with neutral point; each winding has cut in the middle so that it splits into two windings namely outer winding and inner winding in each leg. The outer winding of each leg are turned around and rejoined to the inner coil of adjacent leg. In the connection sequence, the outer coil of A phase is coupled to inner coil of B, outer coil of B is coupled to inner coil of phase C then outer coil of C is coupled to inner coil of phase A as shown in Fig. 2.

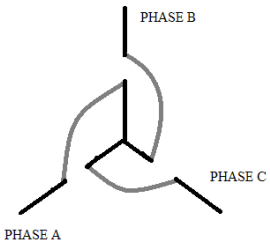

Fig.2. Zig-zag transformer connection.

In the minnesota rectifier topology, the main role of zig-zag transformer is to circulate 3rd harmonic current at supply side. Due to very high magnetizing impedance, it can be operated as open-circuited for both positive and negative sequence voltage components. If

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Nano Nickel Oxide/Vinyl Ester Composites with Improved Mechanical Strength

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Abstract: Nickel(II)oxide is a promising material which suits for many applications due to its speciality characters such as electrochromic, photocatalytic activity, semiconductor nature, etc. But use nickel oxide as filler in polymer composites is not well studied. In this work, nano nickel oxide filled vinyl ester matrix composites were fabricated by reinforcing various weight fractions of filler. The composites so prepared were characterized by mechanical strength analysis, Fourier Transform Infrared Spectroscopy and Scanning Electron Microscopic analysis. Outcome of the analysis showed that addition of nano NiO caused significant improvement in mechanical strength under tensile and bending stress and still further enhancement after the vinyl functionalization of nano nickel oxide.

Keywords: Nano composites, nickel oxide, vinyl ester, surface functionalization, tensile strength, flexural stength

I. INTRODUCTION

Presently, with the fast improvement of science and innovation, materials assume an essential part in the international economy and safety. New materials are the premise of new technologies, and materials science, vitality innovation and data science have turned into the three mainstays of present day science and innovation. As the human population is booming every year, a demand for materials of specialty characters is also arising and hence innovative development of material science and technology has become unavoidable in order to cater the needs of the rapidly growing population of the world. Polymer matrix composites are such kind of emerging materials which are being used in various fields of engineering like aerospace, mechanical, optical, electrical, etc. [1]. Thermosets and thermoplastics are the two main sorts of polymers used in polymer matrix composites. Thermosets have qualities such as a well-bonded three-dimensional molecular structure after curing [2] - [3]. They decompose instead of melting on heating. Merely changing the basic composition of the resin is enough to alter the conditions suitable for curing and determine its other characteristics [4]. Vinyl ester is an economically viable thermoset polymer possessing adorable chemical resistance, thermal stability and flame retardancy [5]. But polymers show poor abrasion resistance, low mechanical strength and stiffness compared to other structural materials, for example, metals and compounds and consequently their usage for structural applications has been limited to some degree [6]. To combat these issues, strategies such as process modification [7], reinforcement of functional fillers and fibres [8] – [9], optimal material selection are being followed by researchers. Nano sized fillers were found to be effective in improving the properties of polymer composites over macroscopic fillers. Nano clay [10], silica [11], metal oxides [12] – [14] are the major functional nano fillers of interest in particulate filled polymer composites. Further, their surface modification is an another way by which the end use properties of particulate filled composites are strengthened [15] – [17]. In this work, an attempt was made to use nano nickel oxide as filler, due to its unique characteristics [18] – [19], in vinyl ester matrix and the tensile and flexural properties of so prepared composites were studied.

II. MATERIALS AND METHODS

A. Materials

Vinyl ester dissolved in 30% v/v styrene monomer, methyl ethyl ketone peroxide (MEKP) catalyst and cobalt naphthenate additives were procured from Vasavibala resins private limited, Chennai, Tamil Nadu, India and used as such. Nano Nickel oxide (average particle size<50nm), coupling agent vinyltrimethoxysilane, were purchased from M/s. Sigma Aldrich India (Pvt) Ltd and.

B. Surface modification of Nano nickel oxide

Vinyltrimethoxysilane (VMS) of concentrations 1%, 2% and 3% v/v in ethanol were prepared and their pH was adjusted to 4.5 - 5.5 by adding dilute acetic acid. Surface modification of nano nickel oxide was carried out by stirring the nano powder with the silane solution for about 5 minutes and air dried at room temperature for 48 hours.

C. Casting of Composites

Nano nickel oxide of weight fractions ranging from 0.1 – 1.0% were mixed with vinyl ester resin, and fabricated by vertical open lay-up Resin Transfer Moulding using a glass mould with 3mm separator. The content of the mould was air cured for about 25 minutes at room temperature and post cured under microwave irradiation (2.4 GHz) at 240W for 30 minutes. The fabricated composite plates were cut by water jet cutting machine.

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Magnetohydrodynamic Viscous Fluid Flow Between Parallel Plates with Base Injection and Top Suction With an Angular Velocity

R. Delhi Babu, V. Yuvaraj, S. Hemanth Kumar

Abstract: In this article manages the issue of stable electrically lead laminar progression of a gooey incompressible liquid stream associating two parallel permeable plates of a divert in the event of a transverse attractive field through base infusion and top suction. Dependable vertical stream is made and controlled by a weight slope. Vertical speed is enduring everywhere in the field stream. It implies $v=v_w$=constant. Answer for little and huge Reynolds number is talk about and the diagram of speed profile for stream including parallel permeable plate with base infusion and top suction through a rakish speed Ω has been considered.

Keywords : About four key words or phrases in alphabetical order, separated by commas.
Keywords : Magnetohydrodynamic flow, fluid flow, parallel plates, angular velocity.

I. INTRODUCTION

The Fluid flow in between same kind of plates arranged in a manner which the hydrodynamic flow established by the Magneto hydrodynamic flow. The main usage of the concept in many fields in real time and also industrial like Magneto hydrodynamic flow, and they are MHD control generator, Aeronautics, Chemical synthesis, Dispersion of Metals, Electronics, Hydromagnetic dynamo action, MHD couples and bearings, MHD flow meters for liquid metals, MHD pumps.

Berman [1] examined the issue of adjusted laminar progression of an incompressible thick liquid from start to finish a permeable path with uniform rectangular cross portion, while the R-Reynolds number is wretched be considered in addition to an irritation arrangement expect ordinary divider speeds to be the equivalent was gotten. Sellars [2] broad the issue contemplated while the R-Reynolds number is raised. Later Yuan [3] suggested the few concepts of the infusion Reynolds numbers in two dimensional constraints with unflattering steam path along with their permeable dividers. Soundalgekar V. M [4] detailed the transfer of the MHD heat as a flow in their given non constant body temperature using the injection and suction as their major focused idea. Attia.H.A [5] [6] main concepts of the unsteady stream in the fixed plates as a parallel plates which has gooey liquid in the form of incompressible and exchange of warmth in the fixed plates. The normal and formed suction and the properties of blend are their major factor influenced. The consistency of their temperature in each subordinate are monitored whose fluids flows through their penetrable and parallel plates. The fluids flow in the shaky steam and dusty coordinating fluids. Ganesh [7] assured the measurement of the MHD fluid stream of viscous liquid. Ganesh [8] studies the MHD behaviour in the thick walls as plates in the parallel position which has fluid flow in porous plates with the concept of top suction and the entrenched. Krishnambal [9] highlighted the work of the stream in the fixed plates in parallel conditions and susceptible. Hafeez H. Y [10] gives the flow of the stream in the porous plates fixed in the bases, the flow studies by their MHD as bottom injection and suction at the top. Another highlight of MHD mentioned in Ganesh [11] which close concept of the parallel and porous plates. R. Delhi Babu [13] investigated the effects of steady magneto hydrodynamic flow in angular velocity which in poured in the plates fixed as a parallel plate. J. Charles Prem Anand [14] studied Magnetohydrodynamic effects on steady blood flow in a stenosis under angular velocity.

The new concept of the stream flow as incompressible liquid which in thick state liquid connecting two penetrable parallel plates inside seeing a transverse alluring field and angular velocity with base imbuement and best suction through precise speed.

II. PROCEDURE FOR PAPER SUBMISSION

Considering the proportionate permeable plates, the new methodology introduced in plates while the fluid flow as incompressible liquid in thick state, the laminar development improvised and the top suction at their dividers with the velocity of the sight of a crosswise attractive field of solidarity is mentioned as H_0. The dividers in the vertical position with the rakish speed Ω. The starting point is focused initially for the channel flow. The axis are mentioned as x and y for the tomahawks comparable and vertical position of their channel dividers. The determination of the long way channel is mentioned as L. The distance measured in the fixed plates is 2h.

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Magnetohydro Dynamic Steady Flow Between Two Parallel Porous Plates of a Viscous Fluid Under Angular Velocity with Inclined Magnetic Field

R. Delhi Babu, S. Ganesh, V. Yuvaraj

Abstract: The Model is made as the Steady Magnetohydro dynamic streams with an exact speed between parallel penetrable plates are considered. The issue is seen methodically by using comparability change, whose game plan oversees growing fluid stream with a dashing velocity. The Major Applications of Magnetohydro dynamic (MHD) are the controller of generators, the system containing Cooling and thermal structures, improvement of polymer, Fuel industries etc. The objective of this paper is to look at the Steady Magnetohydro dynamic stream of thick fluid with a saucy speed between parallel porous plates when the fluid forced to their back position by the way of the dividers of each partition at a comparative rate. The issue is decreased to a third solicitation direct differential condition which depends upon a Suction Reynolds number R and M1 for which a right course of action is gotten.

Keywords : Magnetohydrodynamic flow, fluid flow, parallel plates, angular velocity.

I. INTRODUCTION

Magneto hydro elements are the examination of the association connecting alluring fields and motion fluids. The effect of MHD and Hall current on gooey streams has unprecedented vitality for real time Engineering and related fields. Accordingly, this concept presents the practice of Engineering concepts in early 1960's. In astrophysical fluid and geophysical components many comparable and relevance wide region alluring field are implemented in electrically driving concept and the surge of a fluid. MHD accept colossal employment in many domains for instance, sun-based material science, sun-controlled cycle and turning alluring stars.

Using rectangular channel, the weight inclined viscoelastic Maxwell fluid with issue of precarious stream Bagchi [1]. Attia and Kotb [2] the temperature dependent thickness between two parallel plates by the concept of MHD stream and Warmth trade.Attia [3] cleared the transient state issues in MHD. Ezzat, Othman and Helmy [4] Micropolar Magnetohydrodynamics highlighted in issues of breaking point the stream layers. Aboul-Hassan and Attia [5] concentrated on the progression of transverse appealing field between the penetrable plates at two levels progression of the main viscoelastic fluid. Nabil, Eldabe, Galal, Moatimid and HodaSm Ali [6] experimented the visco-adaptablefluid of Non-Newtonian MHD stream of animated plate by orous medium.Attia [7] determined the viscoelastic fluid of Precarious Hartmann Stream with the Corridor sway. S. Krishnambal and S.Ganesh [8] researched the Temperamental blends streams in-between two parallel and penetrable plates whose fluid considered as thick fluid.R. Delhi Babu and S. Ganesh [9] given the rakish speed and their impact in magnetohydrodynamic steam experiment in parallel penetrable plates. R. Delhi Babu and S. Ganesh [10] highlighted the angular velocity of the Magneto HF in unsteady manner in a platform of porous plates in parallel view.

II. MATHEMATICAL FORMULATION OF THE MODEL

The estimation of the Crossway attractive field into dividers in the vertical direction applying the steady laminar progression in a liquid as incompressible gooey in main interface platform of Permeable plates which are aligned as parallel plates. In the beginning the channels are analysed and verified by considering the two major axes named as parallel and inverse axis for the two divider channels for tomahawks simulation.

L named as the Channel length and the distance between the two plates in parallel conditions are given as 2h. The velocity segment in the x direction named as u and in the y direction the velocity is named as v, Ω is the rakish speed.

The equation of continuity is $\frac{\partial u}{\partial x} + \frac{\partial v}{\partial y} = 0$ (1)

Equations of momentum are

$$\rho \frac{\partial u}{\partial t} = -\frac{\partial p}{\partial x} + \mu \left(\frac{\partial^2 u}{\partial x^2} + \frac{\partial^2 u}{\partial y^2}\right) + 2\Omega u - \sigma_e B_0^2 u \sin^2 \alpha - \frac{\mu u}{k} \quad (2)$$

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Difference cordial labeling and strongly multiplicative labeling for some extended duplicate graph

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Abstract. The aim of this paper is to prove that the extended duplicate graph of arrow graph and splitting graph of path admits difference cordial labeling and strongly multiplicative labelling.

Key words: Arrow graph, Splitting graph of path, Duplicate graph, Extended duplicate graph, Difference cordial labeling, Strongly multiplicative labeling.

1. Introduction

E.Sampthkumar [8,9] introduced the concept of splitting graph and duplicate graph..P.Vijaya kumar et. al., have proved that duplicate graph admits many labeling [12,13,14]. K.Thirusangu et. al., have introduced the concept of extended duplicate graph [11]. Selvam et. al., have proved many result in extended duplicate graph [1,2,3,5,6,10] .In [7] Ponraj, Shatish Narayanan and Kala introduced the notions of difference cordial labeling. The strongly multiplicative labeling was introduced by Beineke and Hegde [4].

2. Preliminaries

Definition 2.1 An arrow graph A_m^n with width 'n' and length 'm' is obtained by joining a vertex 'v' with superior vertices of $P_t \times P_m$ by ' t' new edges from one end. Clearly the total number of vertices is 2m+1 and the total number of edges is 3m.

Example: Arrow graph

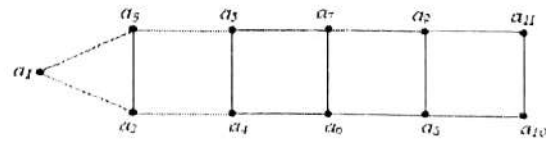

Figure 1 A^2_5

Definition 2.2 Let G (V,E) be a simple graph and the duplicate graph of G is DG (V_1, E_1) ,where the vertex set $V_1 = V \cup V'$ and $V \cap V' = \phi$ and $\varphi : V \to V'$ is bijective and the edge set E_1 of DG is defined as the edge a_ia_j is in E if and only if both a_ia_j' and $a_i'a_j$ are edges in E_1.

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ICAMMAS17

Influence of Polyvinyl Palmitate Copolymer As Viscosity Index Improvers For Lube

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Abstract

Polyvinyl palmitates were synthesized by condensing Polyvinyl alcohol with palmitic acid in different ratios and characterized. Intrinsic viscosity and their Molecular weights were found using Mark-Houwnik equation. Viscosity index of diesel oil doped with the prepared polymers were determined and compared. From the results it was observed that there will be slight increase in the viscosity index of the diesel oil at different ratios of additives. From these results it was confirmed that these additives can be used as viscosity index improvers.

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Keywords: Viscosity Index, Diesel oil, Viscosity index improvers

Introduction

The development of modern engine and transmission technologies would be impossible without lubricant additive. From its conception in the early 1900s, the lubricant additive industry has worked in partnership with the oil and the automotive industries to enhance durability and performance of engine and drive line systems through lubricant design [1]. Additives are synthetic chemicals that can improve or add performances of lubricants. Some additives impart new and useful properties to the lubricant; some enhance their inherent properties, while some act to reduce the rate at which undesirable changes take place in the product during its service life. One of the important types of additive is Viscosity Index Improvers (VII) commonly known as viscosity modifier (VM) [2].

The viscosity index is an indicator of the change in viscosity as the temperature is changed. The higher the viscosity index (VI), the change in viscosity of an oil changes for a given temperature change will be less [3]. Viscosity index improvers are used to limit the rate of change of viscosity with temperature. These improvers have little effect on oil viscosity at low temperatures.

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Dielectric Properties of Natural Rubber Composites filled with Graphite

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Abstract

Natural rubber (NR) composites filled with graphite (G) at various loading level was prepared by two roll mixing mill. Curing characteristics and dielectric properties were investigated and compared with NR/carbon black (CB) composites. The minimum and maximum torque of NR/CB composites increases upto 40phr loading. The same trend was found in NR /G composites upto 30 phr. Scorch time and optimum cure time of NR/ G are relatively higher than NR/CB composites. Dielectric parameters such as dielectric constant and loss factor increases on increase in CB. Graphite composites show maximum dielectric constant up to 20 phr. The frequency dependant dielectric loss factor of NR/CB is shows that, they are more conductive than NR/G composites.

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Keywords: Natural rubber, Graphite ,Carbon black, dielectric properties, vulcanization characteristics;

1. Introduction

Graphite is one of the important allotropes of carbon and abundantly available in nature. Graphite has a layered structure called Graphene, held together by a weak Vander Waals force. The presence of π orbital over the entire Graphene sheet makes it a thermally and electrically good conductor. The thermal and electrical conductivity of graphite is about 209.34 $W \cdot m^{-1} \cdot K^{-1}$ and 2 $x10^{4} \Omega^{-1} cm^{-1}$ respectively [1,2].

Therefore graphite filler is used in the elastomer industry as a filler to enhance electrical and thermal conductivity. Several authors are extensively studied the curing, electrical and dielectric properties of graphite filled polymer composites [3,4,5]. The presence of weak van der Waals forces between the graphite layers is attributed to relatively poor reinforcing properties in polymer. Further to understand the reinforcing effect of filler and the interfacial interactions between rubber matrix and graphite filler, dielectric spectroscopy studies was carried out. In this present study, the effect of graphite on vulcanization and dielectric properties of natural rubber composites has been investigated and the results were compared with NR/CB composites.

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Action Research: a Supplementary Source for the English Langauge Teachers

Poornima Varalakshmi. K, Shanmugathai M

Abstract*— This paper tries to explore that, Action Research is a supplementary source for English Language Teachers to bring out better teaching outcome of the teachers and better learning outcomes of the students. In the current scenario, apart from the syllabus, English Language teachers expect a supplementary source to follow a new strategy in order to satisfy the expectations of the students inside the classroom. They face many challenges in the classroom and one of the important problems is to draw continuous involvement of the students as well as to create good understanding of the subject in the classroom. In this connection, Action Research helps the teachers to explore effective teaching strategy in the classroom. This Action Research is integrated with a new approach called MUSE (Manageable, Urgent, Significant and Engaging), that helps the teachers to plan effectively. Besides, it is an exploratory or activity based classroom research and so it encourages the students to learn effectively and understand clearly with more involvement in the classroom. This study suggests a need for the supplementary source and it also focuses on Action Research to aid the teachers.

Keywords: Supplementary, Action Research, Manageable, Engage, Integrate, Exploratory

I. INTRODUCTION

Nowadays, English Language Teachers play a predominant role to sharpen the skills of the students. The English Teacher plays a vital role in improving the proficiency in the students at higher level of education [4]. But, teachers face many challenges in the field of teaching. In particular, ELT teachers undergo lots of problems in connecting the students with their thoughts inside the classroom. One of the main reasons is the gap between the teachers and students expectations. So, it's a crucial time for the teachers to find a solution for their problems. The teacher is expected to meet the needs of the learners This can be done by adopting learning-centered, project-based and activity-oriented approach in the classroom [4]. In other words, the students also expect many activities based and technology based teaching in the classroom. Hence, there is a gap in between the teacher and students in the classroom itself. In order to fill this gap, Action Research acts as a supplementary source to create a network or link between the teachers and students with a view to enhance the teaching-learning process .

Action research is gaining grounds in the educational arena around the world [5]. Action Research or classroom –based research is steadily gaining popularity in the Indian context because it focuses on the teacher's real-life classroom issues and solving those through an enquiry-based approach [1]. So, it is the right time for the teachers to revive their teaching methodology with the support of Action Research, to meet the recent demands of the students. Fig 1 shows the entry points of Action Research.

Fig 1 Entry Points for Action Research [7]

Continuous Professional Development is very essential for all the teachers to enhance the teaching pedagogy inside the classroom. Besides, many teaching strategies are emerged in the field of teaching to guide the teachers. Action Research is one of the best strategies that facilitate the teachers with creative ideas in order to help the students to face the challenging world confidently. Classroom is a place of interaction and collaboration between learners and the teacher [6]. It is important to develop a package of teaching-learning materials for classroom use in order to engage children in active learning [2]. Students are always passive inside the classroom and so they fail to show interest in the English Subject. A teacher has to use a variety of teaching-learning materials in the classroom, especially to teach a second language like English, as it is challenging for him/ her to sustain learner motivation for one full academic year using a single textbook [2]. In this connection, Action Research acts as an added source to the teachers to bring out a better teaching-learning outcome. Meyer (2000) comments that action research's strength lies in its focus on generating solutions to practical problems and its ability to empower practitioners, by getting them to engage with research and the subsequent development or implementation activities [1]. The purpose of all research is to generate new knowledge. Action research generates a special kind of knowledge [13]. This is done through reflective cycles in the process of Action Research.

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Keeping up with the English Language in India

M. Shanmugathai, K. Poornima Varalakshmi

Abstract— Almost since the times of pre independence, the Indianness in English had started spreading diversified impact and unlimited changes deeply mingled with its cultural heritage which can be noticed predominantly in people belonging to all strata of society. Today, hybrid pattern of English stalks the land of India and helps to improve further more the popularity of already popular English. Indian English has a long journey and it has been steadily entertaining and educating by weaving and mixing innovative word power which goes strongly with the new age users who are familiar with multiculturalism, The reasons being technology, social media, the willingness to be techno-savvy and the touring populace. This paper throws light upon different aspects which ensure the fact that Indian English is here to stay for centuries ahead.

Keywords: Indian English, Diversified impact, Hybrid pattern, Multiculturalism, Technosavvy

I. INTRODUCTION

The Himalayan presence of English in India in the present century augurs well for unlimited foreseen & unforeseen changes that will happen in the near future. India's dalliance with English began when the East India Company arrived in India in 1608. Of course, it has become a marriage of two incompatible partners through the centuries of the Raj. But the fascination for English gathered extraordinary momentum after the British left the country. The growth of the language in India over the years is so steady. From the 18th century onwards, when it came to an important communication, it has to be in English. This has been happening due to two reasons one is the changes and trends in journalism and another is the job of advertising.

The search for a 'higher' language continues throughout the history of the Indian encounter with English starting with early 18th century and going on through various stages of education, administrative reforms and then reaching up to the elusive search for an elitist social status. To-day trying to forge a connection with English is an effort that can be seen at every level.

It is very difficult to answer the question like this: who are the primary users of English in major countries of today? The most natural and immediate response would be that these are upper class people, who belong to the leading strata of a society. It is true that in most of these countries, English Language has been taught from the preschool level. Often there is a strong feeling is in existence that if a student is good in language, particularly in a foreign tongue like English, the quality of his performance in different endeavours related to his studies seems to be good. Edgar W. Schneider (2011) says that there is an enormous liking / preference for English to learn all subjects related to one's education, precisely out of the instrumental motivation, because knowing better English always assures asserted status in society and lucrative job opportunities as well. So even the not so highly qualified individuals tend to practice English language skills for spontaneous communication not only to come up in life financially but also to attain different posts/positions by excelling in trade, tourism and politics.

As said earlier, when attempts are made to flourish in the usage of English, it is clearly observed that an amazing variety of semi fluent usage is noticed. Viniti Vaish (2008) describes the acquisition and use of English language in a lower middle class Government School in New Delhi, and she comments of English though members of it can listen, read and write. It is not the class that speaks Indian English. But this group handles the English language for personal objectives, similar skills like obtaining a license for driving a car to be a good earning driver.

An educated & techno-savvy youth, today, may find it difficult to understand the meaning of the sentence: the manager is a man of letters. In its true sense, the meaning is that the manager has sound English writing skills. But the perceived meaning is that the manager has the habit of producing letters for too many occasions. A great many Indian writers took the letter form to exhibit their writing skills. The first Indian book in English was epistolary, written by Dean Mohamed (1759-1851) who wrote letters about his travels and life. In the year 1934, Peter Davies Ltd published "Letters of an Indian Judge to an English Gentlewoman". The Judge Arvind Nehra was an Anglophile, and most of his letters were cloyingly sentimental about everything British. Further Nehru's letters though had no clear instances of Indian usages, it served to show Indian fascination for the epistolary form especially when it came to writing in English. Binoo K. John (2007) says that the Indian fascination for the writing of letters – good, bad, literary and indifferent - in English has had a wide ranging fall-out: the growth of Indian –English. Not everyone had the literary or descriptive powers of Nehru or Dean or other early Indian letter writers. Their ambitions were confined to seeing their letters printed in newspapers and suffixed with their pen names, as one can see.

Binoo K. John continues saying that Indianised English language will survive by all means defying all logic. Even the 'colour' will be changed due to different groups belonging to different states of India who use the language with their own flavour. A Keralite's English is different to a person from West Bengal and similarly different to that of a Mumbaikar, who of course proves that he is from the trade capital of the

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Strengthening and Retrofitting of RC Beams Using Fiber Reinforced Polymers

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Abstract

Reinforced Cement Concrete (RCC) Structures are bound to lose its strength while in service due to various causes. Rehabilitation restores the health and service life of the structures. Fiber Reinforced Polymer (FRP) composites overcome most of the limitations of conventionally practiced repair techniques.The Fiber Reinforced Polymer (FRP) application is a effective method to repair and strengthen structures that have become structurally weak over their life span. FRP repair systems provide an economically viable alternative to traditional repair systems and materials. Among the various fibers, Glass Fibers (GF) is widely used in FRP. Strengthening of RC structural elements using externally bonded GFRP composite is an effective method to increase the structural performance under both service and ultimate load conditions. Restoring or upgrading the strength of beams using GFRP sheet can result in increased strength and stiffness.

Keywords: Fiber reinforced polymer; cement concrete; increase structural performance

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1. Introduction

1.1 General

Reinforced Cement Concrete (RCC) is an extremely popular construction material. One major flaw of RCC is its susceptibility to environmental attack. This can severely decrease the strength and life of these structures.

The repair of structurally deteriorated RC structures becomes necessary since the structural element ceases to provide satisfactory strength and serviceability. The reasons may be due to changes in loading, changes in use, reinforcement corrosion or changes in configuration. Occurrence of natural calamities may also be one of the reasons requiring repair of existing structures.

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Node Collapse Discover In Mobile Wireless Networks: A Prospective Approach

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Abstract--- *Intense simulation of disconnected and disconnected systems shows that our schemes achieve high failure recognition rates, and sometimes false positive rates, and incur low communication costs. The current approach can result in a lot of network traffic, which is not compatible with the use of restricted sources in mobile wireless systems. Our method has the advantage of being relevant to connected and disconnected systems. When compared to other methods that use localized monitoring, our method has similar fault recognition rates, reduced communication load and a much lower false positive rate. In addition, our approach has the advantage of being suitable for connected and disconnected systems, while central monitoring is relevant only for connected systems. In the indoor environment where the GPS navigation system is not working, the node can use location techniques. Different site devices and methods have different amounts of error in site measurements. The probability of failure depends on the node itself with the atmosphere. Our approach generates only local traffic and is connected both online and offline. Many localization techniques are codified in the literature. Finally, we produce the highest failure recognition rate using our approach.*

Keywords--- NodeFailure Detection, Localized monitor, FPS, Network Traffic, failure node, disconnected network**.**

I NODE COLLAPSE DISCOVER IN MOBILE WIRELESS NETWORKS: A PROSPECTIVE APPROACH

One method that many people have followed in current studies relies on centralized observation. Each node must send periodic "heartbeat" messages to some central monitors, which are used for a possible shortage of node heartbeat messages as an indication of node failure. Detecting node failure is necessary to monitor the network. In this paper, we recommend the use of a unique probability approach that carefully combines local monitoring, site assessment and node collaboration to determine node failure in mobile wireless systems [1]. In particular, we recommend two planners. Detecting node failure in portable wireless systems is very difficult because the network structure can be very dynamic, the network is not always connected, and the sources are also restricted. In this paper, we take a probabilistic approach and suggest two-node error recognition schemes that systematically combine local observation, site estimation, and node collaboration. In contrast to the methods that use centralized monitoring, while our approach may have recognition rates slightly lower and false positive rates slightly higher.

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A Modern Methodology Enabling Smart Agricultural System

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Abstract-- Agriculture is the backbone of our country. However, in spite of all the development, Indians still follow the old methods. It is necessary for the farmers to have knowledge of the amounts of the macronutrients and micronutrients present in the soil. Lab testing method will not be able to visualize the soil nutrients for the live monitoring. This project is intended to provide the soil testing services at farmers door step by determining the amount of macronutrients present in the soil. Measurement of NPK contents of the soil is necessary to decide how much extra contents of these nutrients are to be added in the soil to increase crop fertility. This will improve the quality of the soil which in turn yields a good quality crop. To fulfill increasing demand of growing population over the years there is a need of increase in food production. To increase crop yield, fertilizers containing predominantly N, P and K are essential. Improper use of fertilizers in turn results in poor quality of fruits and vegetables, lagging in colour, size, taste and even quantity. Over-application of fertilizers has caused low fertilizer usage efficiency, resulting in low agricultural product quality, serious environmental pollution, etc. Quantity of NPK is dependent on crop type and on plant growth status. How much quantity of fertilizer to be used is further dependent on present contents of NPK in the soil. The project is implemented using a technology called WUSN which is used to detect the amount of NPK present in the soil and an automatic soil fertilizer dispensing robot is used to dispense only the required amount of fertilizers in the soil based on the data obtained by the sensors.

Keywords—Nitrogen-Phosphorous-Potassium(NPK), Wireless Underground Sensor Network(WUSN).

1. Introduction

To fulfill the increasing demands of growing population over the years there is a need of increase in food production. To increase crop yield fertilizers containing predominantly nitrogen(N), phosphorous(P) and potassium(K) are essential. Improper use fertilizers in turn results into poor quality in fruits, vegetable lagging in color, size, test and even quantity. The three elements promote plant growth in three ways .

- N- Nitrogen : promotes the growth of leaves and vegetation.
- P- phosphorous : promotes root and shoot growth
- K- potassium : promotes flowering, fruiting and general hardiness

Quantity of NPK is dependent on crop type and on plant growth status. The fertilizers are present in the ratio of 18-51-20 by weight : 18% elemental(N), 22% elemental(P), 16% elemental(K).

The existing systems deals with the actual detection of NPK values of the soil using multimode plastic fiber optic sensor and other technologies like FPGA, Colour Sensors, IOT, etc.,

The present study deals with the detection of NPK values of the soil using content detection sensor. Along with this the soil moisture sensor, humidity sensor and water level sensors are used to monitor the soil parameters.

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Lifetime Estimation of WSN with Enhanced Pairwise Directional Geographic Routing

G.Saravanan, R.Lakshmi Devi

Abstract: ***This research work proposes an enhanced pair-wise directional geographic routing (EPWDGR) technique using the directional antenna and compares it with the conventional pair-wise directional geographic routing (PWDGR) method that uses the Omni-directional antenna. PWDGR has two key limitations - minimum network lifetime and its use of static nodes. The EPWDGR technique aims to overcome these pitfalls by incorporating a directional antenna patch that requires lesser power, thereby increasing the network lifetime. The validations have been performed through simulations that use a random waypoint mobility model which is more practical. Varying performance metrics have been used for the estimation of network lifetime. The EPWDGR also solves the energy bottleneck problem at the nodes near the sink.***

Keywords : Wireless sensor nodes, Network lifetime, Directional geographic routing, Enhanced Pairwise directional Geographic routing (EPWDGR), Pairwise directional Geographic routing (PWDGR), Random waypoint model

I. INTRODUCTION

A Wireless Sensor Network is a pack of a specifically designed device with a transmission infrastructure for tracking and to read the conditions at different places. In this experimental work, an enhanced routing technique is compared with PWDGR by evaluating the performance metrics. Here, routing refers to geographic routing (also called geo routing or position-based routing), which is a directing technique that depends on information received from various geo-locations.

This method is mainly suggested for unwired networks and depends on the basic idea that the header node sends a piece of information to the specific geographical location of the endpoint instead of considering its physical address in the network. The problem that is discussed in both protocols is to develop a way to prolong the network lifetime with minimal delay. The conventional PWDGR uses three nodes for efficient routing, namely, Cooperative node, three-hop node, and the source node. PWDGR has been simulated in a static network but simulation validation for EPWDGR is done using a mobile network with a random waypoint mobility model.

II. LITERATURE SURVEY

The energy-medium multi-directional path which is based on relative arrangement of paths is analyzed in the research paper titled, PWDG routing depends on Wireless Sensor Network. GPSR is the leading greedy path algorithm, which it relies on the various geo points, and it propagates the information to the adjacent nodes which are nearest to the base station. In addition to GPSR, there is also a path depends on a gradient by choosing the adjacent node with a decreased angle as the next node [1].

In another paper on Multipath Balancing and Expanding for Wireless Multimedia Sensor Networks, Chen et al. suggested DGR understand the utilization - specific count of node-disjoint routing directions to extend the total bandwidth for the quality of service provided in Wireless Multimedia Sensor Nodes (WMSN). DGR is a procedure framed specifically for visual sensor networks and can significantly boost the running behavior in terms of lifetime and delay [2].

The algorithm explained in the paper Energy-oriented multiple-way finding in wireless sensor networks has primarily been forced by the AOMDV for finding node-disjoint or desired link-disjoint routes. By updating the initial-hop to the RREQ header, and bookkeeping of the initial-hops of the immediate arrivals of RREQs, nodes that accepts false RREQs by various adjacent nodes can quickly find whether the paths are node-disjoint. Every node retains an energy value calculation for each of its path entries. This value finds the possibility that a packet is directed through a specific path [3]. the frame structure, the nodes can form close to send the information within the groups. Then, the extraction of information by hop by hop method and multiple-trip route-finding methods are combined to the implied MIMO method to mutually provide power efficiency, reliability and assured point to point Quality of Service. The alternate usage of noncontinuous routes, GRAB uses a route interleaving method to obtain high reliability. The routing based on a geographical structure can be stateless because the second hop is chosen in such a way that, the geolocation of the endpoint, which is saved in the packet header [4].

Directed Diffusion is an inquiry-based multiple-path routing algorithm, in which the aggregating node starts the path detection work. The collector node floods the specific data through the network. These specific messages consist of information for the task which will be operated by the sensors. At the time of specific data flooding, all the agent nodes save the interest data which are arrived from the adjacent nodes for future use. As the interest data is extracted by the nodes, the receiver node produces an angle towards the node from which the information has been received. At this stage, multiple routes can be located between every source and collector node pair. After this process, when the header node finds the process matched with the available data in the interest table, it sends the information through all the constructed angular points. Depends on the functionality of the data reception over each path, the aggregating node chooses the way, i.e. the path with minimum delay.

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Ultrasonic Sensor Based Haptic Feedback Navigational System for Deaf - Blind People

G. Saravanan, K. Devibalan

Abstract*: *Deaf-Blindness is a rare collective disorder that affects nearly 3.5 million people in today's world. The improvement restricts the usage of two senses and by large impacts a person's navigational capability. A variety of aid devices are used to tackle such a disability. But one common drawback that setback them is their inability to address the collective disorder. The proposed project aims at overcoming the aforementioned drawback with the help of ultrasonic sensors and haptic feedback in the form of vibrations. These sensors and feedback mechanisms are to be controlled by a microcontroller in an Arduino. Further, a rechargeable battery shall be used to accommodate the power requirements which emphasizes on energy efficiency. The project commits to limit space constraints by proposing a compact handle design and maximizes its cost efficiency such that it is affordable for everyone equally.

Keywords* : *Deaf-blindness, SONAR, path guidance

I. INTRODUCTION

Deaf-Blindness is rare disorder that affects a significantly small percentage of our population. It is very rare that a person is born with this disability, but the chances that a person develops deafness or blindness in course of life is highly plausible. When that happens, if the person is already blind or deaf then he ends up with deaf-blindness. Navigational assistance has been a revolutionary technological innovation since its inception. The primary aim of such aid is to provide a seamless method of path guidance based on effective understanding of the environment. In its raw form the end user expects this form of assistance to provide him with the knowledge of objects in the environment in the predefined path to his destination. This brings us to the requirement of developing an efficient solution that enables a disabled person to use navigational assistance without any hassle. The proposed product focuses on providing a novel navigational assistance mechanism in an indoor environment that uses the concept of Sound Navigation and Ranging (SONAR) and haptic feedback**.** SONAR is implemented using ultrasonic transducers and haptic feedbacks in the form of vibrations are provided.

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II. LITERATURE SURVEY

Assistance devices conventionally use a signal or indication of some sort to inform the user about any obstruction in their path. In the vast number of technical articles, papers and experiments that have been studied, it was found that there is no concrete system that aims at providing assistance that is independent of auditory feedbacks. In the conducted survey a detailed account on the existing systems, their drawbacks would be elucidated along with discussion on research carried out in this domain. The most widely used aid device is the Guide Stick or the White Cane which is primarily hand held and extends till the surface of floor. Despite its universal popularity, the major disadvantage is its restricted usage capability. The stick does not inform the user about objects above the knee level. Also it requires the user to continuously tap around that might wear out the user over a period of time. The other alternative guiding mechanisms include, guide Dogs, GPS enabled Wheel Chair, Guiding Bots. Guide Dogs have proven to be a faithful and effective companion, but it requires a lot of training and a period of getting accustomed to which might reduce the usage efficiency.

In a study conducted by Mohamed Fezari *et al.* (2007) from University of Annaba, Ultrasonic transducers have been integrated with various conventional aid devices and their operational response was recorded. The sensors were controlled by a microcontroller and the feedback was given as auditory response with the help of speech synthesizer.

Another study carried out by Ramiro Velázquez *et al.* (2003) from Laboratoire de Robotique de Paris discussed an Intelligent Glass that records the environment in real time and provides an environmental perception to the wearer in the form of interactive Tactile Interface exploiting the concept of Man- Machine Interaction. The important understanding from this study is the need to provide the wearer with an understanding of his environment. [6]

The third study surveyed was by Kyle Curham *et al.* (2012) from University of South Florida focussed on providing Haptic Feedback to the disabled person in the form vibrations. This research also used the concept of SONAR and the working device was proposed as a hand mounted unit.

The results of this study tell the importance of device portability and handling ease. [2]

Finally Mahidi Safaa A. *et al.* (2012) from Technical Institute of Babylon, Iraq worked on a handheld device for obstacle detection using SONAR. The concept of Handheld was adopted from the two research works mentioned above as it gives more degree of freedom and ease of usage. [3]

IoT Controlled All Terrain Rocker Bogie Robot

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Abstract*: *In today's world, we concentrate mainly on newly emerging technologies for several monitoring, surveillance and recovery operations. This paper presents combination of two emerging technologies, which are Robotics and IoT. Most surveillance and monitoring robots does not have the ability to move on uneven surfaces and on slopes, but the rocker bogies have these features. While the present rocker bogies are remote controlled, it needs a human to be near it to control it. So our aim is to design a rocker bogie robot that can be controlled via IoT from a distance, which can be done using web page controlling. The control mechanism is provided with video transmission facility through high speed image transmission. The robot is fitted with a camera which captures the scene and transfer the images to the server on which the user can control and watch the live feed. We present the design of rocker bogie suspension and how to control it using commands in the further sections.

Keywords: Robotics, IoT, Rocker Bogie Suspension, Live feed, Web page controlling.

I. INTRODUCTION

Surveillance is essential in many fields for monitoring and providing accurate information about the status of a place which is prone to illegal entries of spies. Now-a-days as technology improves, robots are being used for monitoring and surveillance applications. These robots have a camera fitted to them which displays the scenes captured by live streaming to the user. But, there are several disadvantages which include the inability of these robots to move on uneven surfaces and slopes. This is overcome by rocker bogie suspension setup which is capable of moving in all types of uneven surfaces and terrains.

Rocker bogie suspension is nothing but a combination of a rocker and a bogie where bogie means the wheels of the robot and bogie means the connecting link between the bogies. This setup allows the robot to move on obstacles which are up to twice the diameter of the wheels.

Existing Rocker bogies are either remote controlled or based on artificial intelligence. The main drawback of remote controlled rocker bogies is it needs a human to control it within its nearby range which cannot make humanless monitoring possible. The disadvantage of artificial intelligence based rocker bogie is it cannot be controlled in desired direction. It makes its automatic moves and cannot be controlled by the user.

To overcome all this problems, rocker bogie robot can be setup with IoT controlling section which would make the robot to traverse in the user desired direction as well as avoid any steeps present in the moving path. This makes the robot move even in slopes of 45 degrees and return without falling.

II. OVERVIEW

The proposed rocker bogie robot controlled using IoT takes commands from the webpage where the scenes captured by the robot are displayed. The webpage is divided into two sections. The section on the right side shows the scenes captured by the robot through live streaming. The session on the left has control buttons for the user to operate the robot from long distances.

The control section is written in HTML to place the buttons on the correct position.HTML is the main language used to build the webpage which use Php for traversing from the main page to the button status page. Clicking on the button changes the status of the button page which gives the control commands to the Raspberry pi3 which is present in the rocker bogie robot.

The Raspberry pi is the main component present in the rocker bogie setup which gets the command from the webpage and processes it and sends it to the motor driver IC. It does it through built in wifi modules for the access of the commands. The Raspberry pi used in this setup is of model B with quad core 64 bit ARM cortex A53 which is clocked at 1.2Ghz.We use Raspberry pi3 instead of Raspberry pi2 because it is 50% faster.

The motor driver IC gets the command from the Raspberry pi and controls the motors based on the command. The motor driver IC is L293D which is 16 pin IC with supply voltage 5volts and 600mA output current capability. It has two voltage pins one is used draw current for the working of L293D and other is for applying voltage for motors. It allows DC motor to drive on either directions simultaneously. We use L293D IC because it has internal ESD protection and high noise immunity inputs.

The dc motor driven by the driver runs at 100 rpm which is basically a 12 volt DC motor. The rocker bogie has 6 wheels and connecting links acting as the rockers The whole setup is supplied with a 12volt-1A sealed rechargeable lead battery. The Raspberry pi takes commands written in Python which is recent and easiest coding language. This project requires XAMPP Php interpreter for interpreting the scripts written in the Php and Pearl language. It is a free and open source cross platform for the webserver. The tight VNC software is used to project the scenes captured by the robot as live

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Pupil Detection Algorithm Based on Feature Extraction for Eye Gaze

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Abstract*: Exact real-time pupil tracking is an essential step in a live eye gaze. Since pupil centre is a base point's reference, eye centre localization is essential for many applications. In this research, we extract pupil eye features exactly within different intensity levels of eye images, mostly with localization of determined interest objects and where the human is looking for. Since it's a digital world and digital transformation, everything is becoming virtual. Hence this concept has a huge scope in e-learning, class room training and analyzing human behaviour. This research covers eye tracking technology to track and analyze the learners' behavior and emotion on e-learning platform like level of attention and tiredness. Harr's cascade classifier was used to first locate the eye's area, and once found and support vector machine (SVM) for classification with the trained datasets. We also include the state of emotions, facial landmarks of the salient patches on face image using automated learning-free facial landmark detection technique.Experimental results help in developing learner eye gaze detection in system using Pycharm and hardware output using Raspberry Pi. In Raspberry Pi is given with the input image captured using external webcam and based on the engagement level of the learner content 1 or 2 would be displayed in the Raspbian OS environment.

Key Words: Image processing, SVM, Harr's Cascade.

I. INTRODUCTION

In a virtual learning world, learners can lose motivation and concentration very easily. Our research is based on studying learner's behavior on an online learning platform to create a system able to analyze the learners based on their behavior, emotion and listening to educational content to their needs.

Eye tracking is one of the techniques for recording eye movements. This technology is used to measure eye positions and eye movement in many fields such as psychology, psycholinguistics, ergonomics and e-learning. This paper introduces the use of eye tracking technology to track and analyze the learners' behavior and emotion on e-learning platform like level of attention and tiredness.

In e-learning, it is necessary to create more effective interaction between the educational content and learners. In particular, increasing motivation by stimulating learners' interest is very much important. Users' eyes can be a significant source of information to analyze learners' behavior and listening to class. Eye movements provide an indication of learner interest and focus of attention. Movement of eyes provides useful feedback to personalize learning interactions which can help in effective teaching. With a study of eye movement, learners may be more motivated.

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II. RELATED WORKS:

"AUTOMATED WHEELCHAIR" can be regulated by theEYE-BALL movement by utilizing the concepts of Image Processing and other guiding technologies [1].

High accuracy of face recognition, detection of facial parts such as eyes, nose, and mouth is achieved by 2D Hough transformation for detecting circle of unknown radius in which, first it generates 2D parameter space (xc, yc) using the gradient of grayscale through obtaining the radius of circle r for each local maximum in the (xc, yc) space. The next step is eye detection using Support Vector Machine (SVM). At last, pairs of eyes satisfying predefined conditions are generated and ordered by sum of the likelihood of both eyes.[2]

An eye tracking system helps in tracking the movement of the eyes to know exactly where the person is looking and for how long they stare at. The suitable devices for eye movement acquiring and software algorithms are chosen as per the application requirements[7]. Some vendors have invested in eye tracking technology. But their solutions are focused on commercial remote camera-based eye-tracker systems for which the light source and camera are permanently affixed to a monitor which is considered as one of the demerits of the system.[3]

The automatic eye detection technique is subsequently validated using FRGC 1.0 database. The result of validation shows that our eye detector has an overall 94.5% eye detection rate, with the detected eyes very close to the manually provided eye positions. [4]

Three different algorithms were used for eye pupil location and testing. This algorithm efficiency comparison was based on human face images taken from the BioIDdatabase. In this case human face images were acquired by a webcam and processed in a real-time system [5].

For images with low resolution, computer vision community due to noise, shadows, occlusions, pose variations, eye blinks, etc., is used and a two-stage algorithm is proposed for iris centre localization[8]. A fast convolution based approach is used for obtaining the coarse location of Iris Centre (IC) and IC is further refined in next stage using boundary tracing and ellipse fitting. The algorithm has been evaluated in public databases like BioID, Gi4E[6].

To improve cursor stability, eye pupil center was filtered with Gaussian filter to remove the spikes[9].

The viability of autonomous public eye trackers as both data-gatherers and public exhibits is proposed in this research[10].

In automotive applications, integrated power electronic systems for automotive electronics gives a solution to

Advanced Patient Health Monitoring System Using Power Line Communication Technology

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Abstract: ***Open source automation system is rapidly developing towards more reliable communication systems. In recent years for its convenient installation and low cost the power line increasingly become a popular transmission medium in creating industrial/ resident work. PLC is a technology uses power lines as physical media for data transmission. PLC offers a no new wires solution because the infrastructure has already been established. PLC modems are used for transmitting data at a rapid speed through a power line in a house, an office, a building, and a factory, etc. Due to this additional telemetry features, cost of the devices are more and all hospital or clinic cannot afford to buy them. Hence in our work, temperature, blood pressure and heart beat monitoring equipment based on power line communication is developed. This is cost effective equipment which uses existing power cables as communication medium. Power Line Modem (PLM) is used for transmitting and receiving the signals over power line cable. Signalsare modulated and demodulated using direct-sequence spread spectrum (DSSS) technology. When compared with other communication technologies like local area network (LAN), ZigBee, Bluetooth, the establishment cost for healthcare monitor using Power Line Communication (PLC) was low.***

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Index Terms: PLC Technology, PLC modem, Energy Efficiency, ZigBee, FSK.

I. INTRODUCTION

This project develops a real time communication using power line as the physical medium for data transmission. The main aim of this project is to monitor the patient health using PLCC technology. The health parameters and the data extraction methods have been set up in such a way that it is given as a input signal to the PLC modem. Then the data is modulated and transmitted through the power line using PLC transmitter.

If in case, any emergency occurs while monitoring the patient the buzzer will indicate and a message intimation will automatically be sent to the doctor through GSM. The data is extracted from the receiver and displayed. This project provides effective communication between patient and medical assistant.

II. RELATED WORKS

In hospitals, medical equipment like ECG machine, ventilators, infusion pumps, heart beat and blood pressure monitors are placed near the patients who need medical assistance. Medical Intensive Care Unit (MICU) in some hospitals has automated patient monitoring system for their patient. In some cases these automated units are interconnected by networking for central monitoring and medical data storage. Recent year's communication technologies are applied in healthcare for performing surgery and delivering assistance to the patients in the form of tele-surgery, telemedicine, biotelemetry using LAN, Radio Frequency (RF), ZigBee, WAN etc. Rural and urban sectors are targeted by the medical industries for assisting and delivering medical care.

High-speed data transfer over power grids is ensured by PLC technology supported by different worldwide standards. Realization of this technology is advantageous especially in buildings where there is no data network or other transfer medium. PLC technology can be used as an alternative way to Wi-Fi, for example, due to wall width when Wi-Fi is not usable. This technology has been often given in relation with possible usage in smart homes. Installation of modems is easy and fast. After connection of PLC modem in power supply, data are available in power grid at home or in a building.[1]

Power line communications (PLC) have become aviable solution in smart grid since most devices are connected to power lines. Although PLC stations can receive power through power lines, they also require efficient use of energy. To this end, recently published PLC standards define a power saving scheme. Since the current PLC power saving scheme only defines a simple constant sleep period strategy, two adaptive sleep period adjustment schemes are presented here. The delay performance and power consumption of the three power saving schemes are verified numerically and through simulations. The two adaptive schemes are confirmed to properly balance delay performance and power consumption for any traffic type.[2]

To improve energy efficiency (EE) in power linecommunication (PLC) systems, we proposed a dynamic load based PLC system model as a new model for EE maximization and an energy-efficient resource allocation strategy optimizing load impedance, transmission power as the optimization arguments. Since the load impedance at receiver is influenced by characteristics of a power line channel, optimizing the load impedance is required to maximally induce a received power while considering the channel characteristics. We need to

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A novel rescuebot for borehole accidents

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Abstract : Major reports are saying that many children were dead due to the unclosed bore wells. The rescue process cannot be handled smoothly because the environment inside the bore well cannot be predicted by easy means. A less expensive robot can be developed with simple mechanisms for controlling will simplify the rescue process. A movable robot capable of adjusting to the bore well dimensions is constructed. The robot has two arms that can be adjusted to rescue the child with the support of camera also aiding in the survival of the baby. Some additional features are also introduced to enhance and ease the comfort of the rescue operation. A compressor is used to fill an air bag that is implemented in this robot to make the rescue operation easy and be comfortable to lift the victim safely. The gas and temperature inside the bore well can be measured using gas sensor and temperature sensor respectively.

1. INTRODUCTION

Robots are humanoids which are having the ability to do the impossible work easily with less consumption of time. The branch of technology that deals with the operation and designing of robots is called robotics. The solution for bore well accidents can be enhanced with this technology. The child can be picked up using arms of the robot [1]. Control systems, sensors, manipulators, power supplies and software are all working together to perform this operation. Whether rotating on wheels, moving on wheels or propelling by inner force mechanism, a robot should move. It can move their arms, head, neck, fingers as well. A robot design must be able to recharge itself. A robot might be solar powered, electrically powered, battery powered. The energy needed by the robot is directly proportional to what the robot has to do. The rescue operation robotic mechanism for bore well accidents mainly consists of three processes: approaching the child, handling the body and taking child out of the well [2].

2. THE RESCUE MECHANISM AND RELATED WORK

The children are easily prone to bore well accidents because of the smaller size. The rescue process in earlier days was too difficult: digging a hole near the surrounding area of bore well. The presence of rocks in the surrounding regions of the bore well makes the rescue operation tedious. There must not be any hindrance to the resource availability for the successful rescue operation. Absence of oxygen and light is another major difficulty faced in this rescue operation. The rescue forces from the defence sector are called upon if further help is required. Time and energy consumption is more and the rescue

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Lab-on-Chip Technology: A Review on Future Scope in Biomedical Applications

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Abstract
Lab-on-Chip (LoC) integrates various analyses such as biochemical operations, chemical synthesis, DNA sequencing onto a single chip which otherwise would have been performed in laboratory taking sufficient amount of time. Due to the miniaturization of these biochemical operations, better diagnostic speed, cost efficiency, ergonomy, sensitivity and so on can be achieved. This paper gives the detailed description of Lab-on-Chip technology including its system components. Ongoing worldwide research projects based on LoC technology have been investigated and various constraints that need to be fulfilled for designing a LoC system are presented. The biomedical applications of LoC in different fields like in diagnostics, cellomics, in environmental studies to control the effect of pathogens, to check the food quality such as for the detection of various antibiotic families in raw milk have also been discussed. Finally, the current open research issues of this technology along with the possible future research scope in the biomedical area have been presented.

Keywords: *Biomedical Systems, Biosensor, MEMS, Microfluidics, Lab-on-Chip*

1. Introduction

Lab-on-Chip technology implies those techniques that perform various laboratory operations on a miniaturized scale such as chemical synthesis and analysis on a single chip leading to a handheld and portable device. In other words, LoC is a device which is capable of scaling the single or multiple laboratory functions down to chip-format. The size of this chip ranges from millimeters to a few square centimeters. [1] Current trend shows the growth of research in this area. In many universities across the world, many groups are formed that are dedicating their research in this area. For example, BIOS in University of Twente, Mina Med in Germany, and Nanobe in Finland [2] are some of the groups. Their main motive is to understand naonofluidics and nanosensing, to connect micro/nanoeng. with biomedical and life science fields, to develop new micro and nano technologies for LOC, and to demonstrate new LOC applications.

2. Design

A **lab-on-a-chip** (**LOC**) is a device that integrates one or several laboratory functions on a single integrated circuit (commonly called a "chip") of only millimeters to a few square centimeters to achieve automation and high-throughput screening.[3]. LOCs can handle extremely small fluid volumes down to less than pico-liters. Lab-on-a-chip devices are a subset of microelectromechanical systems (MEMS) devices and sometimes called "micro total analysis systems" (µTAS). LOCs may use microfluidics, the physics, manipulation and study of minute amounts of fluids. However, strictly regarded "lab-on-a-chip" indicates generally the scaling of single or multiple lab processes down to chip-format, whereas "µTAS" is dedicated to the integration of the total sequence of lab processes to perform chemical analysis. The term "lab-on-a-chip" was introduced when it turned out that µTAS technologies were applicable for more than only analysis purposes.

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Segmentation of Human Vertebral Spine -FEA Analysis

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Abstract
Back pain is one of the most common health problems facing people today. It is the second most common reason for a doctor's visit, behind only to the common cold. Billions of dollars are spent annually on treating back pain, which is also a very common cause of disability. More than 90% of people will experience an episode of debilitating back pain at some point in their lifetime. Once the chronic disc problem has been diagnosed, the conservative treatments like: specific rest, friction force medical aid or physiotherapy and exercise are followed. When correctly diagnosed, an excessive amount of medical/surgical treatments can be avoided. The aim of the study is to generate a mesh model and numerically simulate the biomechanical characteristics of the human spine, namely two vertebrae (L4 and L5) and inter vertebrae disc using finite element analysis (FEA) technique. In this process the bony areas of every MRI scanned image is segmented and the boundary lines are stacked into a smooth surface. Additionally, the technique generates the quantity mesh exploitation linear unit that is used to process the mesh for agreement. Moreover, L4 and L5 with disc were considered as linear materials with the exception of the ligaments. The contact behaviour of the two bones, simulation of disc and obtained displacements and stress describe about the pre-operation of human lumbar spine. The results depict that the potential fracture of the considered patient with respect to displacements. In this paper the implementation of bilateral filter technique is discussed . Using various edge detection algorithms namely, Canny edge detection, Sobel edge detection, Prewitt edge detection and Roberts edge detection, the results were compared. Among them, spine Canny edge detection algorithm produced effective output using MATLAB estimating the following parameters like total deformation, normal elastic strain, normal stress. With the help of these parameters, the human spine model was analyzed using the simulation software ANSYS. The implementation has done with MATLAB, whereas the stress and strain have been found at the plate bone of aspect joint of L4 and L5.

Keywords: *Magnetic resonance imaging(MRI) , Bilateral filter , Canny edge detection, Finite element modeling, MATLAB ,ANSYS*

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I. INTRODUCTION

The human back is composed of a complex structure of muscles, ligaments, tendons, disks, and bones, which work together to support the body and enable us to move around. The segments

Irovers: Real Time Unmanned Four Wheeled Iot Vehicles for Fire Monitoring and Extinguishing Using Sonic Waves

SUBASHINI.V, .ARTHI M, ANBARASI M, RAJAVENI R

Abstract*: The aim of the proposed system is to build an autonomous mobile robot system for measuring the various levels of air and noise pollution as well as the fire monitoring and in case of fire, this robot is used to extinguish the fire using SONIC WAVES. This is a IOT based robot which moves autonomously avoiding obstacles using the IR sensor. This robot is used for temperature monitoring for the analysis of the presence of fire. The data from the robot is sent and received using WIFI in IOT. This mobile robot is capable of avoiding obstacles using IR sensor thereby it can be easily introduced in places of fire accidents for the process of fire extinguishing. The fire detection are monitored by using the temperature sensor. These information from the sensor are sent to the PIC microcontroller and then using the wi-fi the information are sent to the cloud. The fire extinguishing process is carried out by the sonic fire extinguisher .

Keywords: IOT, sensors

I. INTRODUCTION

Fires are the accidents which occur most frequently, whose causes are the most diverse and which require intervention methods and techniques adapted to the conditions and needs of each incident. Depending on the type of fire (nature of the material ablaze), meteorological conditions (wind) and the effectiveness of the intervention, material damage can be limited (a single car, building or production or storage warehouse installation), or affect wide areas (forest or agricultural fires, hydrocarbons, gas or other highly flammable products, storage or piping installations, harbor installations and rail or marine transport equipment). Explosions are in a different category.

Each type of fire is the object of specific technical prescriptions as regards prevention, intervention and the behavior of the population affected. It is also relevant to note that many fires have a criminal origin and that in times of armed conflict or crisis as well as of indirect wars (sabotage) human intervention also provokes major accidents attires, cotton (bales, loose, explosive dust), fodder (fermentation), fires in high warehouses, silos or underground garages as well as forest fires.

All these types of intervention are subject to special measures. For practical reasons it is best to refer to technical documentation, which should be known or available to all security and fire-fighting services, and to national and regional disaster alarm and information centers.

This is especially the case for rescue and fire extinction on motorways, buildings designed to be Used by a great number of people (hospitals, hotels, cinemas, high-rise buildings, department stores, etc); fires affecting chimneys.

III-LITERATURE SURVEY

The first intelligent extinguisher used for eliminating a fire in domestic places. Also it is having a collision sensor to eliminating a obstacles. But the capacity of first intelligent extinguisher is less that is 1.5 liters. Termite is used for extreme hazard areas like aircraft fires and nuclear reactor and size also small. But cost is high. Approximately 95 lakhs.

S.no	Author	Paper Title	Year	Findings
1	B Siregar,H A	Fire Extinguisher	2017	Smart phones are the fire extingusihing robot.image is captured by camera in phones.
2	Varun S V,Vinod Rao.S	Autonomous fire extinguisher robot	2017	robot development isguided by sensors
3.	Srinivas Devarakonda,Parveen Suvesu,Hongzhang Liu,Ruilin Liu,Liviu Iftode,Badri Nath	Real Time air quality monitoring through mobile sensing in metropolitan areas.	2013	Monitoring air quality using fine grained real time pollution measuremen t.
4.	Poonam	Intelligent Fire	2014	Multi Sensor based security system that contains a firefighting system.

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Patient Monitoring using Pan of Wireless Intelligent Sensors

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Abstract
A wearable device for monitoring multiple physiological signals (polysomnograph) usually includes multiple wires connecting sensors and the monitoring device. In order to integrate information from intelligent sensors, all devices must be connected to a Personal Area Network (PAN). This system organization is unsuitable for longer and continuous monitoring, particularly during the normal activity. For instance, monitoring of athletes and computer assisted rehabilitation commonly involve unwieldy wires to arms and legs that restrain normal activity. We propose a wireless PAN of intelligent sensors as a system architecture of choice, and present a new design of wireless personal area network with physiological sensors for medical applications. Intelligent wireless sensors perform data acquisition and limited processing. Individual sensors monitor specific physiological signals (such as EEG, ECG, GSR, etc.) and communicate with each other and the personal server. Personal server integrates information from different sensors and communicates with the rest of telemedical system as a standard mobile unit. We present our prototype implementation of Wireless Intelligent SEnsor (WISE) based on a very low power consumption microcontroller and a DSP-based personal server. In future we expect all components of WISE integrated in a single chip for use in a variety of new medical applications and sophisticated human computer interfaces. Existing growth of wireless infrastructure will allow a range of new telemedical applications that will significantly improve the quality of health care.

Keywords: *personal area network, wireless, intelligent sensors, patient monitoring, telemedicine.*

1. INTRODUCTION

Rapid growth of wireless infrastructure in following years will allow a range of new medical applications that will significantly improve the quality of health care [1][2]. Wider acceptance of physiological monitoring hardware will allow development of devices based on natural human-computer interfaces. Micro Electro Mechanical Systems (MEMS) made possible the development of networks of intelligent wireless sensors for military and space applications [3][4] through the increase of processing power, miniaturization, wireless communication, and decreased power consumption. Defense Advanced Research Projects Agency (DARPA) and Army Research Laboratory (ARL), with their key partners – UCLA Electrical Engineering Department and Rockwell Science Center, are developing Wireless Integrated Network Sensors (WINS) [5]. Department of Commerce, through National Institute for Standards, sponsors Smart Spaces [6]. This is NIST's approach to pervasive computing that is impossible without wireless sensors. DOE, and its Office of Industrial Technology, sponsor Oak Ridge National Laboratory to work on the

Design and Implementation of Performance Improved Medical Signal Filters with and without Multiplier

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ABSTRACT

The digital filter can be done professionally with the compact area and reduced power with simplified multiplication arithmetic. More than Decades of years Computer aided analysis of ECG signal is getting with incredible quantity of work being carried out in the earth. This paper is a small work on our part in that track. ECG Electrocardiogram signal is most comely known familiar and used medical signal, the ECG signal is very responsive in nature, and still if small noise combined with actual signal the different properties of the signal changes, Data ruined with noise must either filtered or eliminated, filtering is important issue for design thought of real time health care process. This work presents a better FIR filter which can be designed in VLSI technique, with or without multiplier and has less power and area improvement.

Keywords: *FIR filter design; ARM processor; Multiplier; ECG;*

Introduction

In signal processing, the filter functions to remove the noise from the signal like random noise and also to extract the necessary parts of the signal like components within a precise range of frequency (Quan et al., 2009)[1]The design of the filters for specific application includes the coefficient calculation according to various criteria including sampling frequency, pass band and stop band frequency, filter order etc.

In future, the mobile phones and portable computing systems are anticipated to offer increased services, faster data rates and higher processing speeds at reduced power dissipation levels. This delivers us with an inspiration to explore new methods in low-complexity design of high-performance digital signal processing blocks which operate at lower power levels. Semiconductor technology today provides unprecedented level of device integration where several orders of millions of transistors can be packaged in a single chip using the state-of-the-art. The number is expected to grow steadily for many years.

Human bodies are continuously provides messages about fitness. This messages may be observed through body-structure-related devices that evaluate heart speed, blood stress, oxygen infiltration levels, blood glucose, nerve transmission, brain movement and so forth. Usually in the past, such observations are taken at clearly stated points in time and indicated in patient's chart. Doctors in fact observe a smaller amount than one percent of these values as they make their round and treatment are prepared based upon this chart readings

Bio-medical signal processing includes the study of these observations to offer helpful message upon which doctors can make conclusions. Engineers are finding new techniques to prepare these signals by means of a range of mathematical formulae and sets of computer commands. Functioning with conventional bio-measurement tools, the signals can be figured out by software-commands and provides the doctors , idea about what happening or viewable at present. By using more fancy (or smart) means to carefully study what bodies are saying, we can possibly decide the state of a patient's health through equipments which will not require cutting into the body.

Background

An extensive literature review was carried out on existing digital filters model and the method that are used for enhancing the performance of the digital filters.

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De-Centralized Certificate Creation and Verification using Block Chain (DCCVuB)

V Brindha Devi, R Skanda Gurunathan, N Keerthi vasan

Abstract: ***The rapid growth in the population has lead to generation of large amount of data from each individual. Each and every individual holds several physically signed documents. Currently, the documents, certificates, and contracts are all printed in papers and manually signed. It is difficult for other party say a recruiter, or a government official or any other custom officer to verify the validity of the certificates and other documents of the individual. It consumes a tremendous amount of time for validating and verifying such documents manually. Thus we propose a system to develop a Decentralized application (DApp) for implementing a Blockchain[1] to store and verify the documents. By the nature of blockchain, the documents are securely stored with high integrity, and no further modifications can be done to the blocks in the chain which in turn reduces the creation of forged documents. Also using Distributed Ledger technology(DLT)[5] and IPFS the data is decentralised so that it is readily available with integrity. Also, using MultiSig[3] concepts, the system is more secured by two step authentication. Thus, blockchain creates trust and DLT provides integrity ease of access. And with use of IPFS the DApp is decentralized4]***

Index Terms: ***Document Verification, Blockchain, Certificates, Smart Contracts, MultiSig***

I. INTRODUCTION

Our paper aims at providing trust to the user documents such as certifications, contracts, legal documents, identity documents, etc., stored on a blockchain in a distributed environment. Our system involves three categories of user. The Certificate Issuer, the Certificate Recipient, and the Certificate Verifier. Certificate Issuer(CI) issues a certificate or contract in the name of Certificate Recipient(CR). The issued certificate data is added to the blockchain by mining a block in the blockchain. DLT[5] implemented using IPFS[4] or Hyperledger[7] or Ethereum[9] that distributes the newly constructed blockchain to all the nodes in the blockchain[5] network. Each node verifies that authenticity of new chain and accepts or rejects it. When a Certificate Verifier (CV) wants to verify the data of the Certificate Recipient, CV computes the hash of recipient's data and compares with the hash in the blockchain. Also Asymmetric key encryption and decryption techniques are used to encrypt and decrypt the data present in the blockchain to safeguard it from eavesdropping in other nodes.

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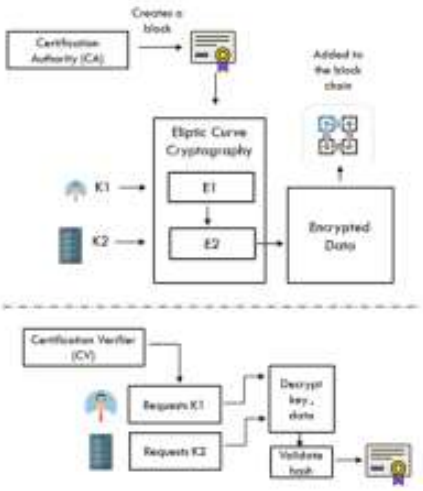
II. EXISTING SYSTEM

In existing system, the verification of documents is manual and data is fetched and verification is done from a centralised server. It requires lot of efforts to maintain a centralised server and at the time of verification, the server may become unavailable. Thus, relying on a centralized server for documents such as certificates doesn't guarantee availability and integrity. This we propose a system that uses a distributed system to ensure availability and blockchain is used to ensure the integrity of the documents. Also the system uses asymmetric key encryption mechanism to provide confidentiality to the data stored in the blockchain.

In Chapter III we propose DCCVuB Structure. In Chapter IV we propose methods creating user and records (mining) in the blockchain. In chapter V we propose methods for distributing the blockchain over the network using IPFS. In chapter VI we propose the process of verification of records in the blockchain. In Chapter VII we propose encryption and decryption mechanisms to ensure security of the system. In Chapter VIII we propose the implementation details of the system. In Chapter IX we propose the future work and conclusion of DCCVuB



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IOT Based Low End Automotive Drive Recorder As Blackbox

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Abstract— ***Automotive electronics plays an important role in the automobile industry and essentially addresses the safety and security concerns. The proposed work aims at a cost effective solution to the design and development of an event data recorder called black box which is more or less equivalent to the one that is being used in the aviation sector. The paper deals with the design of the black box that has features equivalent to the data recorder which could be very useful for domestic vehicles to record their parameters. It is also having additional features that could assist in reducing the number of accidents, by analyzing the previous accidents. The system also provides automatic accident alert system which helps in informing the nearest hospital and the traffic authority by providing not only the coordinates of the accident location but also the exact physical address for immediate medical attention which can save numerous lives every day. The system also provides other features like advanced web tracking and reduced overall cost optimization by integrating multiple features. The experimental results shows superior performance compared to the existing methods for accident analysis.***

Index Terms— ***Black box, Automotive electronics, accident analysis, web tracking, data recorder.***

I. INTRODUCTION

Internet of things is the combination of different technologies like real-time data analytics, machine learning, sensor networks and embedded systems. IOT extends Internet connectivity to range of non-internet-enabled physical devices. These devices are embedded with technology and so they can communicate using the Internet, and so they can also be monitored and controlled remotely.

Motivation and Objective for the Proposed system

The black box system has already been in use in aircraft since 1989 to store data and track the plane details. Two type of black boxes are used, one for capturing flight data that stores information on specific parameters like flight control and engine performance and the second one called as cockpit voice recorder – which records the background sound and conversation.

The objective of this work is to analyze the reason for accident and to prevent the future accidents by using a black box which monitors the whole vehicle by using different sensors such as gas sensor, vibration sensor, crash sensor, temperature sensor, and ultrasonic sensor. We have used GPS to track the location of vehicle and GSM is used to send alert message to the registered mobile number of the driver. The accident details have been stored both online and offline i.e., in the online mode, the webpage updation is done through an IOT module which is having unique URL to track the current location and accident details through sensors. In the offline mode, SD Card is updated and also we can send an alert message to nearby traffic authority and hospitals. IOT has become part of our overall infrastructure just like water, electricity, telephone, TV and currently the Internet. Internet typically connects full-scale computers, whereas the Internet of Things connects everyday objects in the physical world.

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Tracking of Prenatal and Postnatal for Fetus Condition System

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***Abstract*: The broad acknowledgment of cloud based administrations in the medicinal services area has brought about financially savvy and helpful trade of Personal Health Records (PHRs) among a few taking an interest elements of the e-Health frameworks. By the by, putting away the secret wellbeing data to cloud servers is helpless to disclosure or robbery and requires the improvement of philosophies that guarantee the protection of the PHRs. Along these lines, we propose a system called SeSPHR for secure sharing of the PHRs in the cloud. The SeSPHR plot guarantees understanding driven control on the PHRs and jam the secrecy of the PHRs. The patients store the scrambled PHRs on the un-confided in cloud servers and specifically concede access to various sorts of clients on various bits of the PHRs. A semi-confided in intermediary called Setup and Re-encryption Server (SRS) is acquainted with set up people in general/private key combines and to create the re-encryption keys. Besides, the technique is secure against insider dangers and furthermore implements a forward and in reverse access control. Besides, we formally dissect and confirm the working of SeSPHR philosophy through the High Level Petri Nets (HLPN). Execution assessment with respect to time utilization shows that the SeSPHR approach can possibly be utilized for safely sharing the PHRs in the cloud.**

***Keywords*: Cloud computing, PHR, SRS,SeS, PHR**

INTRODUCTION:

Advancements in medicine, quality of education and technological growth have been massive over the past few years. Starting from smart phones to 3D technologies and robotic surgery to Nano medicine, the world has grown to a whole new level. Sadly, these advancements are not easily accessible by all. Remote or underdeveloped regions of the world are still suffering without the aid of advanced medicine and technology. India, being a diverse nation has its population widely spread into two areas, rural and urban. Urban areas are developed and have access to all the latest developments. The inadequate development of rural areas has had even less impact on key issues such as unemployment and health issues.

The broad acknowledgment of cloud based administrations in the medicinal services area has brought about financially savvy and helpful trade of Personal Health Records (PHRs) among a few taking an interest elements of the e-Health frameworks. By the by, putting away the secret wellbeing data to cloud servers is helpless to disclosure or robbery and requires the improvement of philosophies that guarantee the protection of the PHRs. Along these lines, we propose a system called SeSPHR for secure sharing of the PHRs in the cloud. The SeSPHR plot guarantees understanding driven control on the PHRs and jam the secrecy of the PHRs. The patients store the scrambled PHRs on the un-confided in cloud servers and specifically concede access to various sorts of clients on various bits of the PHRs. A semi-confided in intermediary called Setup and Re-encryption Server (SRS) is acquainted with set up people in general/private key combines and to create the re-encryption keys. Besides, the technique is secure against insider dangers and furthermore implements a forward and in reverse access control. Besides, we formally dissect and confirm the working of SeSPHR philosophy through the High Level Petri Nets (HLPN). Execution assessment with respect to time utilization shows that the SeSPHR approach can possibly be utilized for safely sharing the PHRs in the cloud.

EXISTING SYSTEM:

The cloud computing also integrates various important entities of healthcare domains, such as patients, hospital staff including the doctors, nursing staff, pharmacies, and clinical laboratory personnel, insurance providers, and the service provider. Therefore, the integration of aforementioned entities results in the evolution of a cost effective and collaborative health ecosystem where the patients can easily create and manage their Personal Health Records (PHRs). Generally, the PHRs contain information, such as demographic information, patients' medical history including the diagnosis, allergies, past surgeries, and treatments, laboratory reports, data about health insurance claims, and private notes of the patients about certain important observed health conditions.

DISADVANTAGE:

1.Storing the private health information to cloud servers managed by third-parties is susceptible to unauthorized access.
2.In particular, privacy of the PHRs stored in public clouds that are managed by commercial service providers is extremely at risk.
3.The privacy of the PHRs can be at risk in several ways, for example theft, loss, and leakage.

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Heart rate encapsulation and response tool using sentiment analysis

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ABSTRACT

Users of every system expect it to get better. Providing feedback to the owners of the system was difficult but with the advent of technology, it has become handy. Users can now post their comments through online blogs, android apps and websites. Due to the enormous data piling up every second, it has become a problem in analyzing it. In this paper, sentiment analysis is used for analyzing comments and reviews posted by users. The experiments are done with dynamic and real data. The tools, algorithms and methodology that could fetch accurate results are described. Experimental results indicate 90% of accuracy in proposed system. The review report generated would help the hospital management to identify the positive and negative feedback which further assists them in improving their facilities that could not only create customer satisfaction but also enhanced business processes.

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1. INTRODUCTION

Healthcare industries like hospitals, pharmacies, laboratories, software solutions are growing tremendously which is leading to exponential growth of data. Continuous advancement of all these facilities is necessary as they deal with health of the human. The zones of enhancement are identified through observation, experience and feedback of the users. The word feedback refers to the reaction to a product that would act as a main ingredient in improvement. The technical boom has let the users deliver their feedback at any point in time. Hospitals consider this as an important parameter in providing care [1].

Upsurge in the patients directed to diverse views and insights with respect to clinical amenities. These are carried to the infirmary through android app submissions, mails and websites [2]. Survey reveals that 85% of individuals use websites and blogs to post their comments [3]. There is a wide angle to analyze but it has become difficult as the data is unstructured. Owing to this, an instant action cannot be applied to address the issue and correct the condition. This would result in loss of trust among the users. Manual scrutiny might draw precise results but would require profuse manpower and time. Since health information is sensitive, misusing it could cause drastic effects. Hence the associated data is to be collected in the utmost efficient way that would else result in improper data. The feedback submitted is an expressive statement of the user which aids as a grade sheet for the hospital. The usage of the words is diverse in numerous cases for which the algorithms are intended with many restraints like tense, context, substitutes, adjacent words. Some feedback is sensitive and hence sent through emails. The data is encapsulated so it is not exploited. The response tool proposed in this paper is built to expand the healthcare commercially [4], aesthetically and to increase user satisfaction [5].

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An analysis on Version Control Systems

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PDF

N. Deepa ; B. Prabadevi ; L.B. Krithika ; B. Deepa **All Authors**

87
Full
Text Views

Abstract

Document Sections

I. Introduction

II. Study of Existing Version Control Systems

III. Proposal of A Postmodern Version Control System

IV. Parametric Comparison of Existing Tools and the Proposed Tools

V. Conclusion

Authors

Figures

References

Abstract:
Managing the source code of the project and other related documents in an organization is a mandatory need, which may ensure clarity in the delivery of the product enhancing the focus of the organization towards its intended product's quality. In this digital era of computing, we have many software configuration management tools to handle various documents, its revisions, versions and so. In this paper, we analyze the importance of various Version Control Systems (VCS) evolved to assist the software development lifecycle of the project, and compare favourite VCS tools in the market based on their features, measure their performance across chosen attribute. Also, we propose a new tool having some of the best features found in our comparison study as well as a few extra attributes that we believe will raise the quality of this new tool. This tools can combat the issues we face with existing tools in the market.

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I. Introduction

Version control, which is considered to be a very important component of software

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A Supervised Classification Techniques to Optimize Error Evaluation and Space Complexity

M.Santhiya, M.Shobana , R.Jegatha

Abstract*— Bayesian classification is based on Baye's Theorem, which is applied on a conditional probability basis of posterior and prior probabilities in parallel with future evidence. Prior Probabilities are the original probabilities of an outcome which will be updated with new information to create posterior probability. The revised probability of an event occurring after taking into consideration new information.A Bayesian classifier is used to predict the values of features for members of that class. It is used to over come the diagnostic and predictive problems. This classification provides a usefal perspective for understanding and evaluating machine learning algorithms.It is a probabilistic learning algorithm which calculates the explicit probabilities for hypothesis, among the most common learning problem.The proposed work has focused on designing of two classification algorithms naïve space and naïve Mine classification to optimize space complexity and error evaluation forlarger data sets.

***IndexTerms*– Prior & Posterior Probability, Bayes Theorem,Naive Space,Naive Mine.**

I. INTRODUCTION

The data or information that is anticipated in the present situation is significantly arranged or characterized. Arrangement goes under regulated learning methods of AI. Characterization can be quickly portrayed as the undertaking of doling out a class to occasions of information depicted by a lot of characteristics. It incorporates the development of a classifier which is prepared on a lot of preparing information that beforehand has the right class alloted to every datum point. Arrangement fabricates a brief model of the appropriation of class names and afterward used to group new information where the estimations of highlights are known however the class is obscure. Bayesian arrangement depends on Bayes hypothesis. Bayesian hypothesis gives a numerical math of conviction, which depicts what it implies for convictions to be reliable and how they should change with evidence.This supposition, called class restrictive freedom, which is made to improve calculation, thus it isconsidered 'Naive'.Bayesian classifiers are the statisti calclassifiers which predicts class participation probabilities. Guileless Bayes classifier works best in two cases, When the highlights are totally autonomous and also when the highlights are practically needy.

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II. LITERATURE SURVEY

Bayesian characterization [1] with Mistake Adapted successive testing system. Earlier Learning can be utilized related to the preparation information to build the ideal Bayesian Classifier. Discovering more exactness in forecast of information ought to be improved. To present grouping and bunching systems and execution investigation with exactness in blunder detection.Spatial parallel order, Spatial summed up direct model (SGLM)[2] and the Bayesian spatial summed up straight blended model (SGLMM) is utilized to recoup information robustness. A Bayesian characterization for perceiving written by hand numerical articulations [3]. Presenting some constraintson how data sources might be parceled, [4]we inferred an effective parsing calculation got from Unger's method.Expert elicitation and Bayesian System demonstrating for transportation Mishaps. How BBN is connected for demonstrating dangers in the oceanic area, uncommonly on where information originate from and how they are connected. A Bayesian approach [5], forcharacterizing vulnerability in announcing apopulation breakdown, this gauge of vulnerability as an approach to set a certainty interim around a predefined rate decay from the most extreme. Probabilistic methodology [6]for Anticipating the Size of Coding Units in the Quad-Tree Structure of the Quality and Spatial Versatile HEVC. An improved pressure execution atthe cost of critical increment in computational codingcomplexity. On Bayesian Network Classifiers[7]with Decreased Exactness Parameters, Execution is better wavelet-based improved Bayesian surmising. Precision and execution in system model ought to be expanded for discriminatively improved parameters for everything except extremely low piece widths. Moving endlessly from Blunder Related possibilities [8] to accomplish spelling remedy in P300 spellers. For bigger informational collections mistake must be assessed and improve the precision. its utilization as a compelling specialized instrument is dependent on high P300 arrangement exactnesses 70% to represent mistake revisions. Generalized different bit learning [9] with Information Subordinate Priors. Earlier likelihood of blunder ought to be improved with exactness. Early interterm flaw diagnosis[10] in acceptance machines utilizing an explanatory.

Original Article | Published: 25 July 2019

Enhanced fault identification and optimal task prediction (EFIOTP) algorithm during multi-resource utilization in cloud-based knowledge and personal computing

J. M. Nandhini ✉ & T. Gnanasekaran

Personal and Ubiquitous Computing (2019) | Cite this article

60 Accesses | **1** Altmetric | Metrics

Abstract

Virtualization technology is playing an important role in cloud computing for efficient task scheduling and application deployment. Cloud computing offers a platform to store and retrieve a large volume of information without any restriction on time or location. The system optimizes the available resource based on the user application requirement. Server and data storage devices can access distributed data residing in remote places via virtualization mechanism, where cloud applications are easily migrated from one server to another. Issues related to fault identification and resource optimization problems often occur in a cloud environment. To resolve these issues, an enhanced fault identification and optimal task prediction (EFIOTP) algorithm are proposed for finding and preventing faults during task execution with multiple resources. The research work objective is to design a deadline-determined resource allocation model with the VM resource isolation method in a cloud. The proposed work evaluates the maximum amount of task execution by considering different types of resources to identify and predict the faults at various levels and to minimize the occurrence of faults and task execution time. Based on the experiment evaluation, the proposed EFIOTP algorithm reduces 775 task completions (TCT), 0.237 datacenter server utilization (DCSU), 2% virtual machine cost (VMC), and improves the 0.39 hypervolumes (HV) on several parameters and scientific workflow application.

This is a preview of subscription content, log in to check access.

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An Assessment Survey of Cloud Simulators for Fault Identification

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Abstract: **Cloud computing is a large set of logical computational resources accessible via internet. Cloud computing offers services to obtain coherence, scalability, economy subscale with maximum efficiency and resource optimization. Fault tolerance is the characteristic that enables the system to stay operating and adhere SLA even when the in the system faults and failures. For a system to be fault tolerant the interval of fault identification and removal must be minimum to follow the QoS requirements. virtualization in the Data center can assist in fault prediction that makes the system fault tolerant. A cloud simluator is an extensible tool to analyse, evaluate and measure the system performance of the cloud cloud applications to satisfy the QoS provisions. This paper deals with the survey of the various cloud simulators with emphasis on using CloudSim**

Keywords:Data Center, Simulation, CloudSim, Fault tolerance

I. INTRODUCTION

Cloud computing delivers computing services comprising servers, databases, networking, analytics, software development platforms and other services over internet thereby providingflexible resources, rapid modernization and economies of scale. The distributed services are used by the cloud customers as needed. cloud computing extends scalability, security, anytime, anywhere access, high availability for consumers and organizations. The usage of cloud computing is in a fast pace. For the purpose of evaluation and analysis the components of cloud computing such as data centers, virtual machines and other services can be modelled using cloud simulator.

One of the most popular tool available inthe industry for modelling cloud computing iscloudsim. Cloudsim is developed in Java based on Gridsim.The main benefits of a cloud simulator are design and performance feedback, flaw detection at various abstraction level, conceptual demonstration made easier, cost optimization and experimental feedback, risk mitigation at initial stage.[1]

II. SIGNIFICANCE OF SIMULATION

Cloud computing offers IT infrastructure, applications , resources to the end users as services using pay as per use model . Before executing new algorithms and methods in the real time environment, they have to be tested for their performance and other security issues. Cloud simulation makes the task easier by simulating a real time environment that can be used at liberation . Simulation eases the complication in the infrastructure, examining the threats and measuring the quality and overall performance. The key advantages of using a simulation based framework are:[2]

- Making scalable and reliable real time environment.
- Facilitating dynamic flexible configuration and development environments.
- Customizing the visual interfaces in a simple way.
- Increasing the cost benefit by reusing the available components.
- Creating a platform to test the proposed algorithms and methods thereby allowing to examine the quality and performance.

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Intelligent Crime Analysis System Using Pyspark

A. Ponmalar, P. Leela Jancy, V.R. Barath Kumar, B.K. Akshathaah
and P. Pavithra

Abstract--- *Crime analysis is one of the most important activities of the majority of the intelligent and law enforcement organizations all over the world. Generally they collect domestic and foreign crime related data (intelligence) to prevent future attacks and utilize a limited number of law enforcement resources in an optimum manner. A major challenge faced by most of the law enforcement and intelligence organizations is efficiently and accurately analyzing the growing volumes of crime related data. The vast geographical diversity and the complexity of crime patterns have made the analyzing and recording of crime data more difficult. Data mining is a powerful tool that can be used effectively for analyzing large databases and deriving important analytical results. This paper presents an intelligent crime analysis system which is designed to overcome the above mentioned problems. The proposed system is here is we find weather analysis along with the crime happened and we proposed Pyspark here to store large amount of data's for crime analysis. The proposed system consists of a rich and simplified environment that can be used effectively for processes of crime analysis.*

Keywords--- *Pyspark, Bigdata, Data Mining.*

I. INTRODUCTION

Crime analysis has become one of the most vital activities of the modern world due to the high magnitude of crimes which is a result of technological advancements and the population growth. Law enforcement organizations and the intelligence gathering organizations all around the world usually collect large amounts of domestic and foreign crime data (intelligence) to prevent future attacks. As this involves a large amount of data, manual techniques of analyzing such data with a vast variation have resulted in lower productivity and ineffective utilization of manpower. This is one of the most dominant problems in many law enforcement and intelligence organizations.

There are several significant reasons for crime analysis such as to identify general and specific crime trends, patterns, and series in an ongoing, timely manner, to maximize the usage of limited law enforcement resources, to access crime problems locally, regionally, nationally within and between law enforcement agencies, to be proactive in detecting and preventing crimes and to meet the law enforcement needs of the changing society. There are various crime data mining techniques available such as clustering techniques, association rule mining, sequential pattern mining, and classification and string comparison.

Several web based crime mapping systems are available on the Internet such as narcotics network in Tucson police department, but majority of them have been custom made for legislative authorities in different countries and those systems are not accessible to parties outside that particular law enforcement or legislative authorities.

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EFFICIENT REGISTRATION OF LAND USING BLOCK CHAIN TECHNOLOGY

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Abstract: ***A Block chain as a technical solution for real estate(land registry)transactions that is a technical demo shows technology and development of the solution. In the proposed system, the knowledge about the block chain and what are all the ways the concepts of block chain will be used in real life applications such as land registry, vehicle registration, financial records,etc. In this paper we can detailed study about the land registry concept . There merits and demerits on using the concepts of block chain on this fields are also analyzed.***

1. Introduction

What is block chain? Block chain concept was introduced by Satoshi Nakamoto in 2008 it can serve as a public ledger using its own unit of account (Bit coin)[1]. Development of a new information technology(IT) can bring change in the society. Blockchain is a technology to serve as public ledger using its own unit of account (bit coin).The invention of bit coin using blockchain concept is the first digital currency. This block chain technology involves creating a new methodology digital verification records of files. E.g. transactions[2]. This verified records are considered as fingerprints. This records are groups into blocks and they are linked together. It is generally defined as the block of chains, each and every block contains a cryptographic hash value of the previous block in the chain.

A block chain is a public or distributed ledger that is used for managing the transactions in an efficient manner. A block chain uses only a peer to peer network as a protocol for communicating all the new blocks. The third parties can't able to alter the data in any given block when the transactions

completed. But the data can be alter by doing alterations of all the subsequent blocks[3]. Data stored in a block chain are impossible to alter, rewrite, delete or do any illegal manipulation activities, it's highly secure and reliable network. Block chain is consider as the decentralized system which uses peer -to -peer network system, so there is no centralized government or organizations to control these block chain because it is a public digital ledger that is used for providing security as well as managing all the transactions

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across the world who are all connected to block chain so that a data cannot be altered in blocks , without the alteration of all subsequent(previous and after) blocks.

There are three types of networks available in block chain, they are public block chain, private block chain and consortium block chain.

In Public block chain there is no restrictions for accessing the data. Everybody can send a transactions through the internet connection and become a valuator. The well-known public block chains are Bit coin and Ethereum.
A private block chain is authorized as a middle-ground for companies small group's that are generally interested in the block chain technology but they are not with any level of control . Only the network administrator can allow the persons to join on block chain . There is some restrictions to access the data . This type of block chains can be considered as a private network.

A consortium block chain is a semi decentralized system. It is also authorized but instead of a single organization a unique group controlling it, a number of companies, where each might operate a node with the help of a network. In consortium chain, administrators restrict the users reading and also to see the block, this type of blockchain can allows only the restricted user that the people whom are they trust can only add them in the block and made a control with them itself.

2. Related works

Now a days blockchain technology is one of the most developing technology in the world , there are lot of researchers are involve they are trying to develop the technology ,let us see what are the related works done in the field. The most important aspect of blockchain concept is the security every one can easily trust the concept , first the concept was introduced for the transaction of the bit coin which is called as the online currency there is no dependency of the third party these are all done by the blockchain concept.

E-voting system is the another developing technology on the blockchain , by introducing the digital concept in voting system majority of the malpractices are reduced and this leads to the correct democracy nation if the concept are introduced by our government. The technology are also used in the financial services that are also helps in the development of

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SMART CAR PARKING SYSTEM IN SMART CITIES USING IR

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Abstract: **Internet of Things (IoT) plays an indispensable role in bridging the gap between all the day to day things to the networking system, and creates an ease to access all the un-internet things from any distant location. Adaption to the growth in the recent trends is inexorable for the people. With all the advancement in the technology, finding a particular place to park our automobile becomes an exasperating issue. In our work we have designed a Smart Car Parking System (SCPS) with the help of infrared sensor and a database based on application of Iot, which permits the driver to find the proximate parking slot, and gives the number of free places available in that respective parking zone. This ideology mainly focuses on diminishing the time involved in discovering the parking space and also it decreases the unwanted travelling, through filled parking slots in a parking arena. This will in turn reduce the consumption of fuel, which would reduce carbon footprints in our environment. Thus, this will pave way for an eco friendly surrounding.**

Index Term: IoT, SCPS, HTML, IR, GPS, LCD

I. INTRODUCTION

The concept of Internet of Things (IoT) started in 2008 and 2009. The gadgets could be easily tracked, managed or monitored using remote computers connected through Internet. IoT enlarges the use of Internet. It acts as an inter-network of the devices and physical objects, or 'Things'. The two eminent words in IoT are"internet" and "things". Internet means a vast global network of coupled servers, computers, tablets and mobiles using the various types of protocols and connecting systems. Internet allows the process of sending, receiving, or communicating of information. IoT generally comprises of inter-network of the equipments and physical objects. These objects can gather the data from isolated locations and interact to units managing, acquiring, organizing and analyzing the data in all the processes.

It provides an institution where things (date to day equipments, watch, wake up clock, home devices) become chic and behave lively through sensing, computing and communicating by embedded small devices which communicates with remote things or isolated persons through connectivity. The scalable and robust nature of Internet of Things is allowing developers to create and host their applications on it. In basic terms IoT can be explained in form of an equation stating:

Physical Object + Sensor + Internet = Internet of Things

The ideology of producing a Smart City is now becoming viable with the exposure of the Internet of Things. The key aspect for the exposure of smart cities is comfortable parking facilities and systematic transportation and management [12]. There are several issues in smart cities; one among these issues is related to car parking. In these days, urban people are finding it difficult to avail parking spot to drop their vehicle. It is always exhausting for drivers to park their vehicles. It tends to become harder with ever increasing number of private car users. These circumstances can be considered as an opportunity for smart cities to undertake actions in order to improvise the parking resources.

Thus, this leads to reduction in time spent on searching vehicles, traffic congestion across the highway and road accidents that occurs because of these vehicles. Problems concerned with parking and traffic congestion can be resolved if the drivers are informed prior about the availability of parking slots in and around their intentional destination.

Current advancements in making low-cost, low-power embedded systems are useful for the developers to build new applications for Internet of Things. The developments in sensor technology, many modern cities have paved way for deploying various IoT oriented systems in and around the cities for the purpose of monitoring. The LCD display is highly efficient for the improvement in this technique. The use of GPRS is made to make the system more advance and distinct.

A recent survey performed by the International Parking Institute [1] reflects an increase in number of innovative ideas related to parking systems. Presently there are still certain parking systems [2] that claim to drivers to deliver

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Implementation of effective test automation with instrumented customer experience data

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Abstract: ***In the B2C & B2B ecommerce arena, the Measurable Business Results (MBR) of an application is its ability to retain customers and its prospects. And in an ephemeral product and services world, customer experience (CX) is a pillar of value creation. A superior customer experience is a means to stay ahead in the competitive environment. The issues that arise on the customer experience has a greater visibility on the smaller social world and is a direct impact to MBR. With all said, a greater priority of resolving such issues with an effective test automation that leverages the CX oracles in automating the test suites is a solution to mitigate the issues around customer experience. The approach involves flooding the test oracles created with the real customer experience data to the test automation suites that cover the 360 degrees of the functional, regression and integration testing of the application.***

Index Terms: Customer experience, test automation.

I. INTRODUCTION

The application testing with respect to functional, regression and integration testing is a continuous process with the discovery of new data set that suits the changes that has been incorporated as a new feature or changes to the existing one. Every time, the data set identification and streamlining the data set for automated testing is a herculean task and often involve manual efforts to make it happen. There are different mechanisms to validate the correctness of the system under test. The approach taken here is the continuous flooding of the test oracles that get generated by the instrumentation mechanism of the application. The application under test is continuously instrumented gathering the data of customer experience that deal with each specific class and methods of the application. In a nutshell, it is the Integration of Technology with Customer Experience with Open Source API & Frameworks towards enhancing a Java/Web Application with better quality using the automated testing with the following modules.

1. Bytecode Instrumentation to trace CX Behavioral and Interaction Data
2. Automated Testing with CX Data

A. THE CHALLENGE OF TODAY'S IT ENVIRONMENT

The following are few challenges that we see as an inherent issue in the testing world

1. Lack of API Testing
2. Lack of Automated Testing
3. Lack of visibility into production applications
4. Difficulty in managing environments

Fig. 1.1 The Challenges of IT Environment

The results of the above challenges when turned out to be an issue in the production system will result in

1. Voice of Customer – The interaction and behavior data of the customer are analyzed only when the application suffers a huge threat with its stability and reliability
2. Negative Scores of Customer Experience is direct impact to the brand.
3. CX Analytics - is the baby of top management for any organization directly proportional to the following

– Conversion and Revenue
– Scorecards & Competitor Ranking's

B. THE INTEL EFFECT

One of the greatest security issue identified in the early Jan of 2018 was the Meltdown & Spectre Attack. The fundamental design flaw of the intel chips was identified after decades of it being the market leader in the industry. The vulnerability was the leakage of kernel memory to any application when introduced with chip-level security bug. The defense mechanism adapted by various operating systems in the Kernel Address Space Layout Randomization (KASLR) is defected by this vulnerability. This vulnerability can be exploited by hackers and malware to read the kernel's memory and the complete system is under threat inclusive of its network.

C. THE VOICE OF THE CUSTOMER

The feedback from the customer about the product or services to different mediums is the voice of the customer (VoC) and materializing this input to the testing arena before it reaches the public forum will benefit to a larger extent. The following are the different source of VoC data.

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Role of Social Sentiment Analysis in Stock Trends Forecasting

K.Anuratha, M.Parvathy, S.Sujeetha, J.Ghayathri

Abstract: ***Social media like Face book, Twitter have attracted attention from various sectors of study in recent years. Most of the people share ideas, opinions on various topics such as Stock Market Prediction, Digital marketing, Movie review, Election Results Prediction and Product reviews etc,. Forecasting Financial Market is considered to be one of the significant applications of Sentiment Analysis on Social Data like Face book, Twitter. It is essential to accurately predict the movements in stock trends, as the stock market trends are volatile. In the past few years several researches have been carried out for predicting the future trends of stock market through sentiment analysis on social media comments. This paper gives the survey on the various techniques, tools and methodologies adopted by several researchers on Stock Market Prediction based on sentiment analysis of Social networks.***

Keywords: Stock Prediction, Twitter, Sentiment Analysis, Classifiers, Accuracy, Deep Learning

I. INTRODUCTION

It is always interesting for the researchers to find ways to predict what will happen in the future. Social media is a communication platform contains valuable knowledge hidden in it. Information available in the social media resembles real world events and they can be exploited by the researchers to enhance the application capabilities. Stock market prediction can be considered as the one of the important applications of social media. The Stock market is a complex system as it is been influenced by the political, economical and social factors. The prices of stock are very dynamic and impressionable to changes due to the nature of financial domain. Though it is a complex system still stock market is one of the important economic factors.(Al-Augby,2015)[17].The focus of stock market forecasters is to develop a successful approach to predict the stock prices. Prediction of stock market is one of the tough tasks because globe the use of social networks is popular and huge, as it provides a medium to express, share and publish the opinions of people. The effect of social media in stock market prediction has been studied by several researchers, in recent times. Social networks play important role in the society to share the ideas and thoughts of the users through the internet among the virtual community. The knowledgeextracted from the social networks can be applied to predict movement of stock market to some extent.

The most famous micro blog Twitter allows it users to create tweets, short messages that can be shared with and responded by other users of Twitter. The users are much focused on the message they wish to communicate, as twitter employs a restriction on message size. This feature of Twitter makes the tweets good candidates for the Sentiment Analysis task.

Sentiment analysis falls under Natural Language Processing (NLP), a branch of Machine Learning which deals with How computers process and analyze human linguistics?.

This paper is planned as follows: Section II describes Sentiment Analysis. Section III describes the inference from the related research on stock prediction – Stock Prediction Roadmap. The Comparative Study on the different approaches is summarized in Section IV. Section 5 describes the Conclusion on the work carried out and proposes the scope for future work.

II. SENTIMENT ANALYSIS

Sentiment analysis is the process of determining opinion from people's emotion and feelings. Sentiment classification can be done at phrase level, sentence level and document level. The sentiment analysis uses Natural Language Processing (NLP) to divide the language units in to three categories: Negative, Positive and Neutral [20].

The different opinions of people, shared in the social media play significant role in the process of decision making and recommendations [20]. The analysis on micro blogging websites are done using Sentiment Analysis. The contents of Social Media such as posts, tweets, photos are analyzed by people of different community such as politicians, marketers and analysts etc,. Nowadays, stock market investment plays an inevitable role in the finance sector, as high stock market value is considered as the parameter of high economies. The volatile nature of stock market has

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Advanced Coherent System For Predicting Cardiac Risks using Data Mining Techniques

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Abstract: ***Considering health care and medical industry related data there are millions or tons of data which contains numerous hidden information. This information can be mined through which we can make effective decisions in their related industry. There are numerous far advanced methods and techniques in mining and determining the useful decisions using the retrieved useful information. Such an effective system called Coherent cardiac risk prediction system (CCRPS) is developed using neural networks in early detection or prediction of various risk level in cardiac disease. This work employs a multilayer perception neural network with back propagation as the training algorithm. This system aims in predicting the likelihood of patients getting disease related to cardiac such as CHD, a prior heart attack, uncontrolled hypertension, abnormal heart valves, congenital heart disease (heart defects present at birth) and heart muscle disease. The system uses a total of twenty-one medical related parameters such as age, sex, chest pain type, resting blood pressure (in mm Hg on admission to the hospital), serum cholesterol in mg/dl, Smoking, stress etc for prediction purpose. It enables or activated the important knowledge such as how the medical factors related to cardiac disease and patterns and the relationship to be established. Through this system we obtain effective results that have crafted its own diagnostic method or way to predict the risk level measurement of cardiac disease.***

Keywords: ***data mining, mining tools, classification, neural networks, multilayer perception neural network, back propagation, risk diagnosis.***

I. INTRODUCTION

Data mining or Knowledge discovery is the way of extracting meaningful information from a huge data. The data which obtains from various sources are collected as huge data sets which may or may not be in an orderly manner. These data contain so many secret information hidden within them. Many organisations may not be aware of such information and hence retrieving such useful information are not possible. The solution for retrieving such information with-in a span of time is done with the help of some tools and algorithms.

There are many Data mining techniques which helps in analysing the data and make much better decisions in the organizations. In this paper we focus onto the medical sciences more specifically about cardiac disease, where more patterns or some hidden data can be retrieved and treated through the above said techniques. This helps in diagnosing or predicting near to accuracy and treating the medical cases in much efficient manner. This also promotes automation in early diagnosing and treating phases.

Cardiac disease is considered to be a dreadful disease which lead to sudden death or severe disability with psychological impact and affects the economic standards of a family. As per the survey reports of WHO, more than seventeen million people across the globe are dying every year because of Coronary Artery Disease. There are numerous heart disease, some are Coronary artery disease, Heart valve disease, Angina, Heart Arrhythmias, Endocarditis, Rheumatic heart disease, Cardiomyopathy, Congenital Heart Disease which occurs by numerous factors. Menopause in later stages in women, complications during pregnancy can also be a reason for heart disease and heart attacks.

As a tremendous growth in healthcare industries as well as new diseases occurring day by day the healthcare data centres and so huge and they get millions and millions of data each second. Hence data mining and machine learning algorithms plays the most fundamental part of extracting meaningful information. Even some advanced machine learning techniques are used so that some basic automations are made.

Prediction automation in most of the cases are always a good practise in healthcare industry for instance when a patient enters with a heart pain the specialist wont just predict with a touch examination, but allowed to a diagnostic centre after an emergency treatment. The prediction with an automation may have more parameters such that the results are almost accurate decision which helps the medical practitioners to treat the patients well.

A. Weka

Weka is a collection of machine learning algorithms for data mining tasks. The algorithms can either be applied directly to a dataset or called from your own Java code. Weka contains tools for data pre-processing, classification, regression, clustering, association rules, and visualization. Weka makes learning applied machine learning I recommend Weka to beginners in machine learning because it lets them focus on learning the process of applied machine learning rather than getting bogged down by the mathematics and the programming — those can come later.easy, efficient, and fun. It is a GUI tool that allows you to load datasets, run algorithms and design and run

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Determination of Organic Matter and pH Value of the Soil Using Deep Learning Techniques

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Abstract--- Tamil Nadu net cultivated land is 48.92 lakhs ha in which 58% land are under irrigation and rest are rain-fed. The productivity of rice, maize, sugarcane, cotton, and grams compared to the other countries are very less. The productivity of vegetables in India is 11.2 tonnes/ha and fruits are 16.2 tonnes from the document on Tamil Nadu Vision 2023. This motivated to develop a system that identifies the organic content of the soil. So there needs a technology to estimate or predict the organic matter of the soil before cultivation of any crop that ends up in good crop yield with better productivity. To estimate the soil organic content and pH value present in the soil, Shortwave Infra Red (SWIR) and Visible-Near Infrared (VNIR) bands ranges between 400-2500 nm are used. The work is to elaborate on soil organic and pH estimation using remote sensing (RS) techniques. SOM provides important functions including nutrient preservation, water holding capacity. It acts as a key pointer for soil quality. Soil pH is measure of acidity and alkalinity present in the soil, on a scale read from 0 to 14. The comprehensive study on soil spectroscopy needs to be investigated. The soil images are captured using UAV using hyperspectral sensor camera for the chosen study site. The estimated organic contents of the soil benefits the farmers to improve the crop yield which results in the increase of their productivity.

Keywords--- Organic Soil Content, Hyperspectral, ph Value.

I. Introduction

Agriculture is the backbone of the Indian economy as it contributes 18% of India's GDP and 1/6th of export earnings. Agriculture is more important because of world food demands for the increasing population and more production of crops eventually helps in achieving zero hunger. Agriculture is the main source of income for most of the people in India. For good crop production, the land used for the cultivation should be healthy. The soil used for cultivation should be rich in minerals like nitrogen, phosphorus, calcium, potassium etc. Soil naturally contains these minerals. These nutrients allow plant growth. When soil nutrients are missing or in a shortage than required, plants suffer from nutrient deficiency and stop growing. When the nutrient level is too low than normal, the plant cannot function properly and thus cannot produce the food necessary to feed the worlds' population. For every time the crops are harvested for human consumption, the natural supply of nutrients in the soil must be refilled. This is why farmers add nutrients to their soils in one or many ways like organic matter, chemical fertilizers, and even by growing other small plants etc. This maintains the fertility of the soil. So, those farmers can continue to grow the crops healthy and nutritious next time.

In spite of much technical advancement, agriculture remains the ma-jor source of income for 60-70% of the population in our country. There are several problems faced by the farmers due to lack of knowledge in using the fertilizers. This leads to crop failure or reduction in the productivity of crops. It has been shown that for proper usage of fertilizers minerals present in the soil should be known. For this government has issued Soil Health Cards (SHC) for every farmer. The work done by SHC's is physical and costly. So, in the proposed sys-tem, the Hyperspectral images from satellite are collected for the area specified and analyzed the images. To generate the spectral Signatures of organic matter present in the soil. According to data collected the amount of organic matter present in the soil using Machine Learning techniques.

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A Study on Financial Problem of Organised Retail Stores in Kancheepuram District

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Abstract
The size of Indian retail industry is more than US $350 billion but it is highly organized. The organized sector has started developing in the past few years. Many International brands have entered in to the market with the growth in organized retailing, organized retailers are fast changing their business models. The aim of this paper is analyzing financial problems of organized retail sector.

Keywords; *Retailers, organized, financial problem, market*

I. INTRODUCTION

Indian Retail Industry is placed a few of the ten largest retail showcases in the world. The attitudinal move of the Indian client and the rise of looked after out retail arranges have modified the substance of Retailing in India. With the indications of reappearance of monetary development in India, consumer shopping in retail detail is being predicted as a key open door area. The sorted out retail enterprise will develop up to 18 percentage in 2017. With those stages of improvement, there may be excessive extension proper now. Huge Indian business enterprise gatherings like Reliance, Tata, Birla and Mittal are investigating openings in retailing. There will be increment in mindfulness tiers as for gadgets, use and all prompting higher preference level the various customers.

II. INDIAN RETAIL SCENARIO

India's retailing blast has acquired further power, dynamism and liveliness with conventional game enthusiasts checking out in the Indian marketplace and the dominion's present day-day goliaths locating a way to charm the patron. Simultaneously, the early people are rethinking their methodologies to stay extreme and match the new market scene. The following not a few years have become a kick out of the chance to take a look at short development in the composed retailing bunch with a few riding global gamers installing their essence in India with the resource of improving their preparations to healthy close by tastes and purchasing conduct at the same time as territorial game enthusiasts have ventured up their guards and are endeavoring to choose up side over global gamers by way of utilizing their perception into community markets. The big majority of the looked after out retailing in India had as of past due started out and turned into basically moved in metropolitan city regions. Despite the truth that India has greater than five,000,000 stores everything being equal and patterns, the state needs present day feeling of looked after out retail places. This offers awesome risk to shops. As a good deal as ninety six percentage of the 5,000,000 shops are littler than 500 rectangular toes in territory. This implies India's consistent with capita retailing area is round rectangular ft this is most minimal on the planet. A little extra than 8 percent of India's populace is worried with retailing while contrasted with 20 percent in U.S.

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e-Governance through e-Seva in Tamilnadu

C. R. Senthilnathan, V. Dhanyalan

Abstract: e-governance services have become a key measure for the governments to improve their services to the general public after the advancement of information and communication technology (ICT). India being one of the developing countries, has initiated their ICT services in the form of e-Seva. Though governments started these services in India about four years ago, this study is initiated to find the consumers perceptions on the e-Governance and the gaps in the consumer expectations. Three consumer namely, system stability, service reliability and service quality are used in the study to measure the satisfaction. It is found that of the three measures, system stability and service quality have less positive impacts on consumer satisfaction indicating that definitely the government has to improve their service. Whereas the service reliability is better as far as the satisfaction level of the consumers concerned.

Keywords: e-Seva, Consumer perceptions, ICT, Service quality.

I. INTRODUCTION

e-governance / e-seva is all about the implementation of information and communication technologies (ICT) to help the government in administration, support public services and creating relationship among its citizens. Government usage of ICT is to create governmental policies, norms and regulations and flexibly to manage and monitor its governance in known as e-governance (Palvinder Sharma (2007)). Before the implementation of e-governance across Pan India, one should take into consideration the ground-level realities in accessing internet in the villages of India (Malhotra C., Chawla V. Dan. I. (2010)).

Like any other developing countries, India also faces many major hurdles and opposition to the implementation of ICT in various government sectors (Mistry H. (2010), Dwivedi (2010), S.K. Kumar S.P (2010)). The reasons for these inadequacies in addition to Resource lack of motivation and awareness , lack of trust, and lack in technical change. Some of the previous studies (Rajagopalan R.(2009), Damm P. K.(2010), Okike K.M.(2012)) have identified that major problem in Indian e-governance is that it is not citizen centric and suggest that it should be citizen and users specific, community centric and duly understanding the local needs and their demands.

One of the major vision projects of Indian Government is to enable all Government services with information technology which will enable accessibility to every state in the Indian village in a more efficient and reliable way. The vision project name is e-Seva meaning service through electronic media.

II. OBJECTIVES AND SCOPE OF THE STUDY

- To study the consumer perception on e-Seva services
- To find the extent of consumer satisfaction

This study will help in identifying the satisfaction level of the consumer and would help in rectifying the lacuna in the service procedures. This will also bring out the consumer expectations which can be addressed as some factors for enhancing the consumer satisfaction.

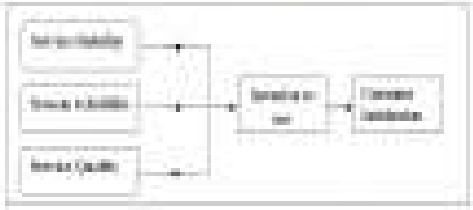
III. REVIEW OF LITERATURE

In the economy wise classification, one among the top states is Tamilnadu. Tamilnadu has enabled many of its services through the e-seva platform (Kumar et al.,(2017)). Over the years the public interest has increased dramatically in the use of ICT and e-technology is the solution for this. Today, e-governance plays an importance role in transforming the political, social and economical landscape of an economy. The reasons of the implementation of ICT by the government is not an easy as it looks. The reasons of implementation includes other important factors like cultural values and attitude within the government and its offices (Angchuan, Sikdar, 2003).

IV. METHODOLOGY

The sample size of the current study is 206 with the respondents selected at simple random technique with a well structured questionnaire. Five point likert scale is used to assess the responses of the respondents. To statistically analyze the data, SmartPLS software is used.

V. CONCEPTUAL FRAMEWORK



The major two objectives of any government is to convey the relevant information to the general public and to increase the level of transparency of the government functioning (Silva,Chiang et al., 2000). A good government system's goal should be to provide the required, reliable, useful and timely information services which is easily accessible to all the people (Bakos, 2000). The three major dimensions which determines the satisfaction level of e-seva (eGovernment) users are service quality, system reliability and stability. Service quality refers to all the services as the one-stop service centre like the individuals, business, community

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Impact of Direct-To-Home (DTH) on Indian Television Viewers

C. R. Senthilkumar, R. Jayalakshmi, M. Manju Bashini, P. Vasumathi

Abstract:— Above us times has revolutionized the television viewing in India. Despite of the high switching costs, alternate offers like more regional channels, discounts, free installations and recent subscription modes are attracted more consumers. Hence, independent variables consumer satisfaction, alternate offers and switching cost were used to understand the consumer loyalty towards DTH service providers. The data collected was analyzed using statistical tools revealed that, substantial amount of switching cost for changing DTH service providers is a biggest hurdle which makes the consumer loyal. The consumer satisfaction which has a positive influence on the consumer loyalty is also the fact that irrespective of the service providers, their responsiveness towards customer calls and complaints are not addressed at the expected level.

Key words: Customer Perception, Loyalty, Customer satisfaction, Alternate offers, Switching cost

I. INTRODUCTION

Direct-to-Home (DTH) was perceived in India during 1996 and government permission was given during 2000 Novembers. But the first DTH services was launched only during 2003 by Dish TV. Currently there are 4 private DTH operators and one government DTH operator (Doordarshan). 500 paid TV channels, with a total of 877 TV channels in India. Total number of active DTH subscribers is 30.09 million in India. As the entry and growth of private service providers increased, the government of India formed a regulatory body TRAI (Telecom Regulatory Authority of India) to monitor and control the telecom services.

Use of newer technology has moved the television viewers to the next level by using satellite signals. DTH is reception of the satellite TV signals with a dish in each individual house pairing with a set-up box to decode.DTH has become more popular with the introduction of high definition (HD) channels and the choice of selected their favourite channels and paying only for those channels they have subscribed.

II. OBJECTIVES AND SCOPE OF THE STUDY

- To study the subscribers' perception on DTH service providers in India.
- To find the extent of consumer loyalty towards service providers.

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This study will help in analysing the satisfaction level of the DTH users and would help in identifying the reasons for their choice on switching service providers. This will also bring out the consumer expectations which can be addressed in near future for enhancing the customer loyalty.

III. LITERATURE REVIEW

Direct-to-Home (DTH) is a high digitalized satellite services provided for the subscribers any part in the country to the television viewer. Cable and satellite operators are completely dominated in use of DTH. The advantage of absence of cable makes possible the television customers even in the remote places in the country. So DTH has revolutionized the Indian television receiver entertainment scenario (Gupta and Bhawan (2003)). Over the years the awareness and reach of DTH is remarkable in India (Fernandes, Anjanshi (2015)). The growth of DTH is more in rural areas compared with Urban areas in India (Thakur & Kohli (2011),Dhawan@Jamdia (2013)).

DTH thought that many users but it also has some domestic rivals including it. Media(Kerala (2009). Like any other business sectors, DTH also has many hurdles like new entrants, rivalry and threat of substitute. (Dhawan (Jalandra,2012) To overcome these threats and to attract more new customers DTH service providers should provide customer problems with a faster and clear response to their satisfaction(Jawahir Kumar and Nagarajan (2012) and with more number of favorite channels (Bhardas Khan, Labib Raj (2013)). To attract more customers value added services such as interactive education for students, farming advisory content and religious content are popular in DTH services Durgadhanap (2011). The other way to survive in the DTH business are to maintain good picture quality, affordable price rather than other factors to make a successful business and satisfy the subscribers (Jayashree.S. Venkatesan.A (2013),Mly-Dynamic &(2013)).

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Investment Avenues Available for Teaching Professionals – An Empirical Study

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Abstract

Competitive pressures have triggered massive shifts in the style and speed of business across the globe. In this situation, financial sector has offered various avenues for investments. Investment avenues are widening in the world to create a positive sources of income. Under these circumstances, investors have their own time and choice to invest their hard-earned savings in available avenues like bank deposits schemes, postal savings scheme, provident fund (PF), share market both primary and secondary, life insurance policies (like LIC), government security or bonds (like NSC), mutual funds, real estate, gold, company deposits and other avenues for investment. Teaching professionals earn handsomely (especially after the implementation of sixth pay commission), but they seldom find time to get information about the various investment avenues. Thus, lack of financial education sets aside their disposable income in low safety, profitability and marketability of investments. As investors, teaching professional do have right to expect a good rate of return from their investment. For all these, they need adequate flow of information. Wealth creation is not an art. It is an attribute of one's attitude towards money. How does one know whether investors have the right kind of attitude towards money? To answer this question, the present study entitled "INVESTMENT AVENUES AVAILABLE FOR TEACHING PROFESSIONALS – AN EMPIRICAL STUDY" has been taken up to understand their a) awareness level; b) investment objectives, c) preference over investment avenues, duration, financial institutions and sources of information; and d) problems in current investment decisions.

I. INTRODUCTION

Investment avenues are widening in the world to create a positive sources of income. One can invest disposable income in domestic or offshore market. Though few people in society are investing their savings in a systematic manner and many are not doing so. A systematic investment plan always yields a fair return. People are earning handsomely, but they do not know where, when and how to invest. Every one should realize that financial planning is a must today in order to know where one stands financially and also to focus on one's financial efforts in the right direction. A proper understanding of money, its value, the available avenues for investment, various financial institutions, the rate of return and risk, et., are essential to successfully manage one's finance for achieving life's goal. Increasingly, over the past several years, competitive pressures have triggered massive shifts in the style and speed of business across the globe. In this situation financial sector have offered various avenues for investment. Markets whether organized or unorganized are flooded with various financial instruments/avenues to enable the investors to invest their disposable income freely. The financial institutions are clearly stating their conditions and regulations subject to market risk to the investors.

Under these circumstances, investors have their own time and choice to invest their hard-earned savings

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A Study on Performance Analysis of Selected Mutual Fund Schemes in India

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ABSTRACT

In India, there are various investment avenues available for investors to invest and earn profitable return. Among the others financial products, investment in mutual fund ensures the minimum risks and maximum return to the investors. The need and scope of the mutual fund operation has increased as the emphasis is being made on increase in domestic savings and improvement in diversification of investments. Thus it became important to study the mutual fund industry and the performance of the mutual funds. This study aims to evaluate the performance of a few selected mutual fund schemes of India on the basis of their daily net asset value (NAV) for the period of five years from 2015-2019. A sample of 10 open-ended, growth-oriented equity funds has been selected for the study. The performance of the funds is evaluated using Sharpe index, Treynor index and Jensen alpha whose results will be useful for investors for taking better investment decisions.

Keywords: **Mutual Funds, Performance, Sharpe Index, Treynor Index, Jensen Alpha….**

INTRODUCTION

In 1963, the mutual fund industry was started in India with the formation of the Unit Trust of India (UTI), at the initiatives taken by the Reserve Bank of India and the Government of India. Mutual funds constitute an important segment of the financial system. It is a non-depository financial intermediary. A mutual fund is a type of investment that pools the savings of the investors for investments in shares, debentures, government securities and other financial instruments. It is a special type of institution that acts as an investment conduit. The unit holders share the income earned through these investments in proportion to their units owned them. The mutual funds in India follow a three-tier structure. The three entities involved in the process are:

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A Factual Research on Employee Green Behavior in Select Medical Research Centres - Medical Tourist Staffs' Perspective

K S Usman Mohideen, V Selvakumar, H Hari Harasudha, K Maran

Abstract **Employee Green Behavior (EGB) is the positive environmental behavior that the employees exhibit in an organization. It is one of the several methods in which environment could be protected. The purpose of this study was to gain an understanding of variables that impact EGB of employees in the select medical centers. This descriptive paper on EGB gives insight into the significance of employee green behavior which plays a significant role in protecting the environment and analyses the benefits of green behavior for the employees as well as the environment. The study explored various variables such as Sustaining work, Avoiding harm, Conserving resources and Taking initiatives from medical tourist staffs perspective. The sample size selected for the study is 100 respondents. The respondents are selected by simple random sampling method and structured questionnaire is used to collect data. Correlation, Independent sample t-test and Chi square were used to analyse the data. There is a significant difference between Marital Status and Avoiding Harm and Marital status and Conserving Resources whereas there is no significant difference between Marital Status and Sustaining Work and Marital Status and Taking Initiative. Positive relationship exhibited between considered variables.**

Keywords: *Avoiding Harm, Conserving Resources, Employee Green Behavior, Medical Research Centers and Medical Tourist Staffs, Sustaining Work and Taking Initiatives.*

I. INTRODUCTION

Environmental sustainability is a critical dimension of corporate well-being in modern era. It can be enhanced by adopting Employee Green Behavior (EGB) Practices. Dilchar defines EGB "as any measurable individual behavior that contributes to or detracts from environmental sustainability goals in the work context." The author states that EGB is an essential component of organizational environmental sustainability. Gonzalez-Benito opined that there is a crucial need for an enthusiastic approach towards environmental management across the world. Improved adoption of ecological management is called Green Management Strategy. It aims at protecting and measuring environmental aspects. Observational learning allows people to pick up on effective behaviors and adapt to new and ambiguous environments. There is an accumulating pressure to address the long term consequences of environmental degradation and pollution and to improve the responsiveness. These practices are called as green practices and it should be formally and informally incorporated within the organization. Employee Green Behaviour variables considered are Sustaining work, Avoiding Harm, Conserving Resources and Taking Initiatives. Medical tourists are the people who come from other countries for availing treatment. Medical tourist staffs are the staffs who are assigned for taking care of medical tourist. The positive employee green behavior of medical tourist staffs creates favorable impression among medical tourists and helps to bring more and more medical tourists not only for the economy and cost but also for the care for ecology.

II. REVIEW OF LITERATURE

Mandlip (2012), in his research on the practice of green HR he stated that green HR should be incorporated in each and every process of HR starting from recruitment, training, appraisal, employee relation and reward. Green initiatives within HRM is major part of CSR. Green HR involves two essential elements: environmentally-friendly HR practices and the preservation of knowledge capital.

Luther (2015), author states that employees perceive that top management is committed to environmental management, employees are provided with environmental training before their joining or during their job as and when required and companies implement green programs which have an impact on environmental performance.

Piotr (2016), the author examines the direct effects of green organizational climate (GOC) on Organizational Citizenship behavior with the mediating effect of individual factors. It is found that employee values and commitment were positively related to OCB of employees who engage in EGB.

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EMPLOYEE ATTRITION –REASONS AND INTENTION TO ATTRITION WITH REFERENCE TO ALLSEC TECHNOLOGIES LTD.

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ABSTRACT

Employee attrition is the rate at which organizations and/or company's hiring and fire employees to either represent their firm or leave their firms. It also referred to the employee turnover rate. There are many different ways for a company to lose employees, most of which are typically taken into account to ensure that the organization is able to operate efficiently. Attrition refers to the loss of employees due to reasons other than firing and other employer-initiated events. This means that an employer has no direct control over how many personnel are lost to employee attrition. Retirement is one major cause of employee attrition, and since people tend to retire around a specific age this is a factor that can be accounted and planned for. Other causes of employee attrition, such as personnel who quit due to prolonged illness, dissatisfaction with the company, or other reasons, can be more difficult to estimate

Keytermss: Employee, Attrition organization

INTRODUCTION

Employee attrition refers to the loss of employees through a number of circumstances, such as resignation and retirement. The cause of attrition may be either voluntary or involuntary, though employer-initiated events such as layoffs are not typically included in the definition. Each industry has its own standards for acceptable attrition rates, and these rates can also differ between skilled and unskilled positions. Due to the expenses associated with training new employees, any type of employee attrition is typically seen to have a monetary cost. It is also possible for a company to use employee attrition to its benefit in some circumstances, such as relying on it to control labor costs without issuing mass layoffs.

There are many different ways for a company to lose employees, most of which are typically taken into account to ensure that the

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"KSA – Research" of Gap Analysis Towards Management Graduate's Deliverables and Industry Expectations – A Contemporary Perspective of Human Resource Professionals

K S Usman Mahideen, S Helen Roselin Gracy, S Santhana Jeyalakshmi

Abstract*— The object of this study is to understand the gap between the performance of management graduates and employer's expectations from them. It is measured through KSA (Knowledge, Skills and Attitudes) approach for the services industry. The questionnaire was distributed to 210 Human Resource Professionals from different spectrum identified through convenience sampling method. Data analysed using Chi-square test, U-test and Weighted average rank. The findings indicated that to reduce a gap institute should increase an institute Industry interactions through Industrial visits, Lectures, etc., The Industry expectations are quite high so, the universities and institutes design curriculum based on the Industry expectations and review the knowledge imparting strategies.

Keywords: Attitude, HR Professionals, Industry, Knowledge, Management Institute, Skills

I. INTRODUCTION

In the last decade, the world has dramatically changed. The outlook of corporate has changed drastically with new disruptive technologies. The education industry is not fortunate enough to be updated with recent trends and demands and, the institutions have not met the requirement of the hour. Especially Indian educational institutions are blindly following an outdated educational system. Very few educational institutions which can be stated for its credibility and reliability. Majority of the educational institutions have not adopted the change. Out of millions of postgraduates or professionals, only 21% of them are fit for employability. Statistics further drops deeply to 8% in the case of engineers. This is evidence for a gap between what the industry expects and what is supplied to them.

II. NEED FOR THE STUDY

For the prospect of the country Industry and Academia should go hand in hand, but in reality, they both have a diverse obligation. Industry focus on cost and institute focus on prestige, so always there is a gap between their expectations. The bitter truth is that statistically, only 14% of postgraduate management students have an ability to meet expectations of the industry (according to survey 2009 NSF) there is a need to tackle the problem of the gap between what industry expects and what the graduates possess. So this study is undertaken to find out the expectation of industry from management graduates.

III. OBJECTIVES OF THE STUDY

- To evaluate the level of satisfaction of recruiters.
- To assess the impact of demographic factors of HR professionals on expectation from management graduates.

IV. REVIEW OF LITERATURE

Farhad Analoui and Mirza Hassan Hoseini (2001), from the study, it is inferred that the appropriate mixture of KSA facilitates the fresh graduates to contribute more. In reality, there is an interlude between actuals and expected. They concluded that there should be more emphasis on self-development parameters.

Giannantonio and Hurley (2002), they found that the first and foremost challenge for HR professionals is "management of change." The graduates must focus on covering the interlude, on being ready to face prospective, turbulent and dynamic opportunities.

Suchismita Bhattacharjee and Somik Ghosh (2012), the paper aims at comparing compare industry expectations from fresh graduates with student perceptions towards requisites for their professional success. The study conducted by collecting data from potential employers and graduates who are about to complete the course. The result depicts a weak correlation between expectation and requisites in the dimension of interpersonal skills.

Ana Anwesha (2012), the study focuses on the required competencies of management students. This research found eight critical competencies for management graduates; the skills are in line with previous studies.

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A STUDY ON EMPLOYEE ENGAGEMENT TOWARDS LEADERSHIP IN SELECTED STEEL CASTINGS PLANT OF KERALA STATE

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Abstract

Employee engagement is level of involvement and commitment on behalf of an employee's level of participation in their organization and its values. Engaged an employee is aware of business context, and works with Colleagues for the benefit of the organization to improve performance within the job. This is a positive attitude towards the organization and its values held by employees. This research study is an effort to understand how employee engagement is associated with employee job satisfaction and how an employee loyalty leads to better work force and affect its loyalty. The results shown that majority of employees are compliance with the organization which brings maximum involvement of the employees and in turn retaining is not impossible. This study is conducted at selected steel castings plant of kerala state to understand the extent of employee engagement towards leadership in the organization. The data was collected by interviewing the respondents with the help of interview schedule.
Key words: Employee engagement, Leadership.

Introduction

The degree of complexity in the business world enables companies to adapt constantly to changes and meet various workplace needs. Sometimes, companies struggle and seek to thrive by lowering prices, cutting costs, redesigning business processes, and lowering employee numbers. If there is a limit to cost reduction and downsizing, new human resource management strategies are necessary for corporate sustainability and growth. Instead of focusing on cost reductions, the focus shift in human resource management (HRM) is to build employee

A STUDY ON EMPLOYEE ENGAGEMENT TOWARDS CAREER DEVELOPMENT IN SELECTED STEEL CASTINGS PLANT OF KERALA STATE

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Abstract
Employee engagement is a key business driver for organizational success. Every organization wants to gain competitive advantages over others and employee engagement is the best tool for it. Engagement is creating prospect for human resources to attach with their managers, employees and organization. This study is conducted at selected steel castings plant of kerala state to understand the extent of employee engagement towards career development in the organization. The data was collected by interviewing the respondents with the help of interview schedule.
Key words: Employee engagement, Career Development.

Introduction
The degree of complexity in the business world enables companies to adapt constantly to changes and meet various workplace needs. Sometimes, companies struggle and seek to thrive by lowering prices, cutting costs, redesigning business processes, and lowering employee numbers. If there is a limit to cost reduction and downsizing, new human resource management strategies are necessary for corporate sustainability and growth. Instead of focusing on cost reductions, the focus shift in human resource management (HRM) is to build employee engagement. As a result, several pieces of research have been published calling for a more constructive approach that focuses on the workplace, i.e. engaging workers rather than concentrating on methods for problem-coping.

A STUDY ON EMPLOYEE ENGAGEMENT TOWARDS BENEFITS & SAFETY MEASURE IN SELECTED STEEL CASTINGS PLANT OF KERALA STATE

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Abstract
Employee engagement has become a heavily discussed topic in recent years. However, there is still ambiguity within the academic literature as to how employee engagement can be influenced by management. There has been significant interest in employee engagement, but this has been coupled with a good deal of misunderstanding. This research study is an effort to understand how employee engagement is associated with employee job satisfaction and how on employee loyalty leads to better work force and affect its loyalty. The results shown that majority of employees are compliance with the organization which brings maximum involvement of the employees and in turn retaining is not impossible. This study is conducted at selected steel castings plant of kerala state to understand the extent of employee engagement towards Benefits & Safety Measure in the organization. The data was collected by interviewing the respondents with the help of interview schedule.
Key words: Employee engagement, Benefits & Safety Measure.

Introduction

Due to the varying definitions of employee engagement, the results of different studies become difficult to examine. This is because each study may look at the subject of employee engagement through a different lens, depending on the definition they decide upon. According to Ferguson (2007), with a universal definition of employee engagement lacking, it cannot be accurately defined and thus it cannot be measured and thus managed. According to Robinson et al (2004), while it has been noted that employee engagement has been defined in numerous ways, a number

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Effectiveness of Training and Development Program with Reference to Real Image Media Technologies (P) Ltd.

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***Abstract*: The project aim is analysis the effectiveness of training and development program in an organization. The study starts with the industry profile, Company profile, and also the need for study, review of literature and objectives are set out for the study. Research methodology, Limitations, Scope, Data analysis & Interpretation, Findings and Suggestions of the study follow. This study is based on questionnaire from the employees by using this tools combined it enables to determine in an effective manner. The main area of the project is the analysis part, where the data are analyzed & interpreted, to find out the methods of training and used in size effect an organization are regarding to and then conclusion, limitations & scope for further study were discussed.**

***Keywords*: Employee, Training, Development.**

1. Introduction

Training is a planned process to modify attitude, knowledge or skill behavior through learning experience to achieve performance in an activity or range of activities. The purpose of training in the work station is to develop the abilities of the individual and safety the current and future needs of the organization.

In earlier practice, training programme focused more on preparation for improved performance in particular job. Most of the trainees used to be from operative levels like mechanics, machines operators and other kinds of skilled workers. When the problems of supervision increased, the steps were taken to train supervisors for better supervision. For training to be effective it is necessary to training needs. Many organizations invest considerable resource in training and development but never really examine now training and development can most effectively promote organizational objectives, or now training and development activities should be attended in the light of business. Training effectiveness is a highly desirable step in total training programs so that one can judge the value or worth of the training. It has been given special importance to develop the skills of the employees in turn leads to the productivity and quality of both the employees and organization as well. This study has undergone to identify the effectiveness of the training and development effectively.

Development is all those activities and programme when recognized and controlled have substantial influence in changing the capacity of the individual to perform his assignment better and in going so all likely to increase his potential for future assignments. Thus, management development is a combination of various training programme, though some kind of training is necessary, it is the overall development of the competency of managerial personal in the light of the present requirement as well as the future requirement. Development an activity designed to improve the performance of existing managers and to provide for a planned growth of managers to meet future organizational requirements is management development. Training need identification is a tool utilized to identify what educational courses or activities should be provided to employees to improve their work productivity. Here the focus should be placed on needs as opposed to desires of the employees for a constructive outcome. In order to emphasize the importance of training need identification we can focus on the following areas: -

- To pinpoint if training will make a difference in productivity and the bottom line
- To decide what specific training each employee needs and what will improve his other job performance
- To differentiate between the need for training and organizational issues and bring about a match between individual aspirations and organizational goals

Identification of training needs is important from both the organizational point of view as well as from an individual's point of view. From an organisation's point of view it is important because an organization has objectives that it wants to achieve for the benefit of all stakeholders or members, including owners, employees, customers, suppliers, and neighbours. These objectives can be achieved only through harnessing the abilities of its people, releasing potential and maximizing opportunities for development.

Therefore, people must know what they need to learn in order

3PL and Warehouse Management at Uniworld Logistics India Pvt Ltd

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Abstract— The study has been undertaken with a view to study the operations effectiveness of Uniworld Logistics India Pvt Ltd which is one of the leading third party logistics & warehouse service provider to its clients. This logistics in analyzing the operational efficiency which might help in increasing the performance of the organization. The research is conducted using several customers of Danfoss department of Uniworld Logistics. Thus it can give a better output. This study focuses on analyzing the importance and efficiency of Logistics with special reference to Third party logistics. In the process of analyzing the operations of third party logistics in Uniworld logistics with Danfoss, tools like Vendor rating, Process chart, Exponential smoothing and Work measurement are used. By using vendor rating the efficient and economical transporter can be identified. Process chart helps to understand the overall activities carried out in a particular process so as to reduce the unnecessary activities. Exponential smoothing is used to forecast the work load for every month and finally Work measurement is used to calculate the standard time in packaging the compressors.
Keywords: logistics, operational, efficiency, packaging

I. INTRODUCTION

A. Operations Management

Operations management refers to the administration of business practices to create the highest level of efficiency possible within an organization. Operations management is concerned with converting materials and labour into goods and services as efficiently as possible to maximize the profit of an organization. Operation management is an area of business concerned with the production of goods and services, and involves the responsibility of ensuring that business operations are efficient in terms of using as little resource as needed, and effective in terms of meeting customer requirements. Operation management is widely classified into Service operations, Production management and Supply chain management.

APICS Dictionary defines Supply chain management as the "Design, planning, execution, control, and monitoring of supply chain activities with the objective of creating net value, building a competitive infrastructure, leveraging worldwide logistics, synchronizing supply with demand and measuring performance globally". SCM draws heavily from the areas of operations management, logistics, procurement, information technology and strives for an integrated approach. Among all these areas Logistics plays a major role in fulfilling the ambition of supply chain management.

B. Production Management v/s Operations Management

A high level comparison which distinct production and operations management can be done on following characteristics:

- Output: Production management deals with manufacturing of products like (computer, car, etc.) while operations management cover both products and services.
- Usage of Output: Products like computer/car are utilized over a period of time whereas services need to be consumed immediately.
- Classification of work: To produce products like computer/car more of capital equipment and less labour are required while services require more labour and lesser capital equipment.
- Customer Contact: There is no participation of customer during production whereas for services a constant contact with customer is required.

C. Scope of Operations management

The scope of operations management ranges across the organization. Operations management people are involved in product and service design, process selection, selection and management of technology, design of work systems, location planning, facilities planning, and quality improvement of the organization's products or services. The operations function includes many interrelated activities, such as forecasting, capacity planning, scheduling, managing inventories, assuring quality, motivating employees, deciding where to locate facilities, and more. We can use an airline company to illustrate a service organization's operations system. The system consists of the airplanes, airport facilities, and maintenance facilities, sometimes spread out over a wide territory. Most of the activities performed by management and employees fall into the realm of operations management.

- Forecasting such things as weather and landing conditions, seat demand for flights, and the growth in air travel.
- Capacity planning, essential for the airline to maintain cash flow and make a reasonable profit. (Too few or too many planes, or even the right number of planes but in the wrong places, will hurt profits.)
- Scheduling of planes for flights and for routine maintenance; scheduling of pilots and flight attendants; and scheduling of ground crews, counter staff, and baggage handlers.
- Managing inventories of such items as foods and beverages, first-aid equipment, in-flight magazines, pillows and blankets, and life preservers.
- Assuring quality, essential in flying and maintenance operations, where the emphasis is on safety, and important in dealing with customers at ticket counters,

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Work Life Balance of Women Employees in Manufacturing Sector with Respect to Madras Export Processing Zone (MEPZ)

P.S.Immaculate, Dr.K.Maran

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Abstract

In the present competitive environment, the future of manufacturing sector is on a fast and an effective growing rate among staff the other sectors. India is the fastest rapidly growing country globally, thanks for the various initiatives which are given by the Government, the privileges given to the various sectors, advancement of technologies and tie ups with other global companies. Due to the foreign investment in India, many manufacturing sectors have show high impact in the Gross rate of the nation. In this context effective employee motivation is very essential for the success of any organization, the classical perspective of the management was essentially rational and analytical and the employee's emotions were not taken into consideration. In motivating process, the human capital and the organizations have to capture their employees hearts and minds, which can be achieved by incorporating the magical term "Work life balance" amongst the working employees. In the present day work scenario, it is merely not the intelligence or the technical competence, would measure one's satisfaction or success at the workplace, it is the "skills of people" on their work life balance that seems to have a vital role. The imbalance of work life will not only influence their members, but also on the productivity of the organization which may lead to a greater mishap among other companies. Globalization and the stress for competitiveness are increasingly making all the companies to focus on their core competencies and outsource the remaining business processes. This provides an opportunity to global companies to relocate such processes to India. India has inherent strengths to support this. In this aspect the study was done to find out the work life balance of women in manufacturing sectors.

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Publication: 07 April 2020

Keywords: *Business processing outsourcing, family work conflict, International labour organization, Work life balance, Grievous working conditions, Work life balance index, Madras export processing zone.*

I. INTRODUCTION

Work-life and personal life are the two sides of the same coin, these both are interconnected and interdependent too. The personal life can also be demanding if you have a kid or aging parents, financial problems or even problems in the life's of a close relative, this can lead to unexpected absence from work, creating stress and lack of concentration at work. The work-life balance of working women employees in the recent years has been a very essential aspect since the time changed from men to earn the family living in the current fast-moving world where both men and women hopefully share the responsibilities of earning for the betterment and the satisfaction of their family life. Hence, it is for the betterment of family life in achieving the various aspires and the needs of their family. With the advanced and changing high-tech advancement in education and training institutions, things have been improved and changed to a greater extent. Work-life balance is explained as a balanced equilibrium in

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DEPARTMENT OF EEE 3.3.7 Faculty participation in Seminars/Conferences and Symposia during the year :

No. of Faculty	International level	National level	State level	Local level
Attended Seminars/ Workshops	-	28	24	11
Presented papers	5	-	-	-
Resource Persons	-	2	-	-

S.no	Name of the Faculty	Department	Nature of the program attended (FDP/ Workshop/ Seminar)	Name of the FDP / Workshop Attended	Duration	From Date	End Date	Organising Institution	INT/NATIONAL/STATE/LOCAL
1	Dr.M.Jagdeeshkumar	EEE	FDP	STTP ON Power electronic sconverters & controllers for RES at IIITD&M	5 days	18.12.2019	22.12.2019	IIITDM, Kancheepuram	NATIONAL
2	Mr.M.Veerasundaram	EEE	FDP	STTP ON Power electronic sconverters & controllers for RES at IIITD&M	5 days	18.12.2019	22.12.2019	IIITDM, Kancheepuram	NATIONAL
3	Mrs.S.Sivarajeshwari	EEE	FDP	STTP ON Power electronic sconverters & controllers for RES at IIITD&M	5 days	18.12.2019	22.12.2019	IIITDM, Kancheepuram	NATIONAL
4	Mrs.N.Shanthi	EEE	FDP	Stress Management (NPTEL)	4days	4 weeks	July 19 to Aug 19	NPTEL	NATIONAL
5	Mrs.G.Ezhilarasi	EEE	FDP	Stress Management (NPTEL)	4days	4 weeks	July 19 to Aug 19	NPTEL	NATIONAL

6	Mrs.A.Sasikala	EEE	FDP	Stress Management (NPTEL)	4days	4 weeks	July 19 to Aug 19	NPTEL	NATIONAL
7	Mrs.T.Thenmozhi	EEE	FDP	Stress Management (NPTEL)	4days	4 weeks	July 19 to Aug 19	NPTEL	NATIONAL
8	Mr.S.Surenderanath	EEE	FDP	Stress Management (NPTEL)	4days	4 weeks	July 19 to Aug 19	NPTEL	NATIONAL
9	Mrs.E.Maheswari	EEE	FDP	DC Microgrid(NPTEL)	7days	8 weeks	July 19 to Sep 19	NPTEL	NATIONAL
10	Mrs.S.Sivarajeshwari	EEE	FDP	DC Microgrid(NPTEL)	7days	8 weeks	July 19 to Sep 19	NPTEL	NATIONAL
11	Dr.T.Muthamizhan	EEE	FDP	DC Microgrid(NPTEL)	7days	8 weeks	July 19 to Sep 19	NPTEL	NATIONAL
12	Mr.R.Dhanasekar	EEE	FDP	Introduction to Smartgrid(NPTEL)	7days	8 weeks		NPTEL	NATIONAL
13	Mrs.R.Anitha	EEE	FDP	Introduction to Smartgrid(NPTEL)	7days	8 weeks		NPTEL	NATIONAL
14	A.Sasikala	EEE	WORK SHOP	3 days workshop on Design Of Experiments: An engineering perspective	3 days	25.4.2020	27.4.2020	JAER powered by Hexacube	NATIONAL
15	S.Sivarajeswari	EEE	FDP	5 days FDP on Technological advancement in power system control , power controller, drives and E-vehicles TAPPAD2020	5 days	27.4.2020	1.5.2020	Dr.NGP.IT.IQAC, autodesk	NATIONAL
16	S.Sivarajeswari	EEE	webinar	3 days webinar on Power system	3 days	21.5.2020	23.5.2020	CK college of engineering	NATIONAL

				simulation and control with MATLAB simulations				and technology	
17	S.Sivarajeswari	EEE	webinar	1 day webinar A power of a teacher	1 day	4.5.2020	4.5.2020	ICT acadamy	NATIONAL
18	E.MAHESWARI	EEE	WORKSHOP	2 days WORKSHOP on FUZZY LOGIC AND NEURAL NETWORK SOLUTIONS FOR ENGINEERING SOLUTIONS	2 Days	29.4.2020	30.4.2020	JAER powered by Hexacube	NATIONAL
19	E.MAHESWARI	EEE	WORKSHOP	3 days workshop on Design Of Experiments: An engineering perspective	3 days	25.4.2020	27.4.2020	JAER powered by Hexacube	NATIONAL
20	E.MAHESWARI	EEE	FDP	5 days FDP on Technological advancement in power system control , power controller, drives and E-vehicles TAPPAD20205	5 days	27.4.2020	1.5.2020	Dr.NGP.IT.IQAC,	NATIONAL
21	E.MAHESWARI	EEE	FDP	3 days FDP on ROBOTICS PROCESS AUTOMATION	3 Days	4.5.2020	6.5.2020	JEPPIAR INSTITUTE OF TECHNOLOGY	NATIONAL
22	E.MAHESWARI	EEE	FDP	6 days FDP on ICT TOOLS	6 Days	11.5.2020	16.5.2020	SREE VIDYANIKET	NATIONAL

								HAN ENGINEERING COLLEGE	
23	N.SHANTHI	EEE	FDP	5 days FDP on Technological advancement in power system control , power controller, drives and E-vehicles TAPPAD2020	5 days	27.4.2020	1.5.2020	Dr.NGP.IT.IQAC	NATIONAL
24	N.SHANTHI	EEE	FDP	7 days FDP on ARDUINO Training	7 Days	16.4.2020	22.4.2020	IIT-Bombay-Spoken Tutorial	NATIONAL
25	N.SHANTHI	EEE	WEBINAR	17 days webinar on Innovation, IPR, Entrepreneurship, and Start-ups among HEIs	17 Days	28.4.2020	22.5.2020	IIC-MHRD Innovation Council	NATIONAL
26	T.THENMOZHI	EEE	FDP	5 days FDP on Technological advancement in power system control , power controller, drives and E-vehicles TAPPAD2020	5 DAYS	27.4.2020	1.5.2020	Dr.NGP.IT.IQAC	NATIONAL
27	MR.R.DHANASEKAR	EEE	FDP	5 days FDP on “Integration of Renewable Energy Systems-Research Tools / Industrial Perspective”	5 DAYS	18.05.2020	22.05.2020	LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING	NATIONAL

28	MR.R.DHANASEKAR	EEE	FDP	5 days FDP on “Grid Integration and Protection”	5 DAYS	22.06.2020	27.06.2020	KOMMURI PRATAP REDDY INSTITUTE OF TECHNOLOGY	NATIONAL

S.no	NAME	Department	Nature of the program attended (FDP/ Workshop/ Seminar)	Name of the FDP / Workshop Attended	Duration	From Date	End Date	Organising Institution	INT/NATIONAL/STATE/LOCAL
1	Mrs.T.Thenmozhi	EEE	FDP	Smart microgrid and Energy storage using Homer and PV Syst	2 days	19.9.2019	20.9.2019	AMET Deemed To Be University	STATE

2	G.EZHILARASI	EEE	FDP	Smart microgrids and Energy storage using Homer and PV Syst	2 days	19.9.2019	20.9.2019	AMET Deemed To Be University	STATE
3	MR.R.DHANASEKAR	EEE	WORKSHOP	3 Days workshop on E-MOBILITY DEVELOPMENT FOR GREEN INDIA	3 DAYS	31.01.2020	02.02.2020	VIT, VELLORE	STATE
4	Mr. L. Vijayaraja	EEE	WORKSHOP	2 Days WORKSHOP onDesign of Elecrtic two wheeler	2 days	25.01.2020	26.01.2020	Madras Institute of Technology, Chennai	STATE

5	Mr.L. Vijayaraja	EEE	SEMINAR	1 Day seminar on Awareness program on Corona - COVID19	1 day	07.02.2020	07.02.2020	Central polytechnic college, Tharamani, Chennai	STATE
6	Mr.L. Vijayaraja	EEE	WORKSHOP	3 days Workshop on TECHNOLOGY EXIBITION 2020 CUM TRAINING PROGRAMME	3 days	27.02.2020	29.02.2020	CTDT, Anna University, Chennai.	STATE
7	A.Sasikala	EEE	FDP	3 days FDP on Power converters for DC microgrid	3 days	4.6.2020	6.6.2020	SSN, Chennai	STATE

8	S.Sivarajeswari	EEE	FDP	3 days FDP on Emerging technology Robotics process automation	3 days	4.5.2020	6.5.2020	Jeppiaar institute of technology	STATE
9	G.Ezhilarasi	EEE	FDP	3 days FDP on Art of writing research articles and funding proposals	3 days	21.5.2020	23.5.2020	MAnakula Vinayagar	STATE

10	G.Ezhilarasi	EEE	WORKSHOP	2 days WORKSHOP on Battery Management System for Electric Vehicles	2 days	21.5.2020	22.5.2020	RMD Engineering College	STATE
11	G.Ezhilarasi	EEE	FDP	5 Days FDP on Modelling Technologies and Control on Electric Vehicle	5 days	25.5.2020	29.5.2020.	AMET University	STATE
12	N.SHANTHI	EEE	FDP	3 days FDP on ROBOTICS PROCESS AUTOMATION	3 Days	4.5.2020	6.5.2020	JEPPIAR INSTITUTE OF TECHNOLOGY	STATE

13	N.SHANTHI	EEE	FDP	5 days FDP on Modelling Technologies and Control on Electric Vehicle	5 days	25.5.2020	29.5.2020.	AMET University	STATE
14	N.SHANTHI	EEE	WEBINAR	1 day webinar on Renewable Energy using MATLAB	1 DAY	16.5.2020	16.5.2020	Pantech Solutions	STATE
15	N.SHANTHI	EEE	WEBINAR	1 day webinar on Electricle Vehicle Design	1 DAY	15.5.2020	15.5.2020	Pantech Solutions	STATE

16	N.SHANTHI	EEE	WEBINAR	1 day webinar on Grid Connected and Stand alone micro grid design using HOMEPRO	1 DAY	15.5.2020	15.5.2020	Erode Sengunthar Engineering ollege	STATE
17	T.THENMOZHI	EEE	FDP	3 days FDP ON Emerging technology Robotics process automation	3 Days	4.5.2020	6.5.2020	JEPPIAR INSTITUTE OF TECHNOLOGY	STATE

18	T.THENMOZHI	EEE	FDP	5 Days FDP on Modelling Technologies and Control on Electric Vehicle	5 days	25.5.2020	29.5.2020.	AMET University	STATE
19	T.THENMOZHI	EEE	FDP	3 days FDP on CYBER SECURITY AND ETHICAL HACKING	3 DAYS	19.4.2020	21.4.2020	AICL	STATE
20	MR.R.DHANASEKAR	EEE	FDP	1 day FDP on LEARNING THROUGH GAMIFICATION	1 DAY	30.04.2020		PSNA COLLEGE OF ENGINEERING AND TECHNOLOGY	STATE

21	MR.R.DHANASEKAR	EEE	ATAL FDP	5 days ATAL FDP on INTERNET OF THINGS	5 DAYS	11.05.2020	15.05.2020	GOVERNEMENT COLLEGE OF ENGG, SRIRANGAM	STATE
22	MR.R.DHANASEKAR	EEE	FDP	3 days FDP on Power Converters for DC Micro Grid	3 DAYS	04.06.2020	06.06.2020	SRI SIVASUBRAMANIYA NADAR COLLEGE OF ENGG	STATE
23	MR.R.DHANASEKAR	EEE	FDP	5 days FDP on “IoT Trends to Drive Innovation for Business and Digital Technology”,	5 DAYS	11.05.2020	15.05.2020	HINDUSTHAN INSTITUTE OF TECHNOLOGY	STATE

24	MR.R.DHANASEKAR	EEE	FDP	3 Days FDP on EMERGING TRENDS AND ITS OPPORTUNITIES IN SMART GRID IMPLEMENTATION	3 DAYS	01.07.2020	03.07.2020	KUMARAGURU COLLEGE OF TECHNOLOGY	STATE

S.no	Name of the Faculty	Department	Nature of the program attended (FDP/ Workshop/ Seminar)	Name of the FDP / Workshop Attended	Duration	From Date	End Date	Organising Institution	INT/NATIONAL/STATE/LOCAL
1	Mr.R.Dhanasekar	EEE	FDP	Renewable Energy Systems	5 days	22 .07. 2019	26.07. 2019	Sri Sairam Engineering College	LOCAL
2	Mr.L.Vijayaraja	EEE	FDP	Renewable Energy Systems	5 days	22 .07. 2019	26.07. 2019	Sri Sairam Engineering College	LOCAL
3	Mr.R.Dhanasekar	EEE	FDP	Artificial Inteligence	6 Days	05 .12. 2019	11 .12. 2019	Sri Sairam Engineering College	LOCAL
4	Mr.L.Vijayaraja	EEE	FDP	Artificial Inteligence	6 Days	05 .12. 2019	11 .12. 2019	Sri Sairam Engineering College	LOCAL

5	Ms.G.Ezhilarasi	EEE	FDP	1 day FDP on Internet of Things	1 Day	6.2.2020	6.2.2020	Sri Sairam Institute of Technology & WILEY	LOCAL
6	E.MAHESWARI	EEE	FDP	12 days FDP on Recent innovation in Electrical,Electronics, Instrumentation,Automation and Teaching Pedagogy	12 days	18.5.2020	30.05.2020	SRI SAIRAM ENGINEERING COLLEGE	LOCAL

7	E.MAHESWARI	EEE	WEBINAR	1 day webinar on HOW TO GET PUBLISHED IN SCIENTIFIC JOURNAL	1 DAY	27.4.2020	27.4.2020	SRI SAIRAM INSTITUTE OF TECHNOLOGY	LOCAL
8	N.SHANTHI	EEE	WEBINAR	1 day webinar on HOW TO GET PUBLISHED IN SCIENTIFIC JOURNAL	1 DAY	27.4.2020	27.4.2020	SRI SAIRAM INSTITUTE OF TECHNOLOGY	LOCAL
9	N.SHANTHI	EEE	WEBINAR	1 day webinar on An Introduction to E-mOBILITY	1 DAY	16.5.2020	16.5.2020	SRI SAIRAM INSTITUTE OF TECHNOLOGY	LOCAL

10	M.RAZMAH	EEE	FDP	6 days FDP on Engineering and Management Teaching pedagogy-an Industry perspective	6 days	11.5.2020	16.5.2020	SRI SAIRAM INSTITUTE OF TECHNOLOGY	LOCAL
11	M.RAZMAH	EEE	WEBINAR	1 day webinar on 3D Printing applications in fighting with covid 19	1 Day	09/05/2020	09.05.2020	SRI SAIRAM INSTITUTE OF TECHNOLOGY	LOCAL

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FOR ENGINEERING SOLUTIONS
This certificate is presented to
Mrs. Thenmozhi T
Sri Sairam Institute of Technology
For active participation in the two days online workshop on "Fuzzy Logic and Neural Network Approaches for Engineering Solutions" organized by Journal of Advanced Engineering Research & powered by hexacube India on 29th & 30th April 2020.
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INSTITUTION'S INNOVATION COUNCIL

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

Certificate of Participation

This is to certify that **Mrs.S.SIVARAJESWARI - Assistant Professor / EEE** from **Sri Sairam Institute of Technology** has participated in the three days Webinar on **"Power System Operation & Control with MATLAB® Simulations"** organized by the Department of Electrical & Electronics Engineering, CK College of Engineering & Technology, Cuddalore during 21st May 2020 to 23rd May 2020.

HoD / EEE
(Dr. A.Arulvizhi, M.E., Ph.D)

Principal
(Dr.S.Saravanan, M.E.,Ph.D)

LOYOLA INSTITUTE OF TECHNOLOGY
PALANCHUR, CHENNAI - 600 123
(Approved by AICTE, Affliated to Anna University)

INNOVATION CELL

CERTIFICATE OF PARTICIPATION

This Certificate is Proudly Presented to

DHANASEKAR R

In acknowledgment of your participation in the Webinar entitled " **Train Accidents, Relief and Investigation**" Organized by the Innovation Cell, Loyola Institute of Technology in association with i3 CADD, Chennai.

Date: 11th June, 2020

Mr. Kovarasan.B
Managing Partner
i3 CADD

Dr. V. Balaji
HOD
Mechanical Engg.

Dr. Sujatha Jamuna Anand
Principal

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Department of Information Technology,
Department of Instrumentation and Control Engineering &
Department of Electronics and Instrumentation Engineering

CERTIFICATE

OF PARTICIPATION

This is to Certify that **Thenmozhi.T** of Sri Sairam Engineering College, Chennai.Tamil Nadu has presented a paper titled *Speed Control Of BLDC Motor Using Voice Command By Implementing Machine Learning*

during the "**International Conference on Computing, Communication and Control**" organized by Sri Sairam Engineering College, Chennai held on 28-02-2020 and 29-02-2020.

Dr. G. Adiline Macriga	**Dr. A. Rajendra Prasad**	**Mr. Sai Prakash LeoMuthu**	**Mr. Rudra Bhanu Satpathy**
Professor (Dept. of IT)	Principal	Chairman & CEO	CEO, IFERP
Sri Sairam Engineering College	Sri Sairam Engineering College	Sairam Institutions	

3.3.7 Faculty participation in Seminars/Conferences and Symposia during the year :

OVERALL COLLEGE

No. of Faculty	International level	National level	State level	Local level
Attended Seminars/ Workshops	18	59	7	24
Presented papers	42	30	2	-
Resource Persons	1	6	8	13

ECE

No. of Faculty	International level	National level	State level	Local level
Attended Seminars/ Workshops	-	6/87	-	22
Presented papers	27	24	-	-
Resource Persons	1	2	3	20

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ACADEMIC YEAR 2019-20

CONFERENCES ATTENDED BY FACULTY MEMBERS

S.No	Title of the paper	Staff name	Name of the conference	Place of the conference	Date	NATIONAL/ INTERNATIONAL
1	Segmentation of human vertebral spine-FEA	Ms.G.Valarmathi	4th International conference on	pilani	18.10.19 &19.1019	International

	Analysis		communication systems(ICCS-2019)			
2	Segmentation of human vertebral spine-FEA Analysis	Mr.N.Oral Roberts	4th International conference on communication systems(ICCS-2019)	Pilani	18.10.19 &19.1019	International
3	Lab-on-chip Technology: A review on Future Scope in Biomedical Applications	Dr.SU.Suganthi	4th International conference on communication systems(ICCS-2019)	Pilani	18.10.19 &19.1019	International
4	Patient Monitoring Using Pan of Wireless Intelligent Sensors	Ms.V.Subashini	4th International conference on communication systems(ICCS-2019)	Pilani	18.10.19 &19.1019	International
5	Inline Inspection Robot For Crack Detection using Image Processing	Dr.P.Saravanan	ARICE 2020	SSIT	6/3/2020	NATIONAL
6	Lifi Based Underwater Communication	R.Janaki	ICCET 2020	Prince shri Padmavathy Venkateswara college of Engineering and technology	14.3.2020,15.3.2020	INTERNATIONAL
7	Smart Irrigation System For Sustainable Agriculture	N.Oral Roberts	National Conference on Innovative Technologies for Sustainable Agriculture-Challenges and	Annai Veilankanni's College of Engineering	31.01.2020	NATIONAL

			Opportunities for Engineers			
8	Classification And Detection Of Mr Brain Tumor Images Using Convolution Neural Network	Dr.G.Thamarai Selvi	ARICE 2020	SRI SAI RAM INSTITUTE OF TECHNOLOGY	06.03.2020	NATIONAL
9	Kappaan (Smart Agrobased Kit)	Dr.G.Thamarai Selvi	ARICE 2020	SRI SAI RAM INSTITUTE OF TECHNOLOGY	06.03.2020	NATIONAL
10	A Hwt-Svd Based Robust Digital Watermarking For Image Security	N.Oral Roberts	ARICE 2020	SRI SAI RAM INSTITUTE OF TECHNOLOGY	06.03.2020	NATIONAL
11	Smart Home Energy Management System Using Machine Learning	V.Subashini	ARICE 2020	SRI SAI RAM INSTITUTE OF TECHNOLOGY	06.03.2020	NATIONAL
12	Image Steganography: Technique Of Hiding Data In An Image	V.Subashini	ARICE 2020	SRI SAI RAM INSTITUTE OF TECHNOLOGY	06.03.2020	NATIONAL
13	A Novel Methodology To Recognize And Systematization Of Mri Using K Means Clustering And Cnn	Dr.G.Saravanan	ARICE 2020	SSIT	6/3/2020	NATIONAL
14	Smart Medication	Dr.G.Saravana	ARICE	SSIT	6/3/2020	NATIONAL

	Box And Patient Health Monitoring System With Iot	n	2020			
15	Automatic Pill Dispenser And Patient Health Monitoring System	Dr.G.Saravanan	ICCET 2020		15.03.2020	INTERNATIONAL
16	Heart Pulse Monitoring And Safeguarding System	Dr.Su.Suganthi	ARICE 2020	SSIT	6/3/2020	NATIONAL
17	Coal Mine Safety System For Mining Workers Using Wusn And Lora	Dr.Su.Suganthi	ARICE 2020	SSIT	6/3/2020	NATIONAL
18	Smart Neural Schema Based Volitional Control For Paralyzed People	Dr.Su.Suganthi	ICCET 2020	SSIT	14.4.2020	INTERNATIONAL
19	Disaster Management Drone Using Artificial Intelligence And Machine Learning	Dr.Su.Suganthi	ARICE 2020	SSIT	6/3/2020	NATIONAL
20	A Smart Neural Schema Based Volitional Control For Paralyzed People	Dr.Su.Suganthi	ARICE 2020	SSIT	6/3/2020	NATIONAL
21	Lora And Wusn Based	Dr.Su.Suganthi	ICCET 2020	SSIT	14.4.2020	INTERNATION

	Safety System For Coal Mine Workers					AL
22	Iot And Ml Based Power Management And Controlled Socket	D.Pushgara Rani	ARICE 2020	SSIT	6/3/2020	NATIONAL
23	Iot And Ml Based Power Management And Controlled Socket	D.Pushgara Rani	ICCET 2020	SSIT	14.4.2020	INTERNATIONAL
24	Artificial Intelligence Based Plant Disease Identification And Eradication Of Pests	D.Pushgara Rani	ARICE 2020	SSIT	6/3/2020	NATIONAL
25	Forest Fire Alerting System	D.Pushgara Rani	ARICE 2020	SSIT	6/3/2020	NATIONAL
26	Comparitive Study-Knn Vs Cnn For Plant Classification	G,Valarmathi	ARICE 2020	SSIT	6/3/2020	NATIONAL
27	Spine Segmentation Using Deep Learning	G,Valarmathi	ARICE 2020	SSIT	6/3/2020	NATIONAL
28	Cashless Automatic Ration Distribution Using Gsm &Rfid	R.P.Maharana	ARICE 2020	SSIT	6/3/2020	NATIONAL
29	Wireless Non Line Of Sight Electronic Automation Using Sonar	Dr.S.Rajarajan	IC3IOT	SEC	21.02.2020	INTERNATIONAL

	Based Gesturedetection For Human Machine Interaction					
30	A Novel Rescue Bot For Bore Hole Accidents	K.Sumathi	ICMSMT 2020	SSIT	9-10 APRIL 2020	INTERNATIONAL
31	Design And Fabrication Of Unmanned Vehicle For Human Welfare	K.Sumathi	ICRACE 2020		6-7 MARCH 2020	INTERNATIONAL
32	Embedded Based Oil Adulteration Detection	Bharathi Gp	ARICE 2020	SSIT	6/3/2020	NATIONAL
33	Water Heater Using Solar Panel	Bharathi Gp	ARICE 2020	SSIT	6/3/2020	NATIONAL
34	Generalised Epilepsy Seizure Alert System	S.Sweetline Shamini	ARICE 2020	SSIT	6/3/2020	NATIONAL
35	Smart Id Card System Using Rfid Technology	S.Sweetline Shamini	ARICE 2020	SSIT	6/3/2020	NATIONAL
36	Tracking And Emergency Detection Of Inland Vessel Using Gps&Gsm	S.Sweetline Shamini	ARICE 2020	SSIT	6/3/2020	NATIONAL
37	Lora Wan Based Building Management And Monitoring System	K.Sangeetha	ARICE 2020	SSIT	6/3/2020	NATIONAL

38	Inferno Wangler	K.Sangeetha	ARICE 2020	SSIT	6/3/2020	NATIONAL
39	Smart Stretcher & Integrated Medical Intelligence Systems For Unconscious Person	K.Sumathi	ARICE 2020	SSIT	6/3/2020	NATIONAL
40	Classification Of Defected Spine And Segmentation Using Deep Learning	G.Valarmathi	ICRDEMT 20	Dhaanish Ahmed College of Engineering	26.6.2020	INTERNATIONAL
41	Plant Classification Using Cnn In Deep Learning	G.Valarmathi	ICIETET 20	Panimalar Institute of Technology	26.6.20&27.6.20	INTERNATIONAL
42	Human Vertebral Spine Segmentation Using Particle Swarm Optimisation Algorithm	G.Valarmathi	ICIETET 20	Panimalar Institute of Technology	26.6.20&27.6.20	INTERNATIONAL
43	Early Prediction Of Sepsis Using Clinical Data	Ms.R.Lakshmi Devi	IEEE ICSCAN 2020	SRI MANAKULA VINAYAGAR ENGG COLLEGE ,PUDUCHERRY	26.6.2020	INTERNATIONAL
44	Lora Wan Based Building Management And Monitoring System	Ms.Sangeetha.K	International conference on recent developments in Engineering Management sciences and technology	DHAANISH AHMED COLLEGE OF ENGG	22.8.2020	INTERNATIONAL

45	Smart Card Based Bus Ticketing System	Ms.G.Saritha	International Conference onEmerging Trends in Engg and Tech	St.JOSEPH COLLEGE OF ENGG	14.3.2020&15.3.2020	INTERNATIONAL
46	Coal Mine Safety System For Workers Using Wusn And Lora	Dr.Su.Suganthi	International Conference on Contemporary Engineering and Technology	prince shri padmavathy college of engg&technology	14.3.2020&15.3.2020	INTERNATIONAL
47	A Smart Neural Schema Based Volitional Control For Paralyzed People	Dr.Su.Suganthi	International Conference on Contemporary Engineering and Technology	prince shri padmavathy college of engg&technology	14.3.2020&15.3.2020	INTERNATIONAL
48	Vehicular Pollution Risk Management	Ms.S.Deivanayagi	International Conference on Contemporary Engineering and Technology	prince shri padmavathy college of engg&technology	14.3.2020&15.3.2020	INTERNATIONAL
49	Iot And Machine Learning Based Power Monitoring And Controlled Socket	Ms.D.Pushgara Rani	International Conference on Contemporary Engineering and Technology	prince shri padmavathy college of engg&technology	14.3.2020&15.3.2020	INTERNATIONAL
50	Index Modulation And Hierarchical Signal Detection Approach For Mimo Ofdma	Dr.R.Prabha	International Conference on Contemporary Engineering and Technology	prince shri padmavathy college of engg&technology	14.3.2020&15.3.2020	INTERNATIONAL
51	Vivoice-Reading	Dr.R.Prabha	International Conference	prince shri padmavathy	14.3.2020&15.3.2	INTERNATION

	Assistant Device For The Blind		on Contemporary Engineering and Technology	college of engg&technology	020	AL

PANIMALAR INSTITUTE OF TECHNOLOGY

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AICTE Sponsored Fifth International Conference on Innovative and Emerging Trends in Engineering and Technology

(ICIETET '20)

Certificate of Participation

This is to certify Prof./Dr./Mr./Ms./Mrs **V.SUBASHINI** of **SRI SAIRAM INSTITUTE OF TECHNOLOGY** has presented a paper on **HOME ENERGY MANAGEMENT SYSTEM USING MACHINE LEARNING** in the AICTE Sponsored Fifth International Conference on Innovative & Emerging Trends in Engineering & Technology organized by Panimalar Institute of Technology, held on **26th & 27th June, 2020.**

CONFERENCE CHAIR

Dr. T. Jayanthy, Principal

Spoken Tutorial

Certificate of Participation

EASWARI ENGINEERING COLLEGE
An AUTONOMOUS Institution
Affiliated to ANNA UNIVERSITY
RAMAPURAM CHENNAI

This is to certify you that ___Sangeetha K___ *participated in a Faculty Development Programme organised by Spoken Tutorial Project, IIT Bombay from* 20th April 2020 *to* 30th April 2020 *remotely at Department of Information Technology, Easwari Engineering College, Chennai*

The Faculty Development Programme included a demonstration with hands on exposure in Python 3.4.3 and R

Shyama Iyer

Ms. Shyama Iyer
National Training Co-ordinator

Dr. R S Kumar
Principal, Easwari Engineering College

CellDesigner™ C++ python LaTeX Linux php MySQL

Page 1 / 1

Sri Venkateswara College of Engineering
(Autonomous)
Faculty Development Program
19th-23rd May 2020
MACHINE LEARNING FOR SIGNAL PROCESSING
CERTIFICATE OF PARTICIPATION
THIS IS TO CERTIFY THAT
Dr.THAMARAI SELVI G,Professor
SRI SAIRAM INSTITUTE OF TECHNOLOGY
has participated in the Faculty Development Program on "Machine Learning for Signal Processing" from 19th-23rd May 2020
Dr.S.Muthukumar
Head Of The Department /ECE
2020
Organized by
Department of Electronics and Communication Engineering
ONLINE FDP @ SVCE

OM SAKTHI

Adhiparasakthi Engineering College

Melmaruvathur - 603319

(Approved by AICTE,Affiliated to Anna university, Accredited by NBA, Accredited by NAAC with "A" Grade, An ISO 9001:2008 Certified Institution)

CERTIFICATE OF PARTICIPATION

This is to certify that Dr./Ms. **SUBASHINI V,** ASSISTANT PROFESSOR has participated in Online Faculty Development Programme on Python 3.4.3 organized by Department of Computer Science and Engineering, Adhiparasakthi Engineering College, Melmaruvathur in association with Spoken Tutorial Project, IIT Bombay from 16th April, 2020 to 22nd April, 2020.

Dr. C. Dhaya
Professor and Head / CSE
Organizer

S.A. ENGINEERING COLLEGE
(An Autonomous institution, Accredited by NBA,NAAC with 'A' Grade, ISO 9001:2015)
Poonamallee, Avadi Main Road
Thiruverkadu,Chennai – 600 077.

Certificate of Participation

This is to certify

Ms.R. LAKSHMI DEVI

has participated in 5 days online Faculty Development Programme on **"Advanced Simulation Tools for Electronics Engineers"** organized by Department of Electronics and Communication Engineering held from 27th April 2020 to 1st May 2020.

Dr. G.KAVYA	*Dr. G.S.KUMARASAMY*	*Thiru.D.SABARINATH*
HoD/ECE	PRINCIPAL	DIRECTOR

E-Certificate -Signature not required

EEE

No. of Faculty	International level	National level	State level	Local level
Attended Seminars/ Workshops	-	28	24	11
Presented papers	5	-	-	-
Resource Persons	-	2	-	-

S.no	Name of the Faculty	Department	Nature of the program attended (FDP/ Workshop/ Seminar)	Name of the FDP / Workshop Attended	Duration	From Date	End Date	Organising Institution	INT/NATIONAL/STATE/LOCAL
1	Dr.M.Jagdeeshkumar	EEE	FDP	STTP ON Power electronic sconverters & controllers for RES at IIITD&M	5 days	18.12.2019	22.12.2019	IIITDM, Kancheepuram	NATIONAL
2	Mr.M.Veerasundaram	EEE	FDP	STTP ON Power electronic sconverters & controllers for RES	5 days	18.12.2019	22.12.2019	IIITDM, Kancheepuram	NATIONAL

				at IIITD&M					
3	Mrs.S.Sivarajeshwari	EEE	FDP	STTP ON Power electronic sconverters & controllers for RES at IIITD&M	5 days	18.12.2019	22.12.2019	IIITDM, Kancheepuram	NATIONAL
4	Mrs.N.Shanthi	EEE	FDP	Stress Management (NPTEL)	4days	4 weeks	July 19 to Aug 19	NPTEL	NATIONAL
5	Mrs.G.Ezhilarasi	EEE	FDP	Stress Management (NPTEL)	4days	4 weeks	July 19 to Aug 19	NPTEL	NATIONAL
6	Mrs.A.Sasikala	EEE	FDP	Stress Management (NPTEL)	4days	4 weeks	July 19 to Aug 19	NPTEL	NATIONAL
7	Mrs.T.Thenmozhi	EEE	FDP	Stress Management (NPTEL)	4days	4 weeks	July 19 to Aug 19	NPTEL	NATIONAL
8	Mr.S.Surenderanath	EEE	FDP	Stress Management (NPTEL)	4days	4 weeks	July 19 to Aug 19	NPTEL	NATIONAL
9	Mrs.E.Maheswari	EEE	FDP	DC Microgrid(NPTEL)	7days	8 weeks	July 19 to Sep 19	NPTEL	NATIONAL
10	Mrs.S.Sivarajeshwari	EEE	FDP	DC Microgrid(NPTEL)	7days	8 weeks	July 19 to Sep 19	NPTEL	NATIONAL
11	Dr.T.Muthamizhan	EEE	FDP	DC Microgrid(NPTEL)	7days	8 weeks	July 19 to Sep 19	NPTEL	NATIONAL
12	Mr.R.Dhanasekar	EEE	FDP	Introduction to Smartgrid(NPTEL)	7days	8 weeks		NPTEL	NATIONAL
13	Mrs.R.Anitha	EEE	FDP	Introduction to Smartgrid(NPTEL)	7days	8 weeks		NPTEL	NATIONAL
14	A.Sasikala	EEE	WORK SHOP	3 days workshop on Design Of Experiments: An	3 days	25.4.2020	27.4.2020	JAER powered by Hexacube	NATIONAL

				engineering perspective					
15	S.Sivarajeswari	EEE	FDP	5 days FDP on Technological advancement in power system control , power controller, drives and E-vehicles TAPPAD2020	5 days	27.4.2020	1.5.2020	Dr.NGP.IT.IQAC, autodesk	NATIONAL
16	S.Sivarajeswari	EEE	webinar	3 days webinar on Power system simulation and control with MATLAB simulations	3 days	21.5.2020	23.5.2020	CK college of engineering and technology	NATIONAL
17	S.Sivarajeswari	EEE	webinar	1 day webinar A power of a teacher	1 day	4.5.2020	4.5.2020	ICT acadamy	NATIONAL
18	E.MAHESWARI	EEE	WORK SHOP	2 days WORKSHOP on FUZZY LOGIC AND NEURAL NETWORK SOLUTIONS FOR ENGINEERING SOLUTIONS	2 Days	29.4.2020	30.4.2020	JAER powered by Hexacube	NATIONAL
19	E.MAHESWARI	EEE	WORK SHOP	3 days workshop on Design Of Experiments: An engineering perspective	3 days	25.4.2020	27.4.2020	JAER powered by Hexacube	NATIONAL

20	E.MAHESWARI	EEE	FDP	5 days FDP on Technological advancement in power system control , power controller, drives and E-vehicles TAPPAD20205	5 days	27.4.2020	1.5.2020	Dr.NGP.IT.IQAC,	NATIONAL
21	E.MAHESWARI	EEE	FDP	3 days FDP on ROBOTICS PROCESS AUTOMATION	3 Days	4.5.2020	6.5.2020	JEPPIAR INSTITUTE OF TECHNOLOGY	NATIONAL
22	E.MAHESWARI	EEE	FDP	6 days FDP on ICT TOOLS	6 Days	11.5.2020	16.5.2020	SREE VIDYANIKETHAN ENGINEERING COLLEGE	NATIONAL
23	N.SHANTHI	EEE	FDP	5 days FDP on Technological advancement in power system control , power controller, drives and E-vehicles TAPPAD2020	5 days	27.4.2020	1.5.2020	Dr.NGP.IT.IQAC	NATIONAL
24	N.SHANTHI	EEE	FDP	7 days FDP on ARDUINO Training	7 Days	16.4.2020	22.4.2020	IIT-Bombay-Spoken Tutorial	NATIONAL
25	N.SHANTHI	EEE	WEBINAR	17 days webinar on Innovation, IPR, Entrepreneurship, and Start-ups among HEIs	17 Days	28.4.2020	22.5.2020	IIC-MHRD Innovation Council	NATIONAL

26	T.THENMOZHI	EEE	FDP	5 days FDP on Technological advancement in power system control , power controller, drives and E-vehicles TAPPAD2020	5 DAYS	27.4.2020	1.5.2020	Dr.NGP.IT.IQAC	NATIONAL
27	MR.R.DHANASEKAR	EEE	FDP	5 days FDP on “Integration of Renewable Energy Systems- Research Tools / Industrial Perspective”	5 DAYS	18.05.2020	22.05.2020	LAKIREDDY BALI REDDY COLLEGE OF ENGINEERING	NATIONAL
28	MR.R.DHANASEKAR	EEE	FDP	5 days FDP on “Grid Integration and Protection”	5 DAYS	22.06.2020	27.06.2020	KOMMURI PRATAP REDDY INSTITUTE OF TECHNOLOGY	NATIONAL

S.no	NAME	Department	Nature of the program attended (FDP/ Workshop/ Seminar)	Name of the FDP / Workshop Attended	Duration	From Date	End Date	Organising Institution	INT/NATIONAL/STATE/LOCAL
1	Mrs.T.Thenmozhi	EEE	FDP	Smart microgrid and Energy storage using Homer and PV Syst	2 days	19.9.2019	20.9.2019	AMET Deemed To Be University	STATE
2	G.EZHILARASI	EEE	FDP	Smart microgrids and Energy storage using Homer and PV Syst	2 days	19.9.2019	20.9.2019	AMET Deemed To Be University	STATE

3	MR.R.DHANASEKAR	EEE	WORKSHOP	3 Days workshop on E-MOBILITY DEVELOPMENT FOR GREEN INDIA	3 DAYS	31.01.2020	02.02.2020	VIT, VELLORE	STATE
4	Mr. L. Vijayaraja	EEE	WORKSHOP	2 Days WORKSHOP onDesign of Elecrtic two wheeler	2 days	25.01.2020	26.01.2020	Madras Institute of Technology, Chennai	STATE
5	Mr.L. Vijayaraja	EEE	SEMINAR	1 Day seminar on Awareness program on Corona - COVID19	1 day	07.02.2020	07.02.2020	Central polytechnic college, Tharamani, Chennai	STATE

6	Mr.L. Vijayaraja	EEE	WORKSHOP	3 days Workshop on TECHNOLOGY EXIBITION 2020 CUM TRAINING PROGRAMME	3 days	27.02.2020	29.02.2020	CTDT, Anna University, Chennai.	STATE
7	A.Sasikala	EEE	FDP	3 days FDP on Power converters for DC microgrid	3 days	4.6.2020	6.6.2020	SSN, Chennai	STATE
8	S.Sivarajeswari	EEE	FDP	3 days FDP on Emerging technology Robotics process automation	3 days	4.5.2020	6.5.2020	Jeppiaar institute of technology	STATE

9	G.Ezhilarasi	EEE	FDP	3 days FDP on Art of writing research articles and funding proposals	3 days	21.5.2020	23.5.2020	MAnakula Vinayagar	STATE
10	G.Ezhilarasi	EEE	WORKSHOP	2 days WORKSHOP on Battery Management System for Electric Vehicles	2 days	21.5.2020	22.5.2020	RMD Engineering College	STATE

11	G.Ezhilarasi	EEE	FDP	5 Days FDP on Modelling Technologies and Control on Electric Vehicle	5 days	25.5.2020	29.5.2020.	AMET University	STATE
12	N.SHANTHI	EEE	FDP	3 days FDP on ROBOTICS PROCESS AUTOMATION	3 Days	4.5.2020	6.5.2020	JEPPIAR INSTITUTE OF TECHNOLOGY	STATE
13	N.SHANTHI	EEE	FDP	5 days FDP on Modelling Technologies and Control on Electric Vehicle	5 days	25.5.2020	29.5.2020.	AMET University	STATE

14	N.SHANTHI	EEE	WEBINAR	1 day webinar on Renewable Energy using MATLAB	1 DAY	16.5.2020	16.5.2020	Pantech Solutions	STATE
15	N.SHANTHI	EEE	WEBINAR	1 day webinar on Electricle Vehicle Design	1 DAY	15.5.2020	15.5.2020	Pantech Solutions	STATE
16	N.SHANTHI	EEE	WEBINAR	1 day webinar on Grid Connected and Stand alone micro grid design using HOMEPRO	1 DAY	15.5.2020	15.5.2020	Erode Sengunthar Engineering ollege	STATE

17	T.THENMOZHI	EEE	FDP	3 days FDP ON Emerging technology Robotics process automation	3 Days	4.5.2020	6.5.2020	JEPPIAR INSTITUTE OF TECHNOLOGY	STATE
18	T.THENMOZHI	EEE	FDP	5 Days FDP on Modelling Technologies and Control on Electric Vehicle	5 days	25.5.2020	29.5.2020.	AMET University	STATE
19	T.THENMOZHI	EEE	FDP	3 days FDP on CYBER SECURITY AND ETHICAL HACKING	3 DAYS	19.4.2020	21.4.2020	AICL	STATE

20	MR.R.DHANASEKAR	EEE	FDP	1 day FDP on LEARNING THROUGH GAMIFICATION	1 DAY	30.04.2020		PSNA COLLEGE OF ENGINEERING AND TECHNOLOGY	STATE
21	MR.R.DHANASEKAR	EEE	ATAL FDP	5 days ATAL FDP on INTERNET OF THINGS	5 DAYS	11.05.2020	15.05.2020	GOVERNEMENT COLLEGE OF ENGG, SRIRANGAM	STATE
22	MR.R.DHANASEKAR	EEE	FDP	3 days FDP on Power Converters for DC Micro Grid	3 DAYS	04.06.2020	06.06.2020	SRI SIVASUBRAMANIYA NADAR COLLEGE OF ENGG	STATE

23	MR.R.DHANASEKAR	EEE	FDP	5 days FDP on “IoT Trends to Drive Innovation for Business and Digital Technology”,	5 DAYS	11.05.2020	15.05.2020	HINDUSTHAN INSTITUTE OF TECHNOLOGY	STATE
24	MR.R.DHANASEKAR	EEE	FDP	3 Days FDP on EMERGING TRENDS AND ITS OPPORTUNITIES IN SMART GRID IMPLEMENTATION	3 DAYS	01.07.2020	03.07.2020	KUMARAGURU COLLEGE OF TECHNOLOGY	STATE

S.no	Name of the Faculty	Department	Nature of the program attended (FDP/ Workshop/ Seminar)	Name of the FDP / Workshop Attended	Duration	From Date	End Date	Organising Institution	INT/NATIONAL/STATE/LOCAL
1	Mr.R.Dhanasekar	EEE	FDP	Renewable Energy Systems	5 days	22 .07. 2019	26.07. 2019	Sri Sairam Engineering College	LOCAL
2	Mr.L.Vijayaraja	EEE	FDP	Renewable Energy Systems	5 days	22 .07. 2019	26.07. 2019	Sri Sairam Engineering College	LOCAL
3	Mr.R.Dhanasekar	EEE	FDP	Artificial Inteligence	6 Days	05 .12. 2019	11 .12. 2019	Sri Sairam Engineering College	LOCAL
4	Mr.L.Vijayaraja	EEE	FDP	Artificial Inteligence	6 Days	05 .12. 2019	11 .12. 2019	Sri Sairam Engineering College	LOCAL

5	Ms.G.Ezhilarasi	EEE	FDP	1 day FDP on Internet of Things	1 Day	6.2.2020	6.2.2020	Sri Sairam Institute of Technology & WILEY	LOCAL
6	E.MAHESWARI	EEE	FDP	12 days FDP on Recent innovation in Electrical,Electronics, Instrumentation,Automation and Teaching Pedagogy	12 days	18.5.2020	30.05.2020	SRI SAIRAM ENGINEERING COLLEGE	LOCAL

7	E.MAHESWARI	EEE	WEBINAR	1 day webinar on HOW TO GET PUBLISHED IN SCIENTIFIC JOURNAL	1 DAY	27.4.2020	27.4.2020	SRI SAIRAM INSTITUTE OF TECHNOLOGY	LOCAL
8	N.SHANTHI	EEE	WEBINAR	1 day webinar on HOW TO GET PUBLISHED IN SCIENTIFIC JOURNAL	1 DAY	27.4.2020	27.4.2020	SRI SAIRAM INSTITUTE OF TECHNOLOGY	LOCAL
9	N.SHANTHI	EEE	WEBINAR	1 day webinar on An Introduction to E-mOBILITY	1 DAY	16.5.2020	16.5.2020	SRI SAIRAM INSTITUTE OF TECHNOLOGY	LOCAL

10	M.RAZMAH	EEE	FDP	6 days FDP on Engineering and Management Teaching pedagogy-an Industry perspective	6 days	11.5.2020	16.5.2020	SRI SAIRAM INSTITUTE OF TECHNOLOGY	LOCAL
11	M.RAZMAH	EEE	WEBINAR	1 day webinar on 3D Printing applications in fighting with covid 19	1 Day	09/05/2020	09.05.2020	SRI SAIRAM INSTITUTE OF TECHNOLOGY	LOCAL

IPPO

Certificate of Participation

This Certificate is awarded to

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conducted on 10th & 11th April 2020

Ms. Anjula Mehta
Chief Executive Officer, IPPO

Prof. S S Manoharan
Director General, PDPU

21/04/2020 14:55:32

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jaeronline.com/verify-certificate
Two Days Online Workshop on
FUZZY LOGIC AND
NEURAL NETWORK APPROACHES
FOR ENGINEERING SOLUTIONS
This certificate is presented to
Mrs. Thenmozhi T
Sri Sairam Institute of Technology
For active participation in the two days online workshop on "Fuzzy Logic and Neural Network Approaches for Engineering Solutions" organized by Journal of Advanced Engineering Research & powered by hexacube India on 29th & 30th April 2020.
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CK COLLEGE OF ENGINEERING & TECHNOLOGY

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Jayaram Nagar, Cheliangkuppam, Cuddalore 607 003

INSTITUTION'S INNOVATION COUNCIL

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

Certificate of Participation

This is to certify that **Mrs.S.SIVARAJESWARI - Assistant Professor / EEE** from **Sri Sairam Institute of Technology** has participated in the three days Webinar on **"Power System Operation & Control with MATLAB® Simulations"** organized by the Department of Electrical & Electronics Engineering, CK College of Engineering & Technology, Cuddalore during 21st May 2020 to 23rd May 2020.

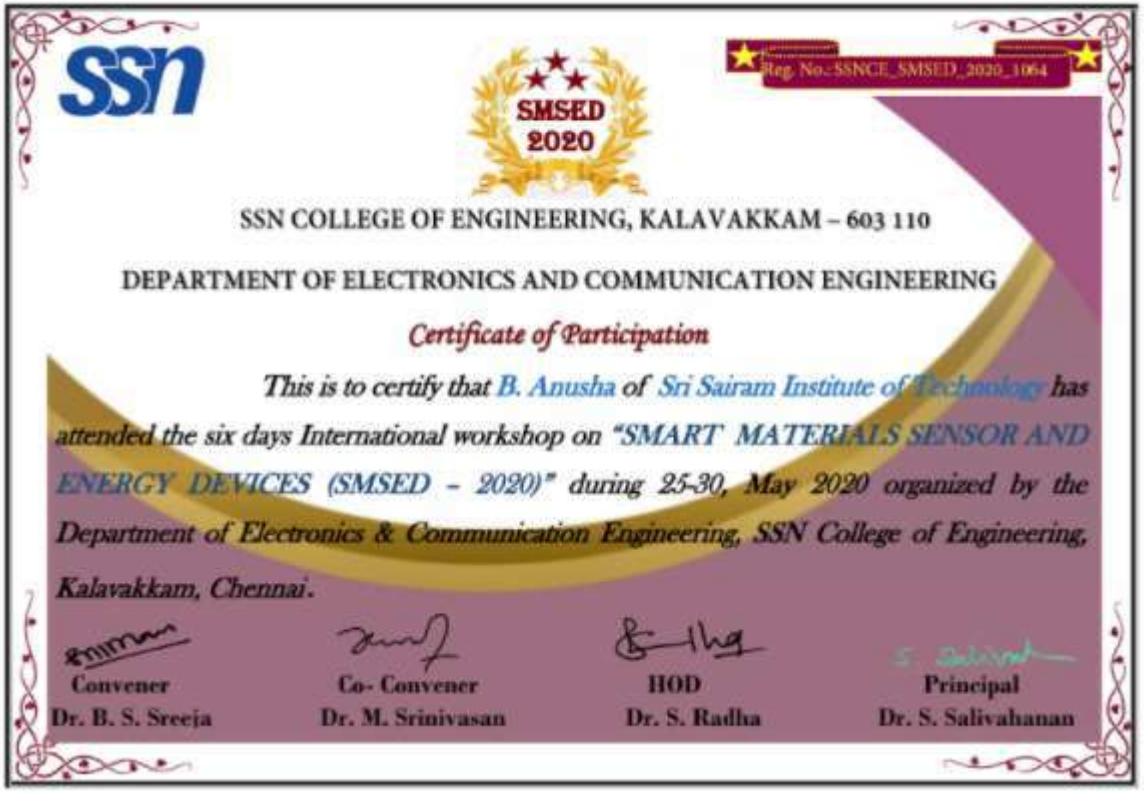
HoD / EEE
(Dr. A.Arulvizhi, M.E., Ph.D)

Principal
(Dr.S.Saravanan, M.E.,Ph.D)

LOYOLA INSTITUTE OF TECHNOLOGY
PALANCHUR, CHENNAI - 600 123
(Approved by AICTE, Affliated to Anna University)
INNOVATION CELL
CERTIFICATE OF PARTICIPATION
This Certificate is Proudly Presented to
DHANASEKAR R
In acknowledgment of your participation in the Webinar entitled " Train Accidents, Relief and Investigation" Organized by the Innovation Cell, Loyola Institute of Technology in association with i3 CADD, Chennai.
Date: 11th June, 2020
Mr. Kovarasan.B
Managing Partner
i3 CADD
Dr. V. Balaji
HOD
Mechanical Engg.
Dr. Sujatha Jamuna Anand
Principal
i3 CADD
Imagine Inspire Innovate.

S&H

No. of Faculty	International level	National level	State level	Local level
Attended Seminars/ Workshops	6	23		
Presented papers	-	-	-	-
Resource Persons	-	-	-	-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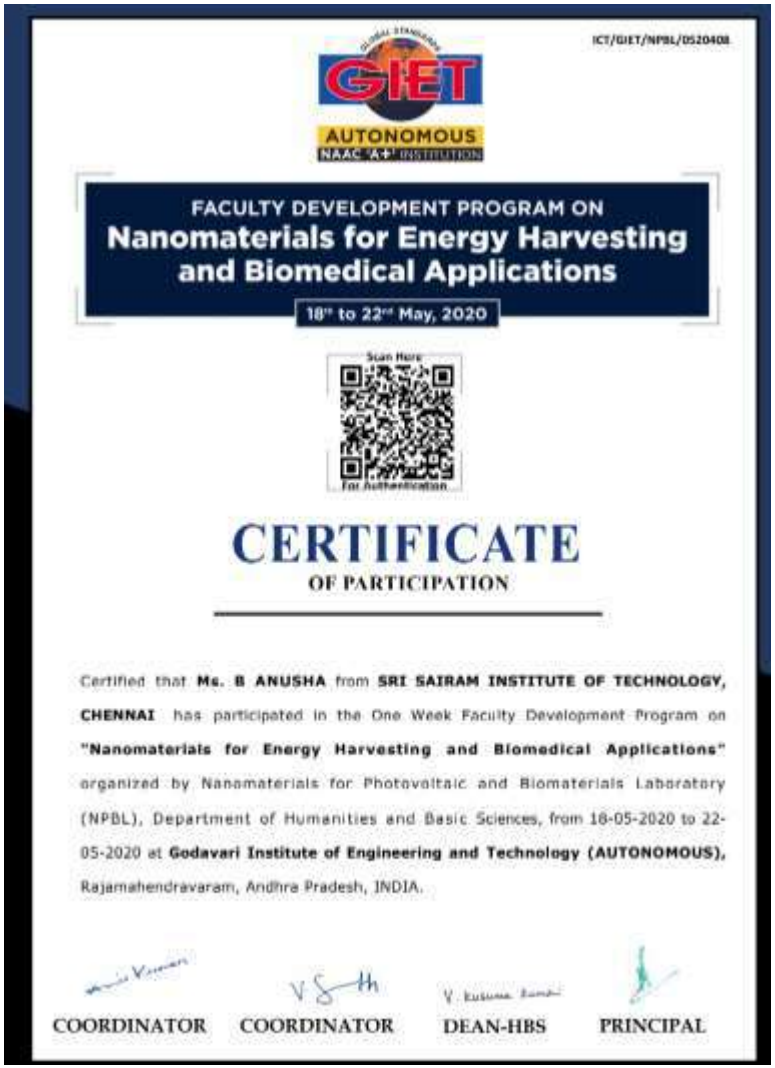
Reg. No.:SSNCE_SMSED_2020_1064
SSN COLLEGE OF ENGINEERING, KALAVAKKAM – 603 110
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
Certificate of Participation
This is to certify that B. Anusha of Sri Sairam Institute of Technology has attended the six days International workshop on "SMART MATERIALS SENSOR AND ENERGY DEVICES (SMSED – 2020)" during 25-30, May 2020 organized by the Department of Electronics & Communication Engineering, SSN College of Engineering, Kalavakkam, Chennai.
Convener
Dr. B. S. Sreeja
Co- Convener
Dr. M. Srinivasan
HOD
Dr. S. Radha
Principal
Dr. S. Salivahanan



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GIET

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FACULTY DEVELOPMENT PROGRAM ON

Nanomaterials for Energy Harvesting and Biomedical Applications

18th to 22nd May, 2020

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For Authentication

CERTIFICATE

OF PARTICIPATION

Certified that **Ms. B ANUSHA** from **SRI SAIRAM INSTITUTE OF TECHNOLOGY, CHENNAI** has participated in the One Week Faculty Development Program on **"Nanomaterials for Energy Harvesting and Biomedical Applications"** organized by Nanomaterials for Photovoltaic and Biomaterials Laboratory (NPBL), Department of Humanities and Basic Sciences, from 18-05-2020 to 22-05-2020 at **Godavari Institute of Engineering and Technology (AUTONOMOUS),** Rajamahendravaram, Andhra Pradesh, INDIA.

COORDINATOR COORDINATOR DEAN-HBS PRINCIPAL

IT

No. of Faculty	International level	National level	State level	Local level
Attended Seminars/ Workshops	3	25	15	20
Presented papers	15	20	0	10
Resource Persons	0	2	2	15

SR INSTITUTE OF MANAGEMENT & TECHNOLOGY

Certificate of Participation

This Certificate is presented to

SUTHAHAR P

for participating in webinar on

Data Analytics

Organized by Department of Computer Science & Engineering , SRIMT, Lucknow

on May 30th, 2020.

In Association with

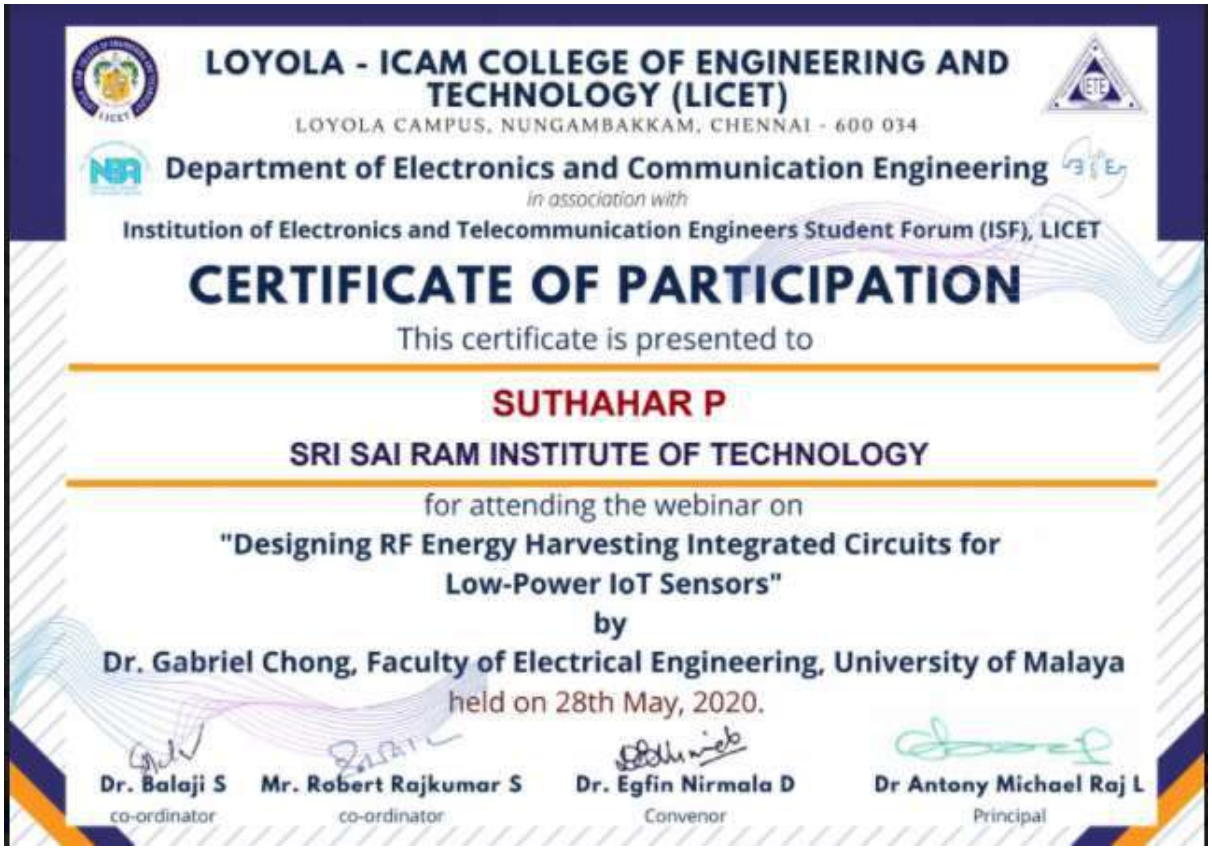
Mrs. Neeta Rastogi
HOD, CSE

Mr. Rajesh Singh Chauhan
Deputy Director

Dr. S. P. Singh
Director

Pawan Singh Chauhan
Chairman

NH-24, Sitapur Road, Bakshi Ka Talab, Lucknow 9793000005,6,7



LOYOLA - ICAM COLLEGE OF ENGINEERING AND TECHNOLOGY (LICET)

LOYOLA CAMPUS, NUNGAMBAKKAM, CHENNAI - 600 034

Department of Electronics and Communication Engineering

in association with

Institution of Electronics and Telecommunication Engineers Student Forum (ISF), LICET

CERTIFICATE OF PARTICIPATION

This certificate is presented to

SUTHAHAR P

SRI SAI RAM INSTITUTE OF TECHNOLOGY

for attending the webinar on

"Designing RF Energy Harvesting Integrated Circuits for Low-Power IoT Sensors"

by

Dr. Gabriel Chong, Faculty of Electrical Engineering, University of Malaya

held on 28th May, 2020.

Dr. Balaji S	Mr. Robert Rajkumar S	Dr. Egfin Nirmala D	Dr Antony Michael Raj L
co-ordinator	co-ordinator	Convenor	Principal

Geetha Shishu Shikshana Sangha (R)

GSSS INSTITUTE OF ENGINEERING & TECHNOLOGY FOR WOMEN

(Affiliated to VTU, Belagavi, Approved by AICTE, New Delhi & Govt. of Karnataka)
Accredited with Grade 'A' by NAAC
Accredited Branches by NBA, New Delhi; UG – ECE, CSE, ISE, TE & IT (Validity: 01.07.2017 - 30.06.2020)
K R S ROAD | METAGALLI | MYSURU - 570016 | KARNATAKA | INDIA

CERTIFICATE OF PARTICIPATION

is hereby presented to

SUTHAHAR P

In appreciation for participation in the "***Webinar series on Satellite and Automation***" organized by GSSSIETW IEEE Student Branch in association with IEEE Bangalore Section and CAS Bangalore chapter during *11th to 13th May, 2020*

Dr. Shivakumar M	Prof. Silvia Liberata Ullo	Dr. Devesh Dwivedi	Mr. Puneet Kumar Mishra
Principal, GSSSIETW, Mysuru	University of Sannio, Benevento, ITALY	Chair, CAS Bangalore Chapter	Chair, IEEE Bangalore Section

e-cell
IIT BOMBAY
IIT BOMBAY'S
E-SUMMIT'20
A BRIO BREAKTHROUGH
Certificate
Of Participation
This is to certify that
Suthahar.P
has attended E-summit'20 organised
by Entrepreneurship Cell, IIT Bombay
during 1st and 2nd February.
Chirag Singhal
Overall Coordinator
The Entrepreneurship Cell
IIT Bombay
Kushal Agarwal
Overall Coordinator
The Entrepreneurship Cell
IIT Bombay

3.4 Extension Activities

3.4.1 Number of extension and outreach programmes conducted in collaboration with industry, community and Non- Government Organizations through NSS/NCC/Red cross/Youth Red Cross (YRC) etc., during the year

Name of The Activity	Organizing Unit/ Agency/ Collaborating Agency	Number of Teachers Participated In Such Activities	Number of Students Participated In Such Activities
SWACHH BHARATH ABHIYAN	YRC	55	306
JAL SHAKTI ABHIYAN AWARENESS PROGRAM	YRC & UBA	64	420
DISASTER MANAGEMENT AWARENESS PROGRAM	YRC	75	459
FIRE SAFETY FIRST AID TRAINING PROGRAM	YRC	75	459
PLASTIC AWARENESS RALLY	YRC & UBA	60	505
THREE DAYS DENGUE AWARENESS AND NILAVEMBU KUDINEER DISTRIBUTION	YRC	85	459
SWACHH BHARAT ACTIVITY AND AWARENESS RALLY AT ADAPTED VILLAGES	YRC	62	325
LPGCONSERVATION AWARENESS PROGRAMME	YRC	66	364
MEGA BLOOD DONATION CAMP	YRC	73	417
YRC Tree Plantation	YRC	56	522
First Aid Training Program	YRC	68	452

SPECIAL CAMP : 7 DAYS (PALANTHANDALEM VILLAGE)	NSS	56	460
INFORMATION RIGTH ACT, YOGA, CLEANING, FREE MEDICAM CAM GENERAL &EYE, SPORTS MEET,, MOTIVATION SPEEACH, LPG AWARENESS, SCIENCE EXPERIEMENTATION, ELECTRICAL SAFETY INTERNET TRAINING TO SCHOOL STUDENTS, BLOOD DONATION AWARENESS, ORGGAN DONATION,AND SOCIAL HELP.	NSS	58	517
SWACHH BHARAT CLEANING WORK	NSS	72	330
TREE PLANTATION	NSS	52	421
COVID 19 NSS STUDENT FOOD PROVIDED TO STREET PEOPLE AND OLD HOMEAGE	NSS	61	465
MASS BLOOD DONATION	NSS	56	383
COVID19 STUDENTS AWARNESS PROGRAM 2 DAYS	NSS	62	334
FIRST YEAR NSS STUDENT ORIENTATION	NSS	52	450
BLOOD DONATION AWARNESS PROGRAM	NSS	51	418
INTERNATIONAL YOGA DAY	MADRAS MEDICAL COLLEGE	65	464
DRUG ABUSE DAY RALLY	MADRAS CITY POLICE	56	317
HONOURING THE MARTYRS OF INDEPENDENT INDIA	1(TN) Medical Unit	61	429

KARGIL VIJAY DIWAS DAYE	EAST COAST GUARD	74	321
SWACHA BARATH	1(TN) Medical Unit	65	377
MADRAS INDEPENDENCE DAY,CHENNAI	TAMIL NADU GOVERNMENT	51	426
LAKE CLEANING PROCESS	Nanai Foundation	61	343
SEED PLANTATIONS	Nanai Foundation	51	302
COLLECTING AWARD FOR BLOOD DONATION	Nanai Foundation	61	309
CLEANING AND MAINTANANCE PROCESS SEED PLANTATION	Nanai Foundation	51	444
SEED PLANTAION PROCESS	Nanai Foundation	71	562
SEEDLING MAINTANANCE	Nanai Foundation	61	453
TREE SAMPLING PLANTING	MADRAS MEDICAL COLLEGE	51	534
SWACHA BARATH	1 (TN) MED UNIT	62	407
HAND WASH DAY	1 (TN) MED UNIT	52	510
50 KM GO-GREEN CYCLATHON CHALLENGE	PRIVATE	50	342
FLAG HOISTING CEREMONY AND SEQUENCE DRILL	1 (TN) MED UNIT-MADRAS 'A'	2	45
RDC FELICITATION EVENT	1 (TN) MED UNIT-MADRAS 'A'	1	14
WEAPON AND THEORY CLASS	1 (TN) MED UNIT-MADRAS 'A'	1	16
PRACTICAL EXAMINATION OF 'B'CERTIFICATE	1 (TN) MED UNIT-MADRAS 'A'	1	16
THEORY EXAMINATION 'B'CERTIFICATE	1 (TN) MED UNIT-MADRAS 'A'	1	16
SPORTS DAY - GUARD OF HONOUR	NCC	1	8
OTA VISIT	1 (TN) MED UNIT-MADRAS	-	15

	'A'		

3.4.2 Awards and recognition received for extension activities from Government and other recognized bodies during the year

Name of the Activity	Award/recognition	Awarding bodies	No. of Students benefited
BLOOD DONATION (NSS/NCC/YRC)	500 UNITS DONOR CATEGORY	MVBDA	1725

3.4.3 Students participating in extension activities with Government Organisations, Non-Government Organizations and programmes such as Swachh Bharat, Aids Awareness, Gender Issue, etc. during the year

Name of the scheme	Organising unit/ agency/ collaborating agency	Name of the activity	Number of teachers coordinated such activities	Number of students participated in such activities
SWACHH BHARATH ABHIYAN	YRC	SWACHH BHARATH ABHIYAN	53	363
JAL SHAKTI ABHIYAN	YRC & UBA	JAL SHAKTI ABHIYAN AWARENESS PROGRAM	43	304
UNNAT BHARATH ABHIYAN	UBA	ATTENDED VILLGE GRAMA SABHA	33	53
UNNAT BHARATH ABHIYAN	UBA	RALLY ON SMOKELESS DEEPAVALI	60	310
UNNAT BHARATH ABHIYAN	UBA	AWARENESS ON COVID 19 PROGRAMME	52	362
SWACHH BHARATH ABHIYAN	NCC	SWACHH BHARATH ABHIYAN	55	317
50 KM GO-GREEN CYCLATHO	PRIVATE	GO GREEN AWARENESS	50	342

N CHALLENGE				
DRUG ABUSE DAY RALLY	MADRAS CITY POLICE	NCC RALLY	51	317
KARGIL VIJAY DIWAS DAY	EAST COAST GUARD	WAR SHIP VISIT	51	221
NCC	1(TN) Medical Unit	HONOURING THE MARTYRS OF INDEPENDENT INDIA	2	29

SWACHH BHARATH ABHIYAN

Date : 10.07.19

Venue : College Campus, SSIT

JAL SHAKTI ABHIYAN AWARENESS PROGRAM

Date : 23.07.19

Venue : Smart class Room, College Campus, SSIT

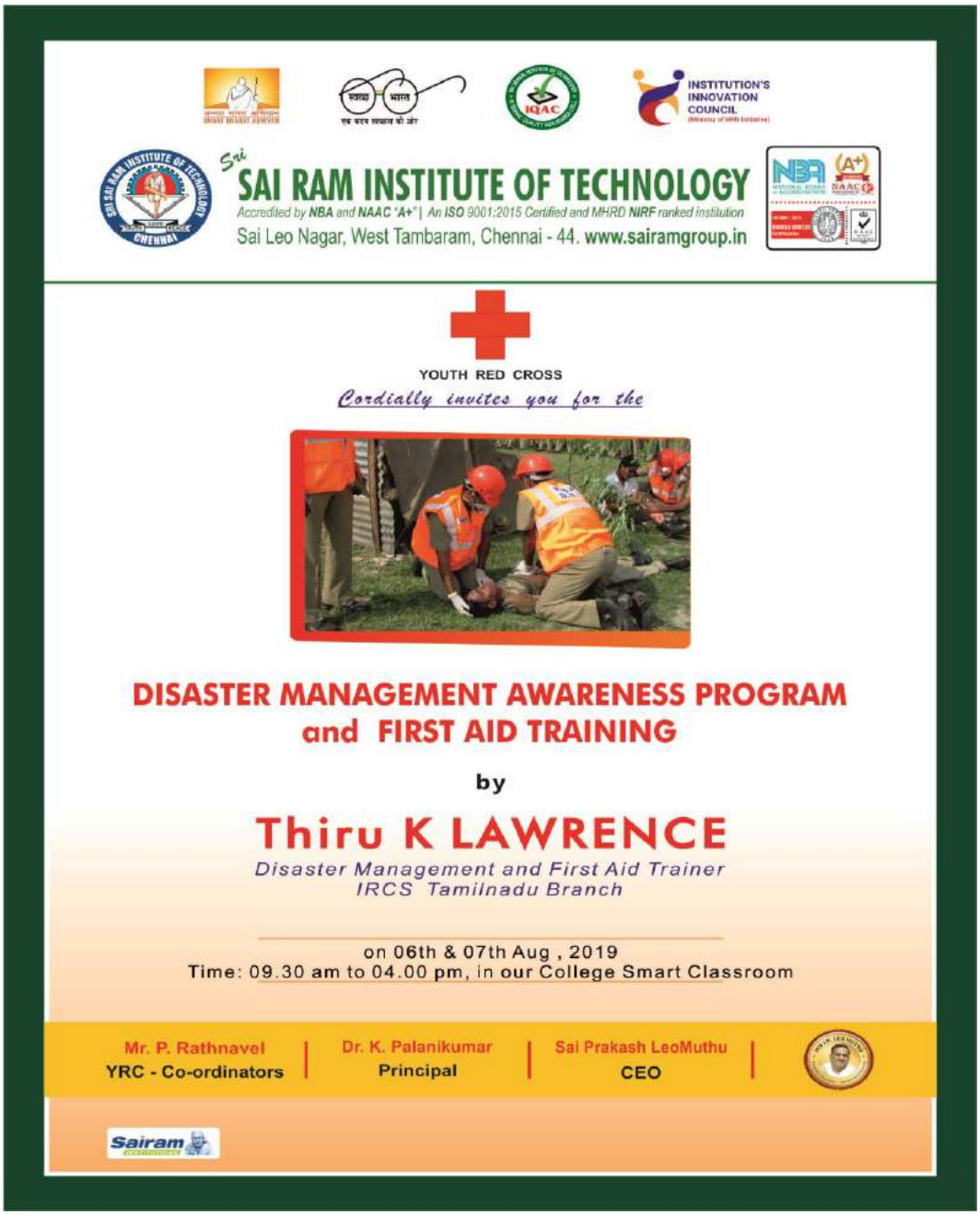
Sairam
SAI RAM
Sairam
SAI RAM INSTITUTE OF TECHNOLOGY
JAL SHAKTI ABHIYAN
Welcome

SAI RAM
INSTITUTE OF TECHNOLOGY
Welcomes you

DISASTER MANAGEMENT AWARENESS PROGRAM

Date : 06.08.19

Venue :



Auditorium, SSIT

Classification of Disaster
Major natural disasters:
Flood
Cyclone
Drought
Earthquake, Tsunami

FIRST AID TRAINING PROGRAM

Date : 07.08.19

Venue : College Campus, SSIT

PLASTIC AWARENESS RALLY

Date : 17.09.19

Venue : Poondhandalam and Erumaiyur

Sairam

Idea 4G
Idea 4G
SAI RAM
YOUTH RED CROSS

GO GREEN
SAI RAM
INSTITUTE OF TECHNOLOGY
YOUTH RED CROSS

PLASTICS

THREE DAYS DENGUE AWARENESS AND NILAVEMBU KUDINEER DISTRIBUTION

Date : 29.10.19 TO 31.10.19

Venue : College Campus, SSIT

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Sai Leo Nagar, West Tambaram, Chennai - 44. **www.sairamgroup.in**

YOUTH RED CROSS

Cordially invites you for the

DENGUE AWARENESS & NILAVEMPU KUDINEER DISTRIBUTION

(THREE DAYS PROGRAM)

by

Mr. KESARI SNS SARMA

MGNCRE Officer,
Mahatma Gandhi National Council of Rural Education,
MHRD, Hyderabad (AP)

on 29th to 31th Oct, 2019
Time: 10.00 am to 04.00 pm, in our College Smart Classroom

Mr. P. Rathnavel	Dr. K. Palanikumar	Sai Prakash LeoMuthu
YRC - Co-ordinators	Principal	CEO

Invitation

SAI RAM INSTITUTE OF TECHNOLOGY

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குடிநீர்
IRIS
YOUTH RED CROSS
SSIT.S.&H.ST.T.28

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SWACHH BHARAT ACTIVITY AND AWARENESS RALLY AT ADAPTED VILLAGES

Date : 19.12.19

Venue : Thirumudivakkam, Pazhanthandalam and Erumaiyur, Tambaram

SAI RAM INSTITUTE OF TECHNOLO
An ISO 9001 : 2008 Certified Institution
Sai Leo Nagar, West Tambaram, Chennai – 600 044. www.sairamit
Organises
Swachh Bharat
Summer Internship 201

அரசினர் மேல் நிலைப் பள்ளி
திருமுடிவாக்கம், சென்னை - 600 044.
GOVT. HR. SEC. SCHOOL
THIRUMUDIVAKKAM, CHENNAI - 600 044.
SAI RAM INSTITUTE OF TECH
Swachh Bh
Summer Intern
REDMI NOTE 8 PRO
AI QUAD CAMERA

TOMMY
SAI RAM INSTITUTE OF TECHNOL
Organises
Swachh Bhara
Summer Internship 20
REDMI NOTE 8 PRO
AI QUAD CAMERA

LPG CONSERVATION AWARENESS PROGRAMME

Date : 10.01.2020

Venue : Seminar Hall and Class Rooms, SSIT

SAI RAM INSTITUTE OF TECHNOLOGY
PCRA
PETROLEUM CONSERVATION RESEARCH ASSOCIATION
SOUTHERN REGION
2019 - 2020
WELCOME

MEGA BLOOD DONATION CAMP

Date **: 17.02.2020**

Venue **: College Campus, SSIT**

YOUTH RED CROSS (YRC)
BLOOD

SAI RAM INSTITUTE OF TECHNOLOGY
GOALS

SAI RAM

YRC Tree Plantation

Date : 12.02.2020

Venue : College Campus, SSIT

First Aid Training Program

Date : 24.02.2020

Venue : Smart Class Room, SSIT

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Sai Leo Nagar, West Tambaram, Chennai - 44. Tel: 044 - 2251 211.

INSTITUTION'S INNOVATION COUNCIL (Ministry of HRD Initiative)

YOUTH RED CROSS

Organizing

FIRST AID TRAINING PROGRAM

on 24.02.2020

Chief Guest

Pulavr. R. MANICKAM

District Secretary,
IRCS Kanchipuram, Tamilnadu, India.

Venue - Smart Class Room, @ SIT Campus

Mr. P. Rathnavel Co-ordinator	Dr. K. Palanikumar Principal	Sai Prakash LeoMuthu CEO

FIRST AID TRAINING

SPECIAL CAMP : 7 DAYS (PALANTHANDALEM VILLAGE)

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SUSTAINABLE DEVELOPMENT GOALS

We, Sri Sairam Institute of Technology NSS Team completely indulged ourselves with the sustainable development goals possessed by the United Nations in order to achieve a better-Futuristic development for the betterment of future generation.

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NSS SPECIAL CAMP 2020

"If you can , feed just one ", its an initiative to **ZERO HUNGER** Nutritionist Dr.Udhayakumar on 29.01.2020 has given valuable suggestions and instructions about nutrition for the students.

2 ZERO HUNGER

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NSS SPECIAL CAMP 2020

To attain a **GOOD HEALTH AND WELL BEING** , we organized a medical camp for the people surrounding the village Pazhanthandalam on 26.01.2020 from 9.30 am to 4.00 pm

3 GOOD HEALTH AND WELL-BEING

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NSS SPECIAL CAMP 2020

A better nation can be build only through QUALITY EDUCATION we conducted the awareness program about LPG by PCRA and Right to Information Act by Mr.SaiSambathkumar on 28.01.2020

4 QUALITY EDUCATION

Sairam INSTITUTIONS
www.sairamgroup.in

NSS SPECIAL CAMP 2020

"The soul has no Gender", which insisted us to conduct programs and events like Chess, Carrom, Drawing, Essay Writing and Kabadi at the school campus on 27.01.2020 for both boys and girls to attain **GENDER EQUALITY.**

5 GENDER EQUALITY

Sairam INSTITUTIONS
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NSS SPECIAL CAMP 2020

"Cleanliness is next to Godliness".
Our NSS team cleaned the surroundings of three water tanks at Pazhanthandalam Village on 25.01.2020 to ensure **CLEAN WATER AND SANITATION**

6 CLEAN WATER AND SANITATION

Sairam INSTITUTIONS
www.sairamgroup.in

NSS SPECIAL CAMP 2020

"The world must come together to end Energy Poverty".
Our Future Engineers exhibited their **AFFORDABLE AND CLEAN ENERGY** projects on 28.01.2020 to the Young minds.

7 AFFORDABLE AND CLEAN ENERGY

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www.sairamgroup.in

NSS SPECIAL CAMP 2020

"World peace begins with inner peace ". Our NSS Team incorporated PEACE, JUSTICE, AND STRONG INSTITUTIONS into the Blooming-Minds.

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

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www.sairamgroup.in

NSS SPECIAL CAMP 2020

"Alone we can do so little ,together we can do so much ", We tied up with various NGO's , individuals and School management to achieve the Goals

17 PARTNERSHIPS FOR THE GOALS

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DISCUSSION AND INTERACTIONS WITH NSS TEAM

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CLEANING THE SCHOOL CAMPUS

Sairam INSTITUTIONS
www.sairamgroup.in

TALENTS EXHIBITED BY THE STUDENTS

Sairam INSTITUTIONS
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WHAT WE ACCOMPLISHED

"Service to others leads to Greatness".

- Our NSS Team with a Week time , has worked with a whole-hearted dedication and sincerity.
- Beginning the day with cleaning our surroundings followed by planning our daily-schedule, we the students of the NSS Team has also conducted various events for the school children and society that include Creating Awareness on RTI, Conservation of LPG, organizing free medical camp and eye-checkup, conducting Interactive classes to the students through the modern technologies , lighting the Hidden-talents of the children , organizing rally on conservation of water and creating awareness on the hazards of Plastic usage.
- Thus we tried our accomplishment on our NSS motto "NOT ME BUT YOU".

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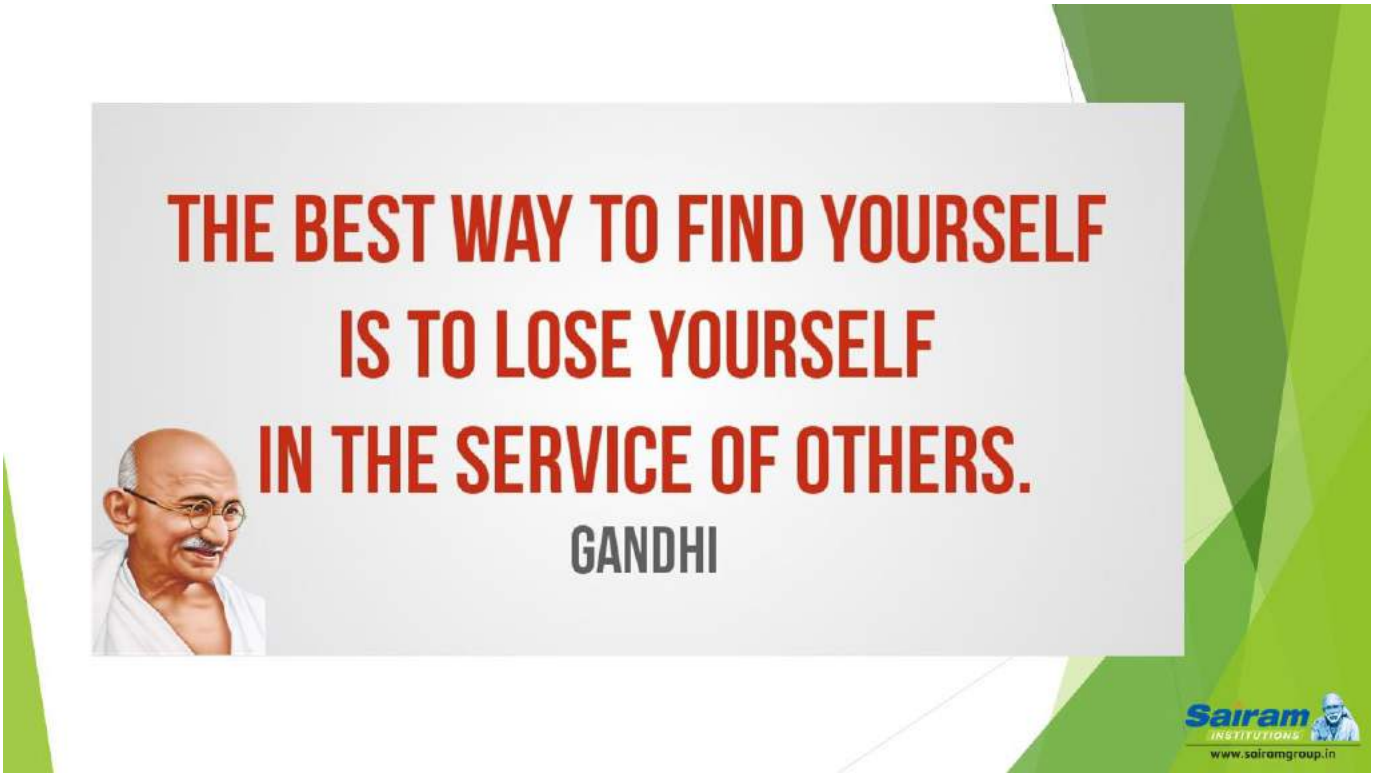
WHAT WE ACQUIRED

This Special camp held for a Week time has thought us many memorable things. The outcomes of this camp would be as follow:

- Patience
- Team spirit
- Leadership Quality
- Sacrificing tendency
- Affection
- Self-satisfaction
- Unity
- Adaptation
- Survival of the fittest

Sairam INSTITUTIONS www.sairamgroup.in


THE BEST WAY TO FIND YOURSELF
IS TO LOSE YOURSELF
IN THE SERVICE OF OTHERS.
GANDHI
Sairam
INSTITUTIONS
www.sairamgroup.in

DATE : 30.01.2020

NSS SPECIAL CAMP PROGRAMM

VALIDICTION PROGRAMM

The valedictory function was held on 30th **January**. The last day of the camp, there was a big ceremony to help the people there. We made a Diaz there as we have to finish the camp with the people there.

The ceremony started around evening by 3p.m.

MJF. Lion Leo Muthu, CEO of Sairam Group of Institutions along with **Dr.K.Palanikumar, Principal of Sri Sairam Institute of Technology, Dr. K.Maran, MBA, Director** and The Chief guest **M. Sathyamoorthy,I.A.S (Rtd), Executive Director and Mr. Anbarasan, PRO, Munusamy, Trust Member**. Sri Sairam Group of Institution some other dignitaries had come by for the ceremony.

After addressing the gathering we distributed **30 spectacles, 02 nos Tailoring Machine, 02 nos Brass Iron Box, 01 nos of Amplifier, Speakers and Mic** and the**, mate 10, 4 tube light fittings, sports Dress and things, student chats frame, cooking vessels provided to primary and Highersecondary schools**. The prizes for the children who won in the game events the previous day.

The final day of our camp ended in happiness and we appreciated each other for the works we did during the camp with good team co-ordination. Vote of thanks by **Dr.K.Baranidharan, NSS Program Officer**.

48MP AI QUAD CAMERA
Shot by Rithick

oup.in
LOGY

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SWACHH BHARAT CLEANING WORK

TREE PLANTATION

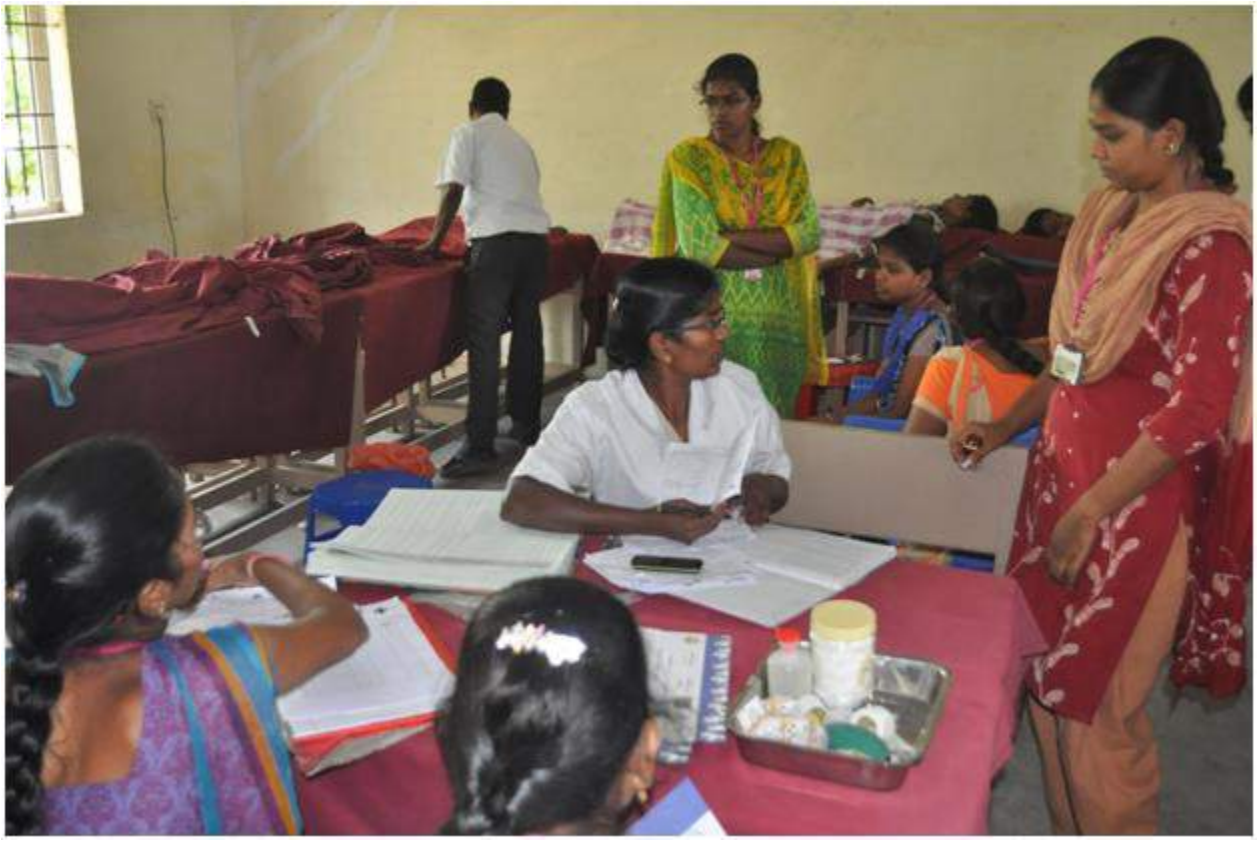
COVID 19 NSS STUDENT FOOD PROVIDE TO STREET PEOPLE AND OLD HOMAGE

Sairam
INSTITUTIONS
542
REDMI K20 PRO
AI TRIPLE CAMERA

MASS BLOOD DONATION

SAI RAM INSTITUTE OF

SAI RAM
SAI RAM INSTITUTE OF TECHNOLOGY
LIONS CLUB
MADRAS GOLDEN CITY
GRAND PRIX CLUB
2007-2008



COVID 10 STUDENTS AWARNESS PROGRAM 2 DAYS

FIRST YEAR NSS ORIENTATION

BLOOD DONATION AWARNESS PROGRAM

INTERNATIONAL YOGA DAY

1. 21.06.2019 INTERNATIONAL DAY OF YOGA

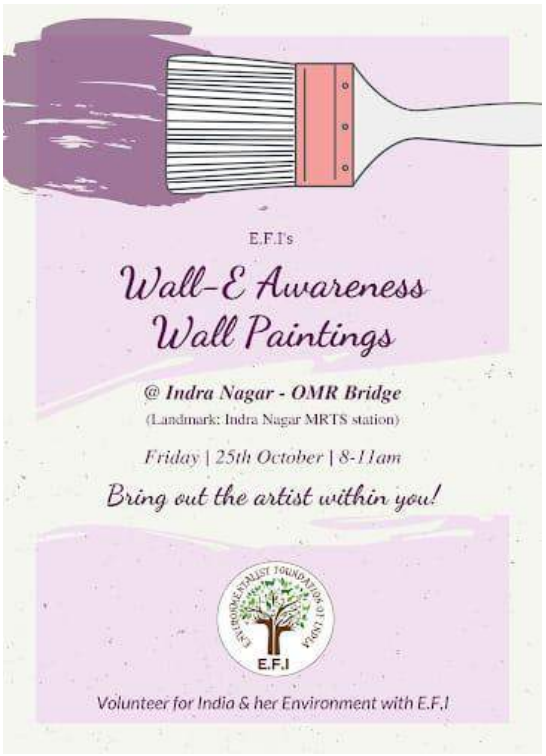
26.06.2019	INTERNATIONAL DAY AGAINST DRUG ABUSE RALLY	EGMORE RAJARATHINAM STADIUM

HONOURING THE MARTYRS OF INDEPENDENT INDIA

WARSHIP VISIT

26.07.19	KARGIL VIJAY DIWAS DAY

5.10.2019	WALL E- AWARENESS WALL PAINTING



6.10.2019	TREE SAPLINGS PLANTING

2.11.2019	TREE SAPLINGS PLANTING

SPORTS DAY GUARD OF HONOUR

BLOOD DONATION AWARD

HAND WASH DAY AWARENESS

I RAM INSTITUTE OF TECHNOLOGY
AL CADET CORPS
EDICAL UNIT NCC
SS PROGRAMME

SAI RAM INSTITUTE OF TECHNOLOGY
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Sai Leo Nagar, West Tambaram, Chennai - 600 044
NATIONAL CADET CORPS
1 (TN) MEDICAL UNIT NCC
achh Bharat Abhiyan
Making Clean India
ARENESS PROGRAMME

UNNAT BHARATH ABHIYAN

JAL SHAKTHI ABHIYAN

SAI RAM
Welcomes you all
SAI RAM INSTITUTE OF TECHNOLOGY
SAI RAM
Welcomes you all

3.4.2 Awards and recognition received for extension activities from Government and other recognized bodies during the year			
Name of the Activity	**Award/recognition**	**Awarding bodies**	**No. of Students benefited**
BLOOD DONATION (NSS/NCC/YRC)	500 UNITS DONOR CATEGORY	MVBDA	1725

26.09.2019 COLLECTING AWARD FOR BLOOD DONATION

VBB

3.4.3

Name of the scheme	Organising unit/ agency/ collaborating agency	Name of the activity
SWACHH BHARATH ABHIYAN	YRC	SWACHH BHARATH ABHIYAN
JAL SHAKTI ABHIYAN	YRC & UBA	JAL SHAKTI ABHIYAN AWARENESS PROGRAM
UNNAT BHARATH ABHIYAN	UBA	ATTENDED VILLGE GRAMA SABHA
UNNAT BHARATH ABHIYAN	UBA	RALLY ON SMOKELESS DEEPAVALI
UNNAT BHARATH ABHIYAN	UBA	AWARENESS ON COVID 19 PROGRAMME
SWACHH BHARATH ABHIYAN	NCC	SWACHH BHARATH ABHIYAN
50 KM GO-GREEN CYCLATHON CHALLENGE	PRIVATE	GO GREEN AWARENESS
DRUG ABUSE DAY RALLY	MADRAS CITY POLICE	NCC RALLY
KARGIL VIJAY DIWAS DAY	EAST COAST GUARD	WAR SHIP VISIT
NCC	1(TN) Medical Unit	HONOURING THE MARTYRS OF INDEPENDENT INDIA

SWACHH BHARATH ABHIYAN

Date : 10.07.19

Venue : College Campus, SSIT

JAL SHAKTI ABHIYAN AWARENESS PROGRAM

Date : 23.07.19

Venue : Smart class Room, College Campus, SSIT

VILLAGE GRAMA SABHA/ UBA

SMOKELESS DEEPAVALI RALLY

COVID 19 AWARENESS PROGRAMME

Sri SAI RAM INSTITUTE OF TECHNOLOGY
An Autonomous Institution
West Tambaram, Chennai - 44
www.sairamit.edu.in

UNNAT BHARAT ABHIYAN 2.0

WEBINAR ON
PREVENTION & PROPHYLAXIS OF SIDDHA SYSTEM OF MEDICINE TO COMBAT THE COVID19 PANDEMIC

11th August 2020 | 2.30 pm - 3.30 pm

Expert Speaker by

Dr. P. ARUL MOZHI
MD(Siddha), Ph.D(Siddha), MBA, Msc, Ph.D(Patho)
Lecturer, National Institute of Siddha
(Ministry of AYUSH, Government of India)
Chennai 47

Registration Link, click here
https://forms.gle/Vu8phzL5HHt9uyQG9
WhatsApp Group Link to join
https://chat.whatsapp.com/FOlLRSroqzBJvsKzeJ3BvS

Sairam INSTITUTIONS

Mr.D.Muralidharan
Mr. Ashwin Sailesh
Co-ordinators / UBA

Dr. K. Palanikumar
Principal / SIT

Shri. Sai Prakash LeoMuthu
Chairman & CEO
Sairam Institutions

SWACHH BHARATH ABHIYAN

50 KM GO-GREEN CYCLATHON CHALLENGE

DRUG ABUSE DAY RALLY

KARGIL VIJAY DIWAS DAY

HONOURING THE MARTYRS OF INDEPENDENT INDIA

3.5.1 Number of Collaborative activities for research, fac

Nature of Activity	Participant
Consultancy work for Technology project	Dr.K.PALANIKUMAR
Consultancy work for Technology project	PONSHAMUGAKUMAR.A
Consultancy work for Technology project	PRABHUDASS.M
Consultancy work for Technology project	SUTHAHAR.P
Consultancy work for Technology project	PREM KUMAR.N
Consultancy work for Technology project	Dr.G.SHANMUGASUNDAR
Consultancy work for Technology project	PONMALAR.A
Consultancy work for Technology project	VEERASUNDARAM.M
Consultancy work for Technology project	ARUNKUMAR.R
Consultancy work for Technology project	SARAVANAN.P
Consultancy work for Technology project	ANBAZHAGAN.A
Consultancy work for	VIJAYARAJA.L
Consultancy work for	SARAVANAN.G
Consultancy work for	VELAVAN.K
Consultancy work for	SANGAMA ESWARAN.R
Consultancy work for	VIGNESWARAN.R

Consultancy work for Technology project	SIVARAJESWARI.S
Consultancy work for	RAJARAJAN.S
Consultancy work for Technology project	BHARATHI.G.P
Consultancy work for Technology project	DHANASEKAR.R
Consultancy work for	KASINATHAN.D
Consultancy work for	MEGANATHAN.S
Consultancy work for	Dr.K.C. SURESH

:ulty exchange, student exchange during the year

Source of financial support	Duration
REVO TECHNOLOGIES AND ENTERPRISES- Chennai	1 Year
RASCI INSTRUMENTS- Chennai	6 months
REVO TECHNOLIGES AND ENTERPRISES- Chennai	6 months
SHRI NDA TECHNOLOGY- Chennai	3 months
REVO TECHNOLIGES AND ENTERPRISES- Chennai	6 months
REVO TECHNOLIGES AND ENTERPRISES- Chennai	6 months
SHRI NDA TECHNOLOGY- Chennai	3 months
JK ENTERPRISES- Chennai	6 months
REVO TECHNOLIGES AND ENTERPRISES- Chennai	6 months
ALTECH INDUSTRIES- Chennai	6 months
ALTECH INDUSTRIES- Chennai	3 months
SAKTHI TRANSFORMER-	6 months
SAKTHI TRANSFORMER-	6 months
CADDAM TECHNOLOGIES-	6 months
CADD CENTRE- Chennai	6 months
CAD EPLOY- Chennai	6 months

REVO TECHNOLIGES AND ENTERPRISES- Chennai	6 months
VI MICRO SYSTEM- Chennai	6 months
INNOVATIVE ENGINEERING SOLUTIONS- Chennai	6 months
INNOVATIVE ENGINEERING SOLUTIONS- Chennai	6 months
ALTECH INDUSTRIES- Chennai	6 months
JK ENTERPRISES- Chennai	3 months
SHRI NDA TECHNOLOGY-	1 year

3.5.2 Linkages With Institutions/Industries For Internship, On-The-Job Training, Project Work, Sharing Of Research Facilities Etc. During The Year

Nature Of Linkage	Title Of The Linkage	Name Of The Partnering Institution/ Industry /Research Lab With Contact Details	Duration (From-To)	Participant
Industrial Visit	Satish Dhawan Space Centre (Isro)	2019-2020	21.08.2019	Field Trip
Industrial Visit	Neyveli Lignite Corporation	2019-2020	20.09.2019	Field Trip
Industrial Visit	Chennai Port Trust	2019-2020	06.09.2019	Field Trip
Industrial Visit	Kalaivani Electricals	2019-2020	22.8.2019	Field Trip
Industrial Visit	chennai Metro	2019-2020	26-7-2019	Field Trip
Interns	Aai Cargo Logistics & Allied Service Company	2019-2020	02.12.2019 To 26.12.2019 21.11.2019 To 26.11.2019	Anuja A P Sreenidhi M D
Interns	Bahwan Cybertek	2019-2020	02.12.2019 To 06.12.2019	Tharun Pranav K S
Interns	Bharat Electronics Limited	2019-2020	02.12.2019 To 07.12.2019	Aparrna M
Interns	Bsnl	2019-2020	02.12.2019 To 06.12.2019	Aswinraja V
Interns	Codebind Technologies	2019-2020	02.12.2019 To 06.12.2019	Felix Raja A, Kenwin Dass C
Interns	Chennai Port Trust	2019-2020	02.12.2019 To 06.12.2019	Gautham, Charuhash, Muneesh Kumar, Dhinagaran, Naveen Mani,
Interns	Infoziant	2019-2020	02.12.2019 To 06.12.2019	M.Sona
Interns	Hyoristic Innovations	2019-2020	02.12.2019 To 11.12.2019	Kamesh T
Interns	Foreview Technologies	2019-2020	02.12.2019 To 06.12.2019	Vijay R
Interns	Dreamfort Interiors And Constructions	2019-2020	29.11.2019 To 05.12.2019	Tabraze Ali Meyan M A

Interns	Kaashiv Infotech	2019-2020	24.11.2019 To 28.11.2019	Ann Sheny R, Monisha S R,Sri Kamali, Karthiga A, Harini S Iswarya T Krishnamurthy Lohitha, Thamkin Dhaniyath Baig A,M Maheshwari S Reethika M Sivashree J, Srivatsav S L Thivya B Vidhya G
Interns	Retech Solutions	2019-2020	2.12.2019 To 4.12.2019	Dinakaran S,Yuvaraj, Khamalesh R A,Ganesh Kumar,Sreevatcha, Pavithra M
Interns	National Institute Of Ocean Technology	2019-2020	02.12.2019 To 06.12.2019	Ramya,Keerthana Devi,Yogesh Pandian
Interns	Redback It Solutions	2019-2020	02.12.2019 To 06.12.2019	Vaishnavi C,Yamini
Interns	Foreview Technologies	2019-2020	02.12.2019 To 06.12.2019	Keethika,Madumitha, Priyadharshini
Interns	Techgig	2019-2020	10.12.2019 To 16.12.2019	Anish Pm
Interns	Foreview Technologies	2019-2020	02.12.2019 To 06.12.2019	Deepika,Edwin Bosco,Reeshma
Interns	Uniq Technologies	2019-2020	25.11.2019 To 29.11.2019	Gayathri M
Interns	Rohaan Constructions	2019-2020	28.11.2019 To 08.12.2019	Roseline K
Interns	T.V.Enterprises	2019-2020	25.11.2019 To 30.11.2019	Pavithra S
Interns	Schneider Electric	2019-2020	25.11.2019 To 05.12.2019	V.K.Ragesh
Interns	Vi Microsystems	2019-2020	25.11.2019 To 30.11.2019	Sandeep S

Interns	Universiti Teknologi Petronas (Malaysia)	2019-2020	11.12.2019 To 17.12.2019	Roshine M
Interns	Ict Academy	2019-2020	26.9.19 To 27.9.19	Nazlanazreen J,Nisha,Parvatham,Pooja,Priya, Samayanandhini S Sarath C Thangadurai R Yogeshmudaliar Yuvashree Abirami Swapna S Yukanthi G Vishal M Tejna S, Saran M Shanmugavel Babitha S Dhanvarsha D Dharshini P Gopika R Kayalvizhi S Keerhika J Magesh B Meenakshi M Kiranprasanna D Soundarya G Archana V Dharani A S Jayavarthne K Kiruthika K Manisha M Nanthini K Oviya M Preetha S,Rupika G,Sanjana V,Sowmia,Mariya Monica A
Interns	Codebind/> Technologies	2019-2020	10.6.2019-14.6.2019	Deepashree D Anantha Narayanan Kavya Mala M Kamalikrishnan M Charan J, Amudha G, Avinash R

Interns	Rede Technologies	2019-2020	26.9.19 To 27.9.19	Priyadharshini
Interns	Microsoft	2019-2020	5 Days	Padmasree
Interns	Barola Technologies	2019-2020	7 Days June 2019	Emelee Angel S M, Ahath Khan Aishwarya V
Interns	Maatram Software Solution	2019-2020	27.5.19-17.6.19	Gowreshankaran S Abhiney
Interns	Foreview Technologies	2019-2020	02.12.2019 To 06.12.2019	Abinaya M,Vijay, Atchaya U Vishwapriya Bargavi1 Aravindh R Balaaji R Deepa R Elavarasi E Keerthika U Mathumitha N Pavadharshini S Ilayaraj B Karthik P Malathi S Manisha M Pavithira A H Shalini S
Interns	National Institute Of Ocean Technology	2019-2020	02.12.2019 To 06.12.2019	Venkatanathan N
Interns	Zoho	2019-2020	18.12.2019 To (Undergoing)	Dhanasekaran E
Interns	Codebind Technologies	2019-2020	22.11.2019 To 28.11.2019	Gunalan M
Interns	Nsic	2019-2020	23.12.2019 To 3.01.2020	Andra Narendra Kumar
Interns	Aai Cargo Logistics & Allied Service Company	2019-2020	21.11.2019 To 26.11.2019	Archana B
Internship	CLRI	2019-2020	25-11-2019 To 06-12-2019	Anbu, Sethu, Vijay, Dhanush,
In Plant Training	Chennai Port Trust	2019-2020	02.12.2019 To 06.12.2019	Gautham, Charuhash, Muneesh Kumar, Dhinagaran, Naveen

				Mani,
Intership	Sarnath Constructions	2019-2020	22.11.2019 To 29.11.2019	Padma Priya, Suvaathi, Mahalakshmi
In Plant Training	Brc Engineering Solution	2019-2020	25.11.2019 To 02.12.2019	Gayathri Vijay, Monica Sri
In Plant Training	Builtec Engineers And Consultant	2019-2020	28.11.2019 To 06.12.2019	Santhosh Anand, Naveen
Intership	Delhi International Airport Limited	2019-2020	25.11.2019 To 06.12.2019	Abilash Krishna
Intership	Kashiv Infotech	2019-2020	28.11.2019 To 02.12.2019	Deepa Sree
Industrial Visit	Ultra Tech Cement	2019-2020	05.02.2020	Industrial Visit
Industrial Visit	Serc -Open Day	2019-2020	26.09.2019	Industrial Visit
Industrial Visit	Poondi Reservoir	2019-2020	16.08.2019	Industrial Visit
In-Plant Training	Ashok Leyland	2019-2020	06-11-2019-6-15-2019	Vijai Karthik R
In-Plant Training	Ashok Leyland	2019-2020	06-11-2019-6-15-2019	Vijai Karthik R
In-Plant Training	Ashok Leyland	2019-2020	06-11-2019-6-15-2019	Vijai Karthik R
In-Plant Training	Sr Precision Engineering	2019-2020	06-03-2019-06-08-2019	Vasanth G
Internship	Rane Madras Ltd	2019-2020	5/28/2019-06-12-2019	Anooj M
Internship	Crp India Pvt Ltd	2019-2020	5/13/2019-5/27/2019	Anooj M
In-Plant Training	Pmi Engineering Exports Pvt.Ltd.	2019-2020	06-10-2019-6/16/2019	G.Manoj Kumar
In-Plant Training	Addison &Co.,Ltd	2019-2020	06-03-2019-	G.Manoj Kumar
In-Plant Training	Rane Brakes Lining Limited	2019-2020	5/20/2019-	Gowtham Kumar K
In-Plant Training	Chennai Port Trust	2019-2020	5/21/2019-	Fenneth Moses G
In-Plant Training	Oneyes Technologies	2019-2020	06-07-2019-	Dhivakar.S
In-Plant Training	Oneyes Technologies	2019-2020	06-07-2019-	Dhivakar.S
In-Plant Training	Ashok Leyland	2019-2020	6/19/2018-	Saran Raj. D
In-Plant Training	Sr Precision Engineering	2019-2020	06-03-2019-	Fenneth Moses G
In-Plant Training	Acrex	2019-2020	5/22/2019--	H. Mani Ponraja

	Engineering			
In-Plant Training	Madras Engineering Industries Pvt Lmtd	2019-2020	06-05-2019-	Jayachandran S
In-Plant Training	Rane Brakes And Linings Limited	2019-2020	5/20/2019-	Surya Ss
In-Plant Training	Arihant Duraplast	2019-2020	5/13/2019-	Venkatasubramanian. M.A
In-Plant Training	Tractors And Farm Equipment Ltd	2019-2020	5/23/2019-	T.M. Barath
In-Plant Training	The Ramco Cements Ltd,	2019-2020	06-06-2019-	M. Sakthi Nayaghan
In-Plant Training	Taneja Aerospace And Aviation Limited	2019-2020	5/28/2018-	S.Narendran
In-Plant Training	Brakes India Private Limited	2019-2020	5/27/2019-	S.Narendran
Internship	J.A Motorsports	2019-2020	5/15/2019-	Abhishek.G.Shanker
In-Plant Training	Nlc India Limited	2019-2020	5/27/2019-	Balakumar S
Internship	Acrex Engineering Private Limited	2019-2020	5/22/2019-	R.Vairavaraj
In-Plant Training	Electric Loco Shed , Royapuram	2019-2020	06-10-2019-	V.Harish
In-Plant Training	Integral Coach Factory	2019-2020	5/29/2019-	P. Hariharan
In-Plant Training	Semmathi Engineering	2019-2020	06-07-2019-	T.Keerthivasan
Internship	Lanson Toyota	2019-2020	12-03-2019-	Nizamudeen.R
In-Plant Training	Tafe Limited	2019-2020	5/23/2019-	Raghul.D
In-Plant Training	Chennai Port	2019-2020	5/21/2019-	K.Naveen Kumar
In-Plant Training	Integral Coach Factory	2019-2020	5/29/2019-	K.Bhaskara Hariharan
In-Plant Training	Shri Pavithra Auto Product Private Limited	2019-2020	5/31/2019-	E.Vijay
In-Plant Training	Electric Locomotive Shed	2019-2020	019-	K.Karthikeyan
In-Plant Training	Cipet Institue Of Plastics	2019-2020	06-10-2019-	Yugendran P

	Technology			
In-Plant Training	Integral Coach Factory	2019-2020	12-10-2018-	Azhur
In-Plant Training	Electric Loco Shed	2019-2020	06-10-2019-	Jagan Murthi
In-Plant Training	Electric Loco Shed	2019-2020	11/19/2018-	Harikrishna. M
Internship	Maha Enterprises	2019-2020	05-03-2019-	Swaminathan.S
In-Plant Training	Chennai Port , Hinduja Fundries , Electric Loco Shed	2019-2020	06-10-2019-	V Harish
In-Plant Training	Bay Forge Pvt Limited	2019-2020	06-03-2019-	S R Thanush
In-Plant Training	Tafe	2019-2020	5/24/2019-	Akash.A
In-Plant Training	Nlc	2019-2020	5/27/2019-	M.Shrinivasan
In-Plant Training	New Autotech Industriees	2019-2020	7/22/2019-	Karthick K
In-Plant Training	New Autotech Industriees	2019-2020	5/22/2019-	Karthick K
In-Plant Training	New Autotech Industriees	2019-2020	5/22/2019-	Karthick K
In-Plant Training	Unique Technologies	2019-2020	11/16/2018-	Karthick K
In-Plant Training	Ashok Leyland,Taal ,Hyundai	2019-2020	01-02-2019-	B.U Raja Ramakrishnaa
In-Plant Training	Oneyes Technologies	2019-2020	06-07-2019-	R.Muralikumaran
In-Plant Training	Southern Railway	2019-2020	06-10-2019-	A.Gokul
In-Plant Training	Tube Investment Of India	2019-2020	5/30/2019-	M.Saravana Kumar
In-Plant Training	Bay Forge Pvt Ltd	2019-2020	06-03-2019-	S E Gouthem
In-Plant Training	Oneyes Technologies	2019-2020	06-07-2019-	Muralikumaran. R
In-Plant Training	Pantech Solutions	2019-2020	04/06/2019 - 08/06/2019	Manakshni V
In-Plant Training	Chennai Metro Rail Ltd	2019-2020	10/06/2019 - 14/06/2019	Vijay J
In-Plant Training	Ministry Of Railways	2019-2020	17/06/2019 - 22/06/2019	Manikandan R
In-Plant Training	Foreview Technologies	2019-2020	11/06/2019 - 16/06/2019	Prasanna P
In-Plant Training	Bharat	2019-2020	10/06/2019 -	Narmadha M

	Electronics		15/06/2019	
In-Plant Training	Integral Coach Factory	2019-2020	04/06/2019 - 11/06/2019	Dickson Samuel Williams M
In-Plant Training	Forview Technologies	2019-2020	10/06/2019 - 13/06/2019	Keerthana V
In-Plant Training	Kaa Shiv Info Tech	2019-2020	10/06/2019 - 14/06/2019	Sahana U
In-Plant Training	Kaa Shiv Info Tech	2019-2020	10/06/2019 - 14/06/2019	Deepika M
In-Plant Training	Integral Coach Factory	2019-2020	10/06/2019 - 17/06/2019	Deepshikha S
In-Plant Training	Integral Coach Factory	2019-2020	10/06/2019 - 17/06/2019	Buwaneshwari S
In-Plant Training	Chennai Port	2019-2020	20/06/2019 - 25/06/2019	Deepshikha S
In-Plant Training	Integral Coach Factory	2019-2020	04/06/2019 - 11/06/2019	Natarajan N
In-Plant Training	Southern Railway	2019-2020	17/06/2019 - 22/06/2019	Merlin Gifta J
In-Plant Training	Foreview Technologies	2019-2020	11/06/2019 - 16/06/2019	Abhirami V
In-Plant Training	Ti Cycles Of India	2019-2020	10/06/2019 - 14/06/2019	Rajarajan S
In-Plant Training	Electric Loco Shed At Royapuram	2019-2020	02/12/2019 - 07/12/2019	Shlok Prakash
In-Plant Training	Electric Loco Shed At Royapuram	2019-2020	02/12/2019 - 07/12/2019	Kirubanandhan P
In-Plant Training	Uniq Technologies	2019-2020	03/12/2019 - 05/12/2019	Divya G
In-Plant Training	Power Integrated Solution	2019-2020	27/11/2019 - 29/11/2019	priya
In-Plant Training	Tangedco, Nctps	2019-2020	02/12/2019 - 06/12/2019	Yaminipriya D
In-Plant Training	Tangedco	2019-2020	26/11/2019 - 30/11/2019	Remya K S
In-Plant Training	Tangedco	2019-2020	26/11/2019 - 30/11/2019	Deepak V
In-Plant Training	Tangedco	2019-2020	26/11/2019 - 30/11/2019	Mahidhar M
In-Plant Training	Tangedco	2019-2020	26/11/2019 - 30/11/2019	Yeswanth P
In-Plant Training	Southern Railway	2019-2020	02/12/2019 - 07/12/2019	Dam odharan G
In-Plant Training	Southern	2019-2020	02/12/2019 -	Varadharajan S

	Railway		07/12/2019	
In-Plant Training	Southern Railway	2019-2020	02/12/2019 - 07/12/2019	Shri Goakul B
In-Plant Training	Southern Railway	2019-2020	02/12/2019 - 07/12/2019	Senthamizh Arasan D
In-Plant Training	Southern Railway	2019-2020	02/12/2019 - 07/12/2019	Logesh S
In-Plant Training	Sk Engineering Solution	2019-2020	27/11/2019 - 04/12/2019	Avinash Janakiraman V
In-Plant Training	Airports Authority Of India	2019-2020	02/12/2019 - 06/12/2019	Avinash Janakiraman V
In-Plant Training	Airports Authority Of India	2019-2020	02/12/2019 - 06/12/2019	Sandhya S
In-Plant Training	Airports Authority Of India	2019-2020	02/12/2019 - 06/12/2019	Deepshikha S
In-Plant Training	Airports Authority Of India	2019-2020	02/12/2019 - 06/12/2019	Buwaneshwari S
In-Plant Training	Southern Railway	2019-2020	03/12/2019 - 08/12/2019	Rubika E
In-Plant Training	Tamilnadu Generation And Distribution Corporation Limited	2019-2020	26/11/2019 - 30/11/2019	Sahana U
In-Plant Training	Retech	2019-2020	05/12/2019 - 07/12/2019	Prabakaran K
In-Plant Training	Isro	2019-2020	06/01/2020 - 10/01/2020	Prabakaran K
In-Plant Training	Retech	2019-2020	05/12/2019 - 07/12/2019	Thati Akhil Kumar T
In-Plant Training	North Chennai Thermal Power Station I	2019-2020	26/11/2019 - 30/11/2019	Dhilip Prasad P
In-Plant Training	Southern Railway	2019-2020	02/12/2019 - 07/12/2019	Perazhagan C
In-Plant Training	Foreview Technologies Pvt. Ltd.	2019-2020	23/12/2019 - 27/12/2019	Raghul G
In-Plant Training	Foreview Technologies Pvt. Ltd.	2019-2020	23/12/2019 - 27/12/2019	Lyzul Imran A
In-Plant Training	Foreview Technologies Pvt. Ltd.	2019-2020	23/12/2019 - 27/12/2019	Nandhini N

In-Plant Training	Foreview Technologies Pvt. Ltd.	2019-2020	23/12/2019 - 27/12/2019	Dhanalaxmi Pl
In-Plant Training	Foreview Technologies Pvt. Ltd.	2019-2020	23/12/2019 - 27/12/2019	Madhuvanthi K P
In-Plant Training	Pioneer Power Ltd	2019-2020	26/12/2019 - 28/12/2019	Aakash Raj K
In-Plant Training	Pioneer Power Ltd	2019-2020	26/12/2019 - 28/12/2019	Vijay Pandiyan K
In-Plant Training	Nlc	2019-2020	06/12/2018 - 18/12/2018	Abhirami V
In-Plant Training	North Chennai Thermal Power Station2019-2020	2019-2020	02/12/2019 - 06/12/2019	Rajarajan S
In-Plant Training(Mech)	Ashok Leyland	2019-2020	06-11-2019-6/15/2019	Vijai Karthik R
In-Plant Training	Ashok Leyland	2019-2020	06-11-2019-6/15/2019	Vijai Karthik R
In-Plant Training	Ashok Leyland	2019-2020	06-11-2019-6/15/2019	Vijai Karthik R
In-Plant Training	Sr Precision Engineering	2019-2020	06-03-2019-06-08-2019	Vasanth G
Internship	Rane Madras Ltd	2019-2020	5/28/2019-06-12-2019	Anooj M
Internship	Crp India Pvt Ltd	2019-2020	5/13/2019-5/27/2019	Anooj M
In-Plant Training	Pmi Engineering Exports Pvt.Ltd.	2019-2020	06-10-2019-6/16/2019	G.Manoj Kumar
In-Plant Training	Addison &Co.,Ltd	2019-2020	06-03-2019-06-08-2019	G.Manoj Kumar
In-Plant Training	Rane Brakes Lining Limited	2019-2020	5/20/2019-5/28/2019	Gowtham Kumar K
In-Plant Training	Chennai Port Trust	2019-2020	5/21/2019-5/25/2019	Fenneth Moses G
In-Plant Training	Oneyes Technologies	2019-2020	06-07-2019-06-09-2019	Dhivakar.S
In-Plant Training	Ashok Leyland	2019-2020	6/19/2018-6/23/2019	Saran Raj. D
In-Plant Training	Sr Precision Engineering	2019-2020	06-03-2019-06-08-2019	Fenneth Moses G
In-Plant Training	Acrex Engineering	2019-2020	5/22/2019-5/27/2019	H. Mani Ponraja
Internship	Madras Engineering Industries Pvt Lmtd	2019-2020	06-05-2019-6/8/2019	Jayachandran S

In-Plant Training	Rane Brakes And Linings Limited	2019-2020	5/20/2019-5/28/2019	Surya Ss
Internship	Arihant Duraplast	2019-2020	5/13/2019-5/23/2019	Venkatasubramanian. M.A
In-Plant Training	Tractors And Farm Equipment Ltd	2019-2020	5/23/2019-06-07-2019	T.M. Barath
In-Plant Training	The Ramco Cements Ltd,	2019-2020	06-06-2019-06-12-2019	M. Sakthi Nayaghan
In-Plant Training	Brakes India Private Limited	2019-2020	5/27/2019-5/31/2019	S.Narendran
Internship	J.A Motorsports	2019-2020	5/15/2019-5/30/2019	Abhishek.G.Shanker
In-Plant Training	Nlc India Limited	2019-2020	5/27/2019-06-01-2019	Balakumar S
In-Plant Training	Acrex Engineering Private Limited	2019-2020	5/22/2019-5/27/2019	R.Vairavaraj
In-Plant Training	Electric Loco Shed , Royapuram	2019-2020	06-10-2019-6/14/2019	V.Harish
In-Plant Training	Integral Coach Factory	2019-2020	5/29/2019-06-03-2019	P. Hariharan
In-Plant Training	Semmathi Engineering	2019-2020	06-07-2019-6/17/2019	T.Keerthivasan
In-Plant Training	Lanson Toyota	2019-2020	12-03-2019-06-12-2019	Nizamudeen.R
In-Plant Training	Tafe Limited	2019-2020	5/23/2019-06-07-2019	Raghul.D
\ In-Plant Training	Chennai Port	2019-2020	5/21/2019-5/25/2019	K.Naveen Kumar
In-Plant Training Internship	Integral Coach Factory Shri Pavithra Auto Product Private Limited	2019-2020 2019-2020	5/29/2019-06-03-2019 31-5-2019-06-08-2019	K.Bhaskara Hariharan, E.Vijay
In-Plant Training	Electric Locomotive Shed	2019-2020	06-10-2019-06/14/2019	K.Karthikeyan
In-Plant Training	Cipet Institue Of Plastics Technology	2019-2020	06-10-2019-6/14/2019	Yugendran P
In-Plant Training	Integral Coach Factory	2019-2020	12-10-2019-12/17/2019	Azhur
In-Plant Training	Electric Loco Shed	2019-2020	06-10-2019-6/14/2019	Jagan Murthi

In-Plant Training	Electric Loco Shed	2019-2020	11/19/2019-11/24/2019	Harikrishna. M
In-Plant Training	Maha Enterprises	2019-2020	05-03-2019-6/13/2019	Swaminathan.S
In-Plant Training	Chennai Port , Hinduja Fundries , Electric Loco Shed	2019-2020	06-10-2019-6/14/2019	V Harish
In-Plant Training	Bay Forge Pvt Limited	2019-2020	06-03-2019-06-10-2019	S R Thanush
In-Plant Training	Tafe	2019-2020	5/24/2019-06-07-2019	Akash.A
In-Plant Training	Nlc	2019-2020	5/27/2019-06-01-2019	M.Shrinivasan
In-Plant Training	New Autotech Industriees	2019-2020	7/22/2019-30/7/2019	Karthick K
In-Plant Training	New Autotech Industriees	2019-2020	5/22/2019-30/5/2019	Karthick K
In-Plant Training	Unique Technologies	2019-2020	11/16/2019-11/8/2019	Karthick K
In-Plant Training	Ashok Leyland,Taal,	2019-2020	02-01-2019	B.U Raja Ramakrishnaa
In-Plant Training	Oneyes Technologies	2019-2020	06-07-2019-6-9-2019	R.Muralikumaran
In-Plant Training	Southern Railway	2019-2020	06-10-2019-06/14/2019	A.Gokul
In-Plant Training	Tube Investment Of India	2019-2020	5/30/2019-6/7/2019	M.Saravana Kumar
In-Plant Training	Bay Forge Pvt Ltd	2019-2020	06-03-2019-6/10/2019	S E Gouthem
In-Plant training	Oneyes Technologies	2019-2020	06-07-2019-06-09-2019	Muralikumaran. R

Industrial Visits

ASHOK LEYLAND
Aapki Jeet. Hamari Jeet.

CERT. No: HRD/T&D/**2308**

06TH FEB 2020

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Ms C V YUVHEDIKAA** student of **"SRI SAIRAM INSTITUTE OF TECHNOLOGY"** has Completed her Internship Training at **ASHOK LEYLAND Ltd**, ENNORE, Chennai, from 09.01.2020 to 06.02.2020 Successfully .

Her conduct and character during the period of training was found to be good.

S. THANGAVEL
SENIOR MANAGER (L&D)

ASHOK LEYLAND LTD. ENNORE CHENNAI-57

BOLT

Inventrom/HRD/2020/FREEVIC8965
20/03/2020

INTERNSHIP COMPLETION CERTIFICATE

To Whom It May Concern

This is to certify that HARANVIGNESHWARAAN S, a student of Sri Sairam Institute Of Technology has successfully completed a Student Partner Internship at Inventrom Private Limited for the duration of 2 months from 20/01/2020 to 19/03/2020. During this internship, the tasks undertaken by HARANVIGNESHWARAAN were related to popularising the concepts of Internet of Things(IoT) and Machine Learning(ML), brand awareness and business development of the Bolt IoT and ML online video training.

We take this opportunity to thank HARANVIGNESHWARAAN for his/her contribution during this internship and wish them all the best for their future.

Note for hiring companies: To verify the authenticity of this certificate, please email to hr@boltiot.com with the code - FREEVIC8965

Yours sincerely,
For Inventrom Private Limited (Bolt IoT)

Joyner Fernandes
Human Resources Manager
Inventrom Private Limited (Bolt IoT)

एन एस आई सी
NSIC
ISO 9001 : 2015

No : 8541

राष्ट्रीय लघु उद्योग निगम लिमिटेड

NATIONAL SMALL INDUSTRIES CORPORATION LIMITED

(A Govt. of India Enterprise)

NSIC - TECHNICAL SERVICES CENTRE,

Sector B-24, Guindy Industrial Estate, Ekkaduthangal, Chennai - 600 032

CERTIFICATE

This is to certify that Mr./Ms. **ANDRA NARENDRA KUMAR** S/o/ D/o Shri. **ANDRA ERUKALAIAH** student of III year B.E (ECE), Sri Sai Ram Institute of Technology, Chennai, has undergone Internship Training on **Industrial Based Real Time Embedded System Design and Development with IoT** at our centre for a period of **Two weeks** from 23.12.2019 to 03.01.2020.

COURSE CO-ORDINATOR

CENTRE HEAD

Open with
NSIC
ISO 9001: 2015
No: 9344
राष्ट्रीय लघु उद्योग निगम लिमिटेड
NATIONAL SMALL INDUSTRIES CORPORATION LIMITED
(A Govt. of India Enterprise)
NSIC - TECHNICAL SERVICES CENTRE,
Sector B-24, Guindy Industrial Estate, Ekkaduthangal, Chennai - 600 032
CERTIFICATE
This is to certify that Mr./Ms. POLU RAHUL SAINADH REDDY S/o/ D/o Shri. POLU ANKI REDDY student of III year B.E (ECE), Sri Sai Ram Institute of Technology, Chennai, has undergone Internship Training on Industrial Based Real Time Embedded System Design and Development with IoT at our centre for a period of Two weeks from 23.12.2019 to 03.01.2020.
CENTRE HEAD

Open with
NSIC
ISO 9001 : 2015
No. : 8346
राष्ट्रीय लघु उद्योग निगम लिमिटेड
NATIONAL SMALL INDUSTRIES CORPORATION LIMITED
(A Govt. of India Enterprise)
NSIC - TECHNICAL SERVICES CENTRE,
Sector B-24, Guindy Industrial Estate, Ekkaduthangal, Chennai - 600 032
CERTIFICATE
This is to certify that Mr./Ms. BELLAMKONDA RAKESH S/o/ D/o Shri. BELLAMKONDA ROSAIAH student of III year B.E (ECE), Sri Sai Ram Institute of Technology, Chennai, has undergone Internship Training on Industrial Based Real Time Embedded System Design and Development with IoT at our centre for a period of Two weeks from 23.12.2019 to 03.01.2020.
COURSE CO-ORDINATOR
CENTRE HEAD

SAI RAM INSTITUTE OF TECHNOLOGY

(Managed by Sapthagiri Educational Trust, Chennai - 77)

Accredited by NBA and NAAC 'A+' | An ISO 9001:2015 Certified and MHRD NIRF ranked institution

Sai Leo Nagar, West Tambaram, Chennai. Tel : 044 - 2251 2111 www.sairam.edu.in

Founder Chairman : MJF. Ln. Leo Muthu

Dr.K.PALANIKUMAR, M.E.,Ph.D.,
Principal

Letter No.SSIT/LV/Civil/2019-20, dt.09.08.2019

To

The Chief Engineer,
Water Resource Department,
Design – Research and Construction Support (DRCS),
Chepauk,
Chennai-05.

Sir / Madam,

Sub: SSIT, Chennai-44-Industrial Visit- Permission to visit Poondi Reservoir at Tiruvallur District , chennai- Requested-Reg.

***

"SAPTHAGIRI EDUCATIONAL TRUST" established by a Philanthropist **MJF.Ln.LEO MUTHU**, Managing Director of Leo Group of Companies, started SRI SAI RAM INSTITUTE OF TECHNOLOGY in the year 2008, at Sai Leo Nagar, Dharkast, near Tambaram, a few kilometers away from Kishkinta a well known amusement park. The college has Six branches of Engineering at the under Graduate Level, and MBA course at the post Graduate level. We have come a long way from our modest beginning and our college is approved by AICTE, New Delhi and affiliated to Anna University. Our Institute is Accredited by National Board of Accredited (NBA) and also Accredited by NAAC with "A+" Grade.

Our third year B.E., CIVIL students (45 Nos.) accompanied by 2 of our teaching staff are desirous of visiting **" Poondi Reservoir "** on **16th August 2019** so as to get an exposure to the technical development taking place in the technical field and how they are implemented in your esteemed organization. This will greatly help them in developing their academic skills. Hence, I request that they may kindly be permitted to visit your organization.

Thanking you and with regards,

Yours faithfully,

PRINCIPAL

Principal
Sri Sai Ram Institute Of Technology
Chennai - 44.

Admn Office : "SAI BHAVAN", #31 B, Madley Road, T. Nagar, Chennai - 600 017.
Tel : 044 - 4226 7777 e-mail : sairam@sairamgroup.in
/SairamInstitutions
+91 98848 45678
www.sairamgroup.in

From

Xavier Vedha Rayan BS
Assistant professor,
Department of Civil Engineering,
Sri Sai Ram Institute of Technology,
West Tambaram.

To

The Principal,
Sri Sai Ram Institute of Technology,
West Tambaram.

Respected Sir,

Sub: Requisition for arranging Industrial visit for final year students Reg.

We have planned for arranging Industrial visit for Final year Civil Engineering Students on **05.02.2020** to '**Aditya Birla - Ultra Tech Cement'**, located at Arakkonam . A Total of 63 students will be accompanied by 3 staff members. So kindly grand us permission for Industrial Visit and provide us necessary Transportation facilities. Please do the needful from your end.

Thanking you,

Yours Truly,

[XAVIER VEDHA RAYAN BS]

forwarded to principal

23/01/2020

27/01/2020

CH.P.T. Item Code No. C-81804355
500 Pads 27-11-2018

SAGARMALA

AEO
भारतीय सीमा शुल्क
INDIAN CUSTOMS

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Par - Excellence
चेन्नै पोर्ट ट्रस्ट

CHENNAI PORT TRUST

Fax :+91-44-25361228
Phone :+91-44-25312000
:+91-44-25362201

प्रशासनिक कार्यालय
ADMINISTRATIVE OFFICE
राजाजी सालै, चेन्नै- 600 001.
Rajaji Salai, Chennai-600 001.
Website : www.chennaiport.gov.in

No. JDR/610/2018/E 18.07.2019

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr. S.Dhanush**, third year B.E (Civil Engineering) student of Sri Sai Ram Institute of Technology, Chennai has undergone in-plant training in Civil Engineering Department from 17.06.2019 to 21.06.2019. During this period, the student was briefed about the principles and design of Marine structures and provided first-hand information on Hydrographic Survey procedures. The student was also given an opportunity to visit sites of Major ongoing projects and inspect marine structures. The student has satisfactorily completed his training. I wish him all success in his future endeavours.

18/7/19

for CHIEF ENGINEER

सीएसआईआर – केन्द्रीय चर्म अनुसंधान संस्थान
CSIR - CENTRAL LEATHER RESEARCH INSTITUTE
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद Council of Scientific & Industrial Research)
सरदार पटेल रोड Sardar Patel Road, अड्यार Adyar, चेन्नई Chennai - 600 020
तमिलनाडु Tamil Nadu, भारत INDIA, वेबसाइट website : www.clri.org
CSIR-CLRI

Date: 06.12.2019

TO WHOMSOEVER IT MAY CONCERN:

This is to certify that **Mr. M. Vijhay Sundhar, Register No. 412417103043** a student of **Bachelor of Engineering (B.E.,) in Civil Engineering in Sri Sai Ram Institute of Technology, Chennai - 600017** has completed the **Internship at CSIR - Central Leather Research Institute, Adyar, Chennai- 600020** under the guidance of **Mr. V. Rajesh, Assistant Engineer (Civil),** Civil Engineering Division for the period from 25-11-2019 to 06-12-2019.

He was given an exposure to various fields of Civil Engineering activities of campus as detailed below:

- An overview of the campus and detailing the plan.
- He got exposure to the Renovation of Tannery work which includes Mezzanine floor, wooden flooring, Polyvinyl Flooring, Epoxy flooring, Ornamental false ceiling and Toughen glass partitions, etc.
- Renovation of the VIP guest house and Construction of Modernised kitchen.
- Estimation and costing for the compound wall of the CLRI Institute.
- An outline of the constructional requirements for the Animal House.
- Exposed to knowledge in replacement of damaged pipe line system with systematic tracking system for betterment.
- Processing details of Scientific Apparatus in Glass Blowing laboratory.
- Processing and manufacturing of leather and leather-based products (Tannery and CLAD Departments).
- He was exposed to an On-going Indo-German research project on Bio-gas generation from leather and vegetable waste at Environmental Department.
- A visit to GAIT lab and Fermentation lab, frequent discussions on the evolution of trends in Civil Engineering.

We wish him all success in his future endeavours.

V. RAJESH
Assistant Engineer (Civil)
Central Leather Research Institute
Council of Scientific & Industrial Research
Sardar Patel Road, Adyar, CHENNAI-600 020

C.L.R.I., CHENNAI-20

वरि.सीओए Sr. CoA दूरभाष Phone : 044 - 2445 5822, 2443 7184 फैक्स Fax : 044 - 2445 0901 ई-मेल e-mail : srcoa@clri.res.in
एओ AO दूरभाष Phone : 044 - 2491 5852, 2443 7140 फैक्स Fax : 044 - 2491 1589 ई-मेल e-mail : admnofficer@clri.res.in

सीएसआईआर – केन्द्रीय चर्म अनुसंधान संस्थान
CSIR - CENTRAL LEATHER RESEARCH INSTITUTE
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद Council of Scientific & Industrial Research)
सरदार पटेल रोड Sardar Patel Road, अड्यार Adyar, चेन्नई Chennai - 600 020
तमिलनाडु Tamil Nadu, भारत INDIA, वेबसाइट website : www.clri.org
CSIR-CLRI

Date: 06.12.2019

TO WHOMSOEVER IT MAY CONCERN:

This is to certify that **Mr. A. Anbucheziyan, Register No. 412417103002** a student of **Bachelor of Engineering (B.E.,) in Civil Engineering in Sri Sai Ram Institute of Technology, Chennai - 600017** has completed the **Internship at CSIR - Central Leather Research Institute, Adyar, Chennai- 600020** under the guidance of **Mr. V. Rajesh, Assistant Engineer (Civil),** Civil Engineering Division for the period from 25-11-2019 to 06-12-2019.

He was given an exposure to various fields of Civil Engineering activities of campus as detailed below:

- An overview of the campus and detailing the plan.
- He got exposure to the Renovation of Tannery work which includes Mezzanine floor, wooden flooring, Polyvinyl Flooring, Epoxy flooring, Ornamental false ceiling and Toughen glass partitions, etc.
- Renovation of the VIP guest house and Construction of Modernised kitchen.
- Estimation and costing for the compound wall of the CLRI Institute.
- An outline of the constructional requirements for the Animal House.
- Exposed to knowledge in replacement of damaged pipe line system with systematic tracking system for betterment.
- Processing details of Scientific Apparatus in Glass Blowing laboratory.
- Processing and manufacturing of leather and leather-based products (Tannery and CLAD Departments).
- He was exposed to an On-going Indo-German research project on Bio-gas generation from leather and vegetable waste at Environmental Department.
- A visit to GAIT lab and Fermentation lab, frequent discussions on the evolution of trends in Civil Engineering.

We wish him all success in his future endeavours.

C.L.R.I., CHENNAI-20

V. RAJESH
Assistant Engineer (Civil)
Central Leather Research Institute
Council of Scientific & Industrial Research
Sardar Patel Road Adyar CHENNAI 600 0

वरि.सीओए Sr. CoA दूरभाष Phone : 044 - 2445 5822, 2443 7184 फैक्स Fax : 044 - 2445 0901 ई-मेल e-mail : srcoa@clri.res.in
एओ AO दूरभाष Phone : 044 - 2491 5852, 2443 7140 फैक्स Fax : 044 - 2491 1589 ई-मेल e-mail : admnofficer@clri.res.in

CH.P.T. Item Code No. C-81804355
500 Pads 27-11-2018

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प्रशासनिक कार्यालय
ADMINISTRATIVE OFFICE
राजाजी सालै, चेन्नै- 600 001.
Rajaji Salai, Chennai-600 001.
Website : www.chennaiport.gov.in

No. JDR/610/2018/E 14.01.2020

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr.M.Gautham**, third year B.E.(Civil Engineering) student of Sri Sai Ram Institute of Technology, Chennai has undergone in-plant training in Civil Engineering Department from **02.12.2019 to 06.12.2019**. During this period, the student was briefed about the principles and design of Marine structures and provided first-hand information on Hydrographic Survey procedures. The student was also given an opportunity to visit sites of Major ongoing projects and inspect marine structures. The student has satisfactorily completed his training. I wish him all success in his future endeavours.

14/1/2020
for CHIEF ENGINEER

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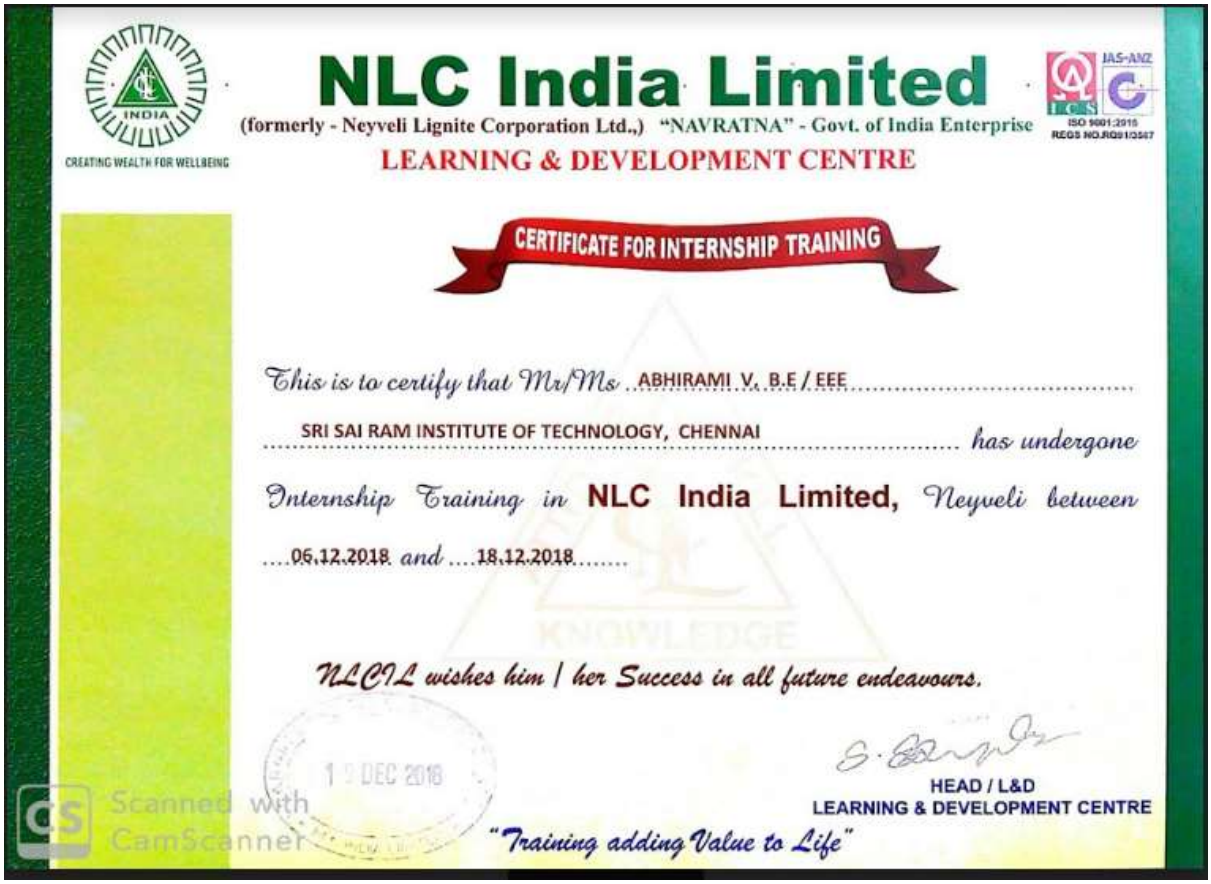

NLC India Limited

(formerly - Neyveli Lignite Corporation Ltd.,) "NAVRATNA" - Govt. of India Enterprise

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ISO 9001:2015 REGS NO.IRQ91/3567

LEARNING & DEVELOPMENT CENTRE

CERTIFICATE FOR INTERNSHIP TRAINING

This is to certify that Mr/Ms ABHIRAMI V, B.E / EEE

SRI SAI RAM INSTITUTE OF TECHNOLOGY, CHENNAI has undergone

Internship Training in **NLC India Limited,** Neyveli between

06.12.2018 and 18.12.2018

NLCIL wishes him / her Success in all future endeavours.

18 DEC 2018

HEAD / L&D
LEARNING & DEVELOPMENT CENTRE

"Training adding Value to Life"

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KaaShiv InfoTech

SOFTWARE DEVELOPMENT & ELECTRONICS / IOT RESEARCH COMPANY

X-41, shivanantha Building, 5th Floor, 2nd Avenue, Anna Nagar, Chennai - 40

www.kaashivinfotech.com

ORACLE Certified Expert

Certificate of Completion

Mr./ Ms. M. DEEPIKA

a Student of SRI SAIRAM INSTITUTE OF TECHNOLOGY

has done his/her In-Plant Training in Our Company held from 10-06-2019

to 14-06-2019 and completed the Training Successfully.

J. VENKATESAN PRABU
Managing Director

KAASHIV INFOTECH
X-41, Shivanantha Building,
5th Floor, 2nd Avenue,
Anna Nagar, Chennai - 600 040.
Ph : 7667662428

J. ARUNACHALAM
Project Manager

***This Hands-On Training is Provided by 10 Years Microsoft Awarded Most Valuable Professional, 13 International Certified Expert - Recognized Top Azure Specialist in the World.

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Certificate No.201905094

SOUTHERN RAILWAY

Office of the Senior Divisional Electrical Engineer,
Rolling Stock,
Electric Loco Shed, Royapuram-600 013.

Telefax:044-2590 2250
e-mail:srdeerstrpm@mas.railnet.gov.in

This is to certify that Mr.A.Gokul , Reg No.412417114026 Second Year B.E Mechanical Engineering Branch Student from Sai Ram Institute of Technology , Sai Leo Nagar , West Tambaram, Chennai-44, had completed "Inplant Training" at Electric Loco Shed, Royapuram from 10-06-2019 to 14-06-2019. During the course of training, his performance was Good.

Date:14.06.2019

(BACHU RAMESH)
Divisional Electrical Engineer,
Incharge, Rolling Stock,
Royapuram

ELECTRIC LOCO SHED
ROYAPURAM

NLC India Limited

"NAVRATNA" - Govt. of India Enterprise

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REGS NO.RQ91/3867

LEARNING & DEVELOPMENT CENTRE

CERTIFICATE FOR INTERNSHIP TRAINING

This is to certify that Mr./Ms. PURUSHOTH E, BE / MECH

SRI SAI RAM INSTITUTE OF TECHNOLOGY, CHENNAI *has undergone Internship Training in* **NLC India Limited,** *Neyveli between* 25.11.2019 *and* 07.12.2019

NLCIL wishes him / her Success in all future endeavours.

Page 1 / 1

adevkumar.pdf Open with

INTERNSHALA

Scholiverse Educare Pvt. Ltd.,
B-610, Unitech Business Zone
Nirvana Country, South City 2,
Gurgaon, India - 122018

16/12/2019

Dear Sabari Sastha ,

Welcome to Internshala Student Partner (ISP) 16!

We hope that you are excited to embark on a 70-day transformational journey with us. At Internshala, we consider the ISP team to be our biggest strength when it comes to educating college students across the world about the power of internships and online trainings. Thus, we take pride in hiring ONLY the best and the brightest! We are sure that you would play a vital role in helping us realize our vision of creating a world full of opportunities for the students.

Your appointment as an ISP will be governed by the terms and conditions presented in **Annexure A**

Congratulations!

Warm regards,

Samay Bhatnagar

Head - ISP Program

Internshala ~ 'connecting students with internships from 80,000+ brands'

Page 1 / 3

भाविनि
BHAVINI

भारतीय नाभिकीय विद्युत निगम लिमिटेड
(भारत सरकार का उद्यम)
BHARATIYA NABHIKIYA VIDYUT NIGAM LIMITED
(A Government of India Enterprise)

11.12.2019

No: BHAVINI/HR/2019

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Shri. A. Thangaraj (Registration No.18ME009), B.E (Mech.), II Year, IV Semester** Student of **Sri Sairam Institute of Technology, West Tambaram, Chennai - 600044.,** has undergone Inplant training on **"General Overview of Prototype Fast Breeder Reactor (PFBR)" at Bharatiya Nabhikiya Vidyut Nigam Limited (BHAVINI),** Kalpakkam, Tamil Nadu **from 28.11.2019 to 10.12.2019.**

(K. Malathi)
Sr. Manager (HR)

कार्यालय: पीएफबीआर पॉलीमेंट भवन, कल्पाक्कम, कांचीपुरम जिला - 603 102, तमिलनाडु, भारत
Office : PFBR Project Station Building, Kalpakkam, Kancheepuram Dist. - 603 102, Tamilnadu, India.
टेलीफोन Telephone : 044 - फैक्स Fax: 044 - ईमेल Email:
पंजीकृत कार्यालय: पहाड़ी रोड़ा केंद्र, डॉ. अंबेडकर मार्ग, पलावरम कंटोनमेंट, चेन्नई - 600 043
Regd. Office : Hill Nadu Centre, Dr. Ambedkar Road, Pallavaram Cantonment, Chennai - 600 043.
टेलीफोन Telephone No.: 044 2266 3374, फैक्स Fax: 044 2266 3933

TVS Training & Services

29735/TVS-TS/2019-20

Certificate

Mr. Dinesh M

of Sri Sairam Institute of Technology

(Department of Mechanical Engineering)

has participated in Industrial Training on Industry 4.0

conducted by TVS Training and Services Limited

from 02nd-Dec-19 to 06th-Dec-19

TVS TRAINING AND SERVICES LTD. CHENNAI 600 058

Authorized Signatory

TVS TRAINING AND SERVICES LTD.

No. 61, Reddy Street, Vanagaram Main Road, Athipattu, Ambattur Industrial Estate, Chennai - 600 058 Tel. +91-44-2619 6600 www.tvsts.com

सवारी डिब्बा कारखाना, चेन्नै – 600038
रेल मंत्रालय की एक उत्पादन इकाई

INTEGRAL COACH FACTORY, CHENNAI - 600 038
A Production Unit Under Ministry of Railways
(AN ISO: 9001, ISO:14001 AND BS : 18001 CERTIFIED PRODUCTION UNIT)

Sl.No. : M/877/2018
Date : 17.12.2018

Certificate

This is to certify that Mr. S. AZHUR

Regn.No 412017[illegible] Course B.E

Branch MECHANI[illegible] II Year, Student of

SRI SAIRAM INSTITUTE OF TECHNOLOGY,

has undergone Inplant Training from 10.12.2018 to 17.12.2018

at Integral Coach Factory.

Principal
Technical Training Centre
ICF, Chennai-38

BOLT

Inventrom/HRD/2020/FREEHT9444
17/04/2020

INTERNSHIP COMPLETION CERTIFICATE

To Whom It May Concern

This is to certify that SRI PRIYA K, a student of Sri Sairam Institute Of Technology has successfully completed a Student Partner Internship at Inventrom Private Limited for the duration of 2 months from 17/02/2020 to 16/04/2020. During this internship, the tasks undertaken by SRI PRIYA were related to popularising the concepts of Internet of Things(IoT) and Machine Learning(ML), brand awareness and business development of the Bolt IoT and ML online video training.

We take this opportunity to thank SRI PRIYA for his/her contribution during this internship and wish them all the best for their future.

Note for hiring companies: To verify the authenticity of this certificate, please email to hr@bolthot.com with the code - FREEHT9444

Yours sincerely,
For Inventrom Private Limited (Bolt IoT)

Joyner Fernandes
Human Resources Manager
Inventrom Private Limited (Bolt IoT)

[illegible]

SkillSanta

OFFER LETTER

10th August '20

Dear Subhashini Thiyagarajan,

Based on the recent discussions with you, SkillSanta (officially registered as INTERVIEWMILES PRIVATE LIMITED) is pleased to offer you the position of **Instructor.** At SkillSanta, we believe that our team is our biggest strength and we take pride in hiring "ONLY" the best and the brightest. We are confident that you would play a significant role in the overall success of the venture and wish you the most enjoyable, learning packed and truly meaningful work experience with SkillSanta.

Your appointment will be governed by the terms and conditions presented in **Annexure A and B.**

We look forward to you joining us. Please do not hesitate to call us for any information you may need. Also, please sign the duplicate of this offer as your acceptance and forward the same to us.

Congratulations!

Gaurav Gupta

CHA. LIC. No.159/2011

PROFESSIONAL FREIGHT LOGISTICS

AIR & SEA CLEARING FORWARDING, FREIGHT AGENT & TRANSPORTATION

Old No.43, New No.94, First Floor, Sembudoss Street, Parrys, Chennai - 600 001.

Phone : 044 - 4206 1421, 4206 1422 Fax : 4216 1723

E-mail : info@pflogistic.com

DATE: 10-Jun-2019

TO WHOMSEVER IT MAY CONCERN

This is to certify that **Miss. Suthanthira .S** from Sri Sairam Institute of Technology , B.Tech (IT) Second year has worked as an **Intern** at **PROFESSIONAL FREIGHT LOGISTICS,** Chennai-600001 from 03'rd June 2019 to 07'th June 2019.

During the tenure as an Intern, She has evinced keen [illegible] to learn.

Her conduct and character found to be good.

We wish him all success in her future endeavors.

For PROFESSIONAL FREIGHT LOGISTICS,

Authorized Signatory.

RETECH SOLUTIONS PVT.LTD.

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **S SUTHANTHIRA** student of **SRI SAIRAM INSTITUTE OF TECHNOLOGY, BTECH/IT** has undergone the internship in our concern entitled **IOT** during the period of **05th December 2018 to 07th December 2018** in relevant departments related to their academic studies.

During the above period, the performance was good & we wish great success in all your future endeavours.

Authorised Signature

No. 31, 1st Floor, Alagesan Street,
West Tambaram, Chennai - 600 045.
Office : 044-4207 7204
Cell : +91 96888 81190

No. 13, 1st Floor, Ramanuja Koodam Street,
Poonamallee, Chennai - 600 056.
Office : 044 - 4855 5575

RETECH SOLUTIONS PVT.LTD.

TO WHOMSOEVER IT MAY CONCERN

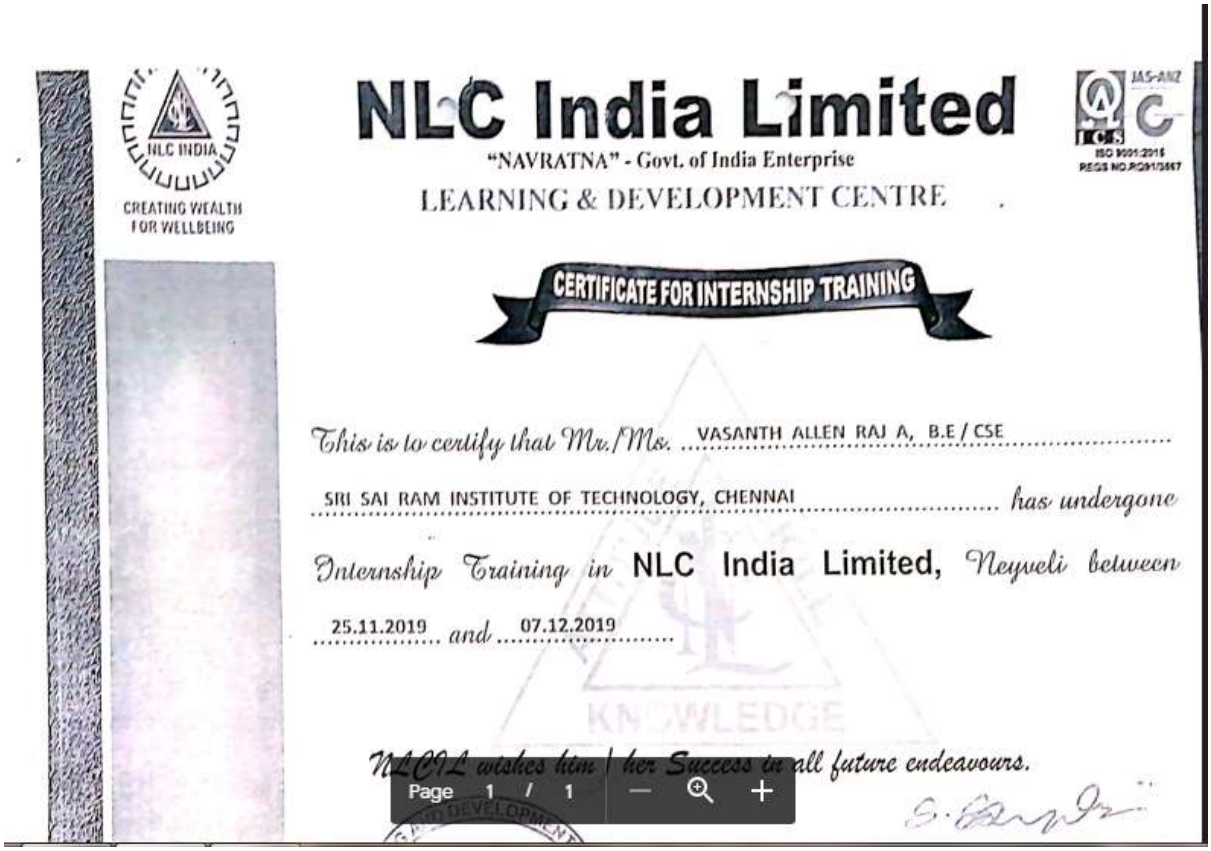
This is to certify that **S SUTHANTHIRA** student of **SRI SAIRAM INSTITUTE OF TECHNOLOGY, BTECH/IT** has undergone the internship in our concern entitled **IOT** during the period of **05th December 2018 to 07th December 2018** in relevant departments related to their academic studies.

During the above period, the performance was good & we wish great success in all your future endeavours.

Authorised Signature

No. 31, 1st Floor, Alagesan Street,
West Tambaram, Chennai - 600 045.
Office : 044-4207 7204
Cell : +91 96888 81190

No. 13, 1st Floor, Ramanuja Koodam Street,
Poonamallee, Chennai - 600 056.
Office : 044 - 4855 5575



NLC India Limited

"NAVRATNA" - Govt. of India Enterprise

LEARNING & DEVELOPMENT CENTRE

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CREATING WEALTH FOR WELLBEING

ISO 9001:2015 REGD NO.IQ91/1667

CERTIFICATE FOR INTERNSHIP TRAINING

This is to certify that Mr./Ms. VASANTH ALLEN RAJ A, B.E / CSE

SRI SAI RAM INSTITUTE OF TECHNOLOGY, CHENNAI *has undergone Internship Training in* **NLC India Limited,** *Neyveli between* 25.11.2019 *and* 07.12.2019

NLCIL wishes him / her Success in all future endeavours.

Page 1 / 1

Date: 02-Dec-2019
Ref No: ZCPL-4776/12/2019

To

Mr. SAIRAM T ,
PLOT NO: 200, HARSHITHA HOMES, PRAKASH NAGAR,
8TH CROSS STREET, THIRUNINDRAVUR,
CHENNAI - 602 024.

Dear Mr. SAIRAM T ,

We are pleased to offer you employment for the position of **MEMBER TECHNICAL STAFF** with **ZOHO CORPORATION PRIVATE LIMITED**.

INTERNSHIP AND STIPEND

You are expected to do the final semester project of your curriculum in our organisation. We expect you to work on the project on a full time basis for a period of 5-6 months. During this period you will be paid a monthly stipend of **Rs.15000/- (RUPEES FIFTEEN THOUSAND ONLY)**. The following offer is valid subject to successful completion of your project.
(Note: The above may not apply to you if your college does not permit internships).

DATE OF JOINING

Your date of appointment is effective from your date of joining after successful completion of your curriculum.

REMUNERATION

Your annual cost to company will be **Rs.396000/- (RUPEES THREE LAKH NINETY SIX THOUSAND ONLY) plus variable benefits.** The breakup of your gross salary and benefits details are set out in Annexure to this letter. Salary will be paid by the last day of each month.

PROBATION

Upon joining you will be on probation, at a minimum, until completion of the performance review cycle that immediately follows completion of six months from your date of joining, provided that your performance is determined to be satisfactory. If your performance is not satisfactory, your probation may be extended until your performance is determined to be satisfactory. Upon completion of the probation period you will be confirmed on the rolls of the company.

SALARY REVISION

Revision to your compensation will be after one year from the date of joining, subject to satisfactory completion of the probation by you. Zoho operates a Pay-for-performance Policy and any salary revision will take your performance into account.

Prepared by

Shankar
Sairam-7-237

Verified by

Vijay

s@itech
Informatics

Saitech Informatics

43, Arthi Flats, Haridoss Main Road, Kolathur, Chennai – 600 099.
https://saitechinfo.net | https://saitechinfo.com

Chennai-99

08 June 2019

CERTIFICATE

This is to certify that **SAI KARTHIK,** an engineering student from **Sri Sai Ram Institute of Technology** has been working as an internship candidate at Saitech Informatics from 1st June 2019 to 8th June 2019. He has been working on a small assignment on **"DEVELOPMENT OF JAVA SCRIPT BASED BOT PROGRAM BY INTEGRATING TELEGRAM AND GOOGLE SPREADSHEET TO SUPPORT ONLINE TIME STAMPING OF CHECK IN AND CHECK OUT OF TRAINEES".** He completed the scripting and deployment successfully. We wish him a grand success in his future career.

Best wishes Sai Karthik!

For Saitech Informatics,

E. Ramanathan
8/6/19

(E. RAMANATHAN)

CHIEF CONSULTANT

u·n·i·q technologies

services | technology | development

ISO 9001:2015 CERTIFIED

CERTIFICATE OF MERIT

This is to certify that RAVI MOUNIKA *(Reg No.* 412418104061 *) has successfully completed the internship in* cloud computing *Application Development in our concern from* 29-11-19 *to* 11-12-19 .

During the internship period, the performance of the intern was found to be GOOD .

Program Coordinator

HR Head

RETECH
SOLUTIONS PVT. LTD.
An ISO 9001:2015 certified company

INT:RE1960650

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **RAVI MOUNIKA** student of **SRI SAIRAM INSTITUTE OF TECHNOLOGY, BE/CSE** has undergone the internship in our concern entitled **MACHINE LEARNING** from **24th December 2019 to 26th December 2019** in relevant departments related to their academic studies.

During the above period, the performance was good & we wish great success in all your future endeavours.

RETECH SOLUTIONS PVT. LTD. CHENNAI 600 045

Authorised Signature

No-31, 1st Floor, Alagesan Street, Tamberam West, Chennai-45.
Office : 044-42077204 | +91-8122266657 www.retechsolutions.in

An ISO 9001 : 2008 Certified Company

ONEYES TECHNOLOGIES

INTERNSHIP

CERTIFICATE OF COMPLETION

This is to certify that Mr/Mrs/Miss JAI KARTHIKA. S

studying CSE department

in SRI SAIRAM INSTITUTE OF TECHNOLOGY

has undergone Internship on INTERNET OF

THINGS [IoT] from 03-DEC-2019 to 31-DEC-2019

for ONEYES

Trainer

Co-ordinator

ONEYES TECHNOLOGIES CHENNAI

INTERNSHIP

FOREVIEW TECHNOLOGIES PVT. LTD.

No.13, II nd Floor, Rajagopal Mudhaliyar Street,
Opp. National Theatre, West Tambaram, Chennai - 600 045

Internship Certificate

This is to Certify that ~~Mr/~~Ms. HARITHA .V.K.

Representing SRI SAIRAM INSTITUTE OF TECHNOLOGY

has Completed Internship in

" C , C++ "

DATE: 22.09.19 to 26.09.19

Director

foreview
TECHNOLOGIES PVT LTD

FOREVIEW TECHNOLOGIES PVT. LTD.

No.13, II nd Floor, Rajagopal Mudhaliyar Street,
Opp. National Theatre, West Tambaram, Chennai - 600 045

Internship Certificate

This is to Certify that ~~Mr~~/Ms. RAJESHWARI · A

Representing SRI SAIRAM INSTITUTE OF TECHNOLOGY

has Completed Internship in

"C, C++"

DATE: 02·12·19 to 06·12·19

Director

foreview
TECHNOLOGIES PVT LTD

Internship /IPT Approval letter

SRI SAIRAM INSTITUTE OF TECHNOLOGY
036
06 JAN 2020
SAI LEO NAGAR, CHENNAI-600 044

SRI SAIRAM INSTITUTE OF TECHNOLOGY, CHENNAI - 44

Admn. Office, T.Nagar, Chennai – 17.

06/01

No. 19/SIT/TBM/INTERNSHIP/2020 Dated: 03.01.2020

Sub: SIT – TBM – Admn. – Student. C.V. YUVEDHIKAA and R.U. ANUVA of III Year / ECE Department to do Internship training at Ashok Leyland, Chennai – Approval granted – Orders issued.

Ref: Letter No. 003/S2/SSIT, Ch-44/2020. Dated 02.01.2020 from the Principal

ORDER:

The Principal has been permitted to allow **Ms. C.V. YUVEDHIKAA and Ms. R.U. ANUVA** a Student of **III Year** / ECE Department to do 'Internship Training' at **ASHOK LEYLAND, CHENNAI** for one month from **07.01.2020 to 06.02.2020**. Their absepce from **07.01.2020 to 06.02.2020** shall be treated as **Academic Attendance**, as requested in the reference cited.

On completion of the **Internship**, a **'Feed-back Report'** may be obtained from this Scholarly Students and sent to Trust Office.

For SRI SAIRAM INSTITUTE OF TECHNOLOGY,
(Sd/xxxxxxxx)
CHIEF EXECUTIVE OFFICER

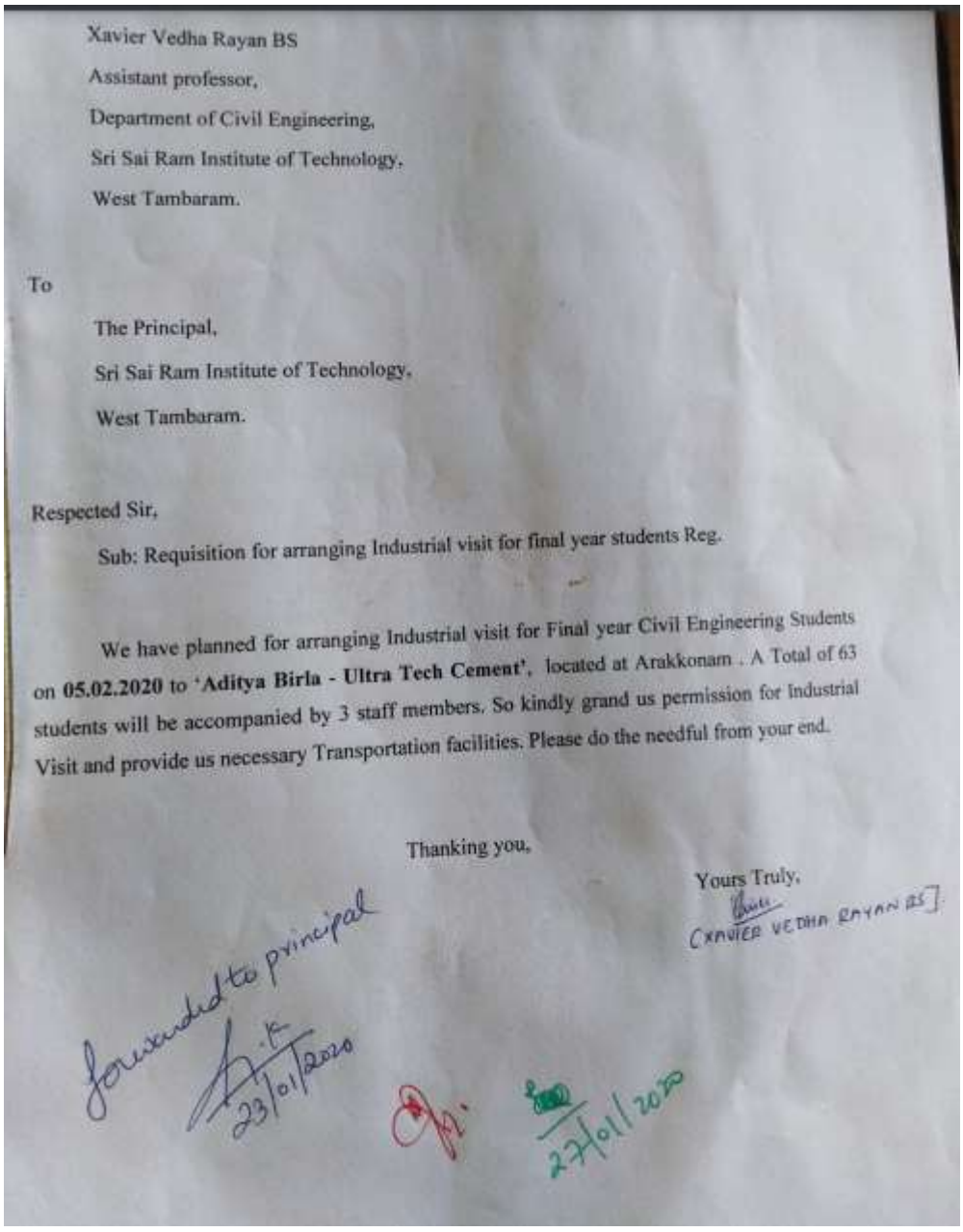
/ By order of Chief Executive Officer /

EXECUTIVE DIRECTOR 1/2

To
The Principal,
Sri Sairam Institute of Technology,
Chennai -44.

Copy to:
Accounts Section

Industrial Visit letter



Xavier Vedha Rayan BS
Assistant professor,
Department of Civil Engineering,
Sri Sai Ram Institute of Technology,
West Tambaram.

To

The Principal,
Sri Sai Ram Institute of Technology,
West Tambaram.

Respected Sir,

Sub: Requisition for arranging Industrial visit for final year students Reg.

We have planned for arranging Industrial visit for Final year Civil Engineering Students on **05.02.2020** to '**Aditya Birla - Ultra Tech Cement**', located at Arakkonam . A Total of 63 students will be accompanied by 3 staff members. So kindly grand us permission for Industrial Visit and provide us necessary Transportation facilities. Please do the needful from your end.

Thanking you,

Yours Truly,
XAVIER VEDHA RAYAN BS

forwarded to principal
23/01/2020

27/01/2020

SAI RAM INSTITUTE OF TECHNOLOGY

Dr.K.PALANIKUMAR, M.E.,Ph.D.,
Principal

Letter No.SSIT/LV/Civil/2019-20, dt.09.08.2019

To

The Chief Engineer,
Water Resource Department,
Design – Research and Construction Support (DRCS),
Chepauk,
Chennai-05.

Sir / Madam,

Sub: SSIT, Chennai-44-Industrial Visit- Permission to visit Poondi Reservoir at Tiruvallur District, chennai- Requested-Reg.

****

"SAPTHAGIRI EDUCATIONAL TRUST" established by a Philanthropist **MJF.Ln.LEO MUTHU**, Managing Director of Leo Group of Companies, started SRI SAI RAM INSTITUTE OF TECHNOLOGY in the year 2008, at Sai Leo Nagar, Dharkast, near Tambaram, a few kilometers away from Kishkinta a well known amusement park. The college has Six branches of Engineering at the under Graduate Level, and MBA course at the post Graduate level. We have come a long way from our modest beginning and our college is approved by AICTE, New Delhi and affiliated to Anna University. Our Institute is Accredited by National Board of Accredited (NBA) and also Accredited by NAAC with "A+" Grade.

Our third year B.E., CIVIL students (45 Nos.) accompanied by 2 of our teaching staff are desirous of visiting "**Poondi Reservoir**" on **16th August 2019** so as to get an exposure to the technical development taking place in the technical field and how they are implemented in your esteemed organization. This will greatly help them in developing their academic skills. Hence, I request that they may kindly be permitted to visit your organization.

Thanking you and with regards,

Yours faithfully,

PRINCIPAL

Principal
Sri Sai Ram Institute Of Technology
Chennai-44.

Sairam

Admin Office: "SAI SHRIRAM", 651 S. Madley Road, T. Nagar, Chennai - 600 017
Tel: 044 - 4020 7777 e-mail: sairam@sairamgroup.in
/Sairaminstitutions
+91 98848 49878
www.sairamgroup.in

அசோக் லேலண்ட்
எண்ணூர் பூனிட்
ASHOK LEYLAND
ENNORE UNIT
SHOT ON REDMI Y3
AI DUAL CAMERA

3.5.2 Linkages With Institutions/Industries For Internship, On-The-Job Training, Project Work, Sharing Of Research Facilities Etc. During The Year

Nature Of Linkage	Title Of The Linkage	Name Of The Partnering Institution/ Industry /Research Lab With Contact Details	Duration (From-To)	Participant
Industrial Visit	Satish Dhawan Space Centre (Isro)	2019-2020	21.08.2019	Field Trip
Industrial Visit	Neyveli Lignite Corporation	2019-2020	20.09.2019	Field Trip
Industrial Visit	Chennai Port Trust	2019-2020	06.09.2019	Field Trip
Industrial Visit	Kalaivani Electricals	2019-2020	22.8.2019	Field Trip
Industrial Visit	chennai Metro	2019-2020	26-7-2019	Field Trip
Interns	Aai Cargo Logistics & Allied Service Company	2019-2020	02.12.2019 To 26.12.2019 21.11.2019 To 26.11.2019	Anuja A P Sreenidhi M D
Interns	Bahwan Cybertek	2019-2020	02.12.2019 To 06.12.2019	Tharun Pranav K S
Interns	Bharat Electronics Limited	2019-2020	02.12.2019 To 07.12.2019	Aparrna M
Interns	Bsnl	2019-2020	02.12.2019 To 06.12.2019	Aswinraja V
Interns	Codebind Technologies	2019-2020	02.12.2019 To 06.12.2019	Felix Raja A, Kenwin Dass C
Interns	Chennai Port Trust	2019-2020	02.12.2019 To 06.12.2019	Gautham, Charuhash, Muneesh Kumar, Dhinagaran, Naveen Mani,
Interns	Infoziant	2019-2020	02.12.2019 To 06.12.2019	M.Sona
Interns	Hyoristic Innovations	2019-2020	02.12.2019 To 11.12.2019	Kamesh T
Interns	Foreview Technologies	2019-2020	02.12.2019 To 06.12.2019	Vijay R
Interns	Dreamfort Interiors And Constructions	2019-2020	29.11.2019 To 05.12.2019	Tabraze Ali Meyan M A

Interns	Kaashiv Infotech	2019-2020	24.11.2019 To 28.11.2019	Ann Sheny R, Monisha S R,Sri Kamali, Karthiga A, Harini S Iswarya T Krishnamurthy Lohitha, Thamkin Dhaniyath Baig A,M Maheshwari S Reethika M Sivashree J, Srivatsav S L Thivya B Vidhya G
Interns	Retech Solutions	2019-2020	2.12.2019 To 4.12.2019	Dinakaran S,Yuvaraj, Khamalesh R A,Ganesh Kumar,Sreevatcha, Pavithra M
Interns	National Institute Of Ocean Technology	2019-2020	02.12.2019 To 06.12.2019	Ramya,Keerthana Devi,Yogesh Pandian
Interns	Redback It Solutions	2019-2020	02.12.2019 To 06.12.2019	Vaishnavi C,Yamini
Interns	Foreview Technologies	2019-2020	02.12.2019 To 06.12.2019	Keethika,Madumitha, Priyadharshini
Interns	Techgig	2019-2020	10.12.2019 To 16.12.2019	Anish Pm
Interns	Foreview Technologies	2019-2020	02.12.2019 To 06.12.2019	Deepika,Edwin Bosco,Reeshma
Interns	Uniq Technologies	2019-2020	25.11.2019 To 29.11.2019	Gayathri M
Interns	Rohaan Constructions	2019-2020	28.11.2019 To 08.12.2019	Roseline K
Interns	T.V.Enterprises	2019-2020	25.11.2019 To 30.11.2019	Pavithra S
Interns	Schneider Electric	2019-2020	25.11.2019 To 05.12.2019	V.K.Ragesh
Interns	Vi Microsystems	2019-2020	25.11.2019 To 30.11.2019	Sandeep S
Interns	Universiti Teknologi	2019-2020	11.12.2019 To 17.12.2019	Roshine M

	Petronas (Malaysia)			
Interns	Ict Academy	2019-2020	26.9.19 To 27.9.19	Nazlanazreen J,Nisha,Parvatham,Pooja,Priya, Samayanandhini S Sarath C Thangadurai R Yogeshmudaliar Yuvashree Abirami Swapna S Yukanthi G Vishal M Tejna S, Saran M Shanmugavel Babitha S Dhanvarsha D Dharshini P Gopika R Kayalvizhi S Keerhika J Magesh B Meenakshi M Kiranprasanna D Soundarya G Archana V Dharani A S Jayavarthne K Kiruthika K Manisha M Nanthini K Oviya M Preetha S,Rupika G,Sanjana V,Sowmia,Mariya Monica A
Interns	Codebind/> Technologies	2019-2020	10.6.2019-14.6.2019	Deepashree D Anantha Narayanan Kavya Mala M Kamalikrishnan M Charan J, Amudha G, Avinash R
Interns	Rede	2019-2020	26.9.19 To	Priyadharshini

	Technologies		27.9.19	
Interns	Microsoft	2019-2020	5 Days	Padmasree
Interns	Barola Technologies	2019-2020	7 Days June 2019	Emelee Angel S M, Ahath Khan Aishwarya V
Interns	Maatram Software Solution	2019-2020	27.5.19-17.6.19	Gowreshankaran S Abhiney
Interns	Foreview Technologies	2019-2020	02.12.2019 To 06.12.2019	Abinaya M,Vijay, Atchaya U Vishwapriya Bargavi1 Aravindh R Balaaji R Deepa R Elavarasi E Keerthika U Mathumitha N Pavadharshini S Ilayaraj B Karthik P Malathi S Manisha M Pavithira A H Shalini S
Interns	National Institute Of Ocean Technology	2019-2020	02.12.2019 To 06.12.2019	Venkatanathan N
Interns	Zoho	2019-2020	18.12.2019 To (Undergoing)	Dhanasekaran E
Interns	Codebind Technologies	2019-2020	22.11.2019 To 28.11.2019	Gunalan M
Interns	Nsic	2019-2020	23.12.2019 To 3.01.2020	Andra Narendra Kumar
Interns	Aai Cargo Logistics & Allied Service Company	2019-2020	21.11.2019 To 26.11.2019	Archana B
Internship	CLRI	2019-2020	25-11-2019 To 06-12-2019	Anbu, Sethu, Vijay, Dhanush,
In Plant Training	Chennai Port Trust	2019-2020	02.12.2019 To 06.12.2019	Gautham, Charuhash, Muneesh Kumar,

				Dhinagaran, Naveen Mani,
Intership	Sarnath Constructions	2019-2020	22.11.2019 To 29.11.2019	Padma Priya, Suvaathi, Mahalakshmi
In Plant Training	Brc Engineering Solution	2019-2020	25.11.2019 To 02.12.2019	Gayathri Vijay, Monica Sri
In Plant Training	Builtec Engineers And Consultant	2019-2020	28.11.2019 To 06.12.2019	Santhosh Anand, Naveen
Intership	Delhi International Airport Limited	2019-2020	25.11.2019 To 06.12.2019	Abilash Krishna
Intership	Kashiv Infotech	2019-2020	28.11.2019 To 02.12.2019	Deepa Sree
Industrial Visit	Ultra Tech Cement	2019-2020	05.02.2020	Industrial Visit
Industrial Visit	Serc -Open Day	2019-2020	26.09.2019	Industrial Visit
Industrial Visit	Poondi Reservoir	2019-2020	16.08.2019	Industrial Visit
In-Plant Training	Ashok Leyland	2019-2020	06-11-2019-6-15-2019	Vijai Karthik R
In-Plant Training	Ashok Leyland	2019-2020	06-11-2019-6-15-2019	Vijai Karthik R
In-Plant Training	Ashok Leyland	2019-2020	06-11-2019-6-15-2019	Vijai Karthik R
In-Plant Training	Sr Precision Engineering	2019-2020	06-03-2019-06-08-2019	Vasanth G
Internship	Rane Madras Ltd	2019-2020	5/28/2019-06-12-2019	Anooj M
Internship	Crp India Pvt Ltd	2019-2020	5/13/2019-5/27/2019	Anooj M
In-Plant Training	Pmi Engineering Exports Pvt.Ltd.	2019-2020	06-10-2019-6/16/2019	G.Manoj Kumar
In-Plant Training	Addison &Co.,Ltd	2019-2020	06-03-2019-	G.Manoj Kumar
In-Plant Training	Rane Brakes Lining Limited	2019-2020	5/20/2019-	Gowtham Kumar K
In-Plant Training	Chennai Port Trust	2019-2020	5/21/2019-	Fenneth Moses G
In-Plant Training	Oneyes Technologies	2019-2020	06-07-2019-	Dhivakar.S
In-Plant Training	Oneyes Technologies	2019-2020	06-07-2019-	Dhivakar.S
In-Plant Training	Ashok Leyland	2019-2020	6/19/2018-	Saran Raj. D
In-Plant Training	Sr Precision	2019-2020	06-03-2019-	Fenneth Moses G

	Engineering			
In-Plant Training	Acrex Engineering	2019-2020	5/22/2019--	H. Mani Ponraja
In-Plant Training	Madras Engineering Industries Pvt Lmtd	2019-2020	06-05-2019-	Jayachandran S
In-Plant Training	Rane Brakes And Linings Limited	2019-2020	5/20/2019-	Surya Ss
In-Plant Training	Arihant Duraplast	2019-2020	5/13/2019-	Venkatasubramanian. M.A
In-Plant Training	Tractors And Farm Equipment Ltd	2019-2020	5/23/2019-	T.M. Barath
In-Plant Training	The Ramco Cements Ltd,	2019-2020	06-06-2019-	M. Sakthi Nayaghan
In-Plant Training	Taneja Aerospace And Aviation Limited	2019-2020	5/28/2018-	S.Narendran
In-Plant Training	Brakes India Private Limited	2019-2020	5/27/2019-	S.Narendran
Internship	J.A Motorsports	2019-2020	5/15/2019-	Abhishek.G.Shanker
In-Plant Training	Nlc India Limited	2019-2020	5/27/2019-	Balakumar S
Internship	Acrex Engineering Private Limited	2019-2020	5/22/2019-	R.Vairavaraj
In-Plant Training	Electric Loco Shed , Royapuram	2019-2020	06-10-2019-	V.Harish
In-Plant Training	Integral Coach Factory	2019-2020	5/29/2019-	P. Hariharan
In-Plant Training	Semmathi Engineering	2019-2020	06-07-2019-	T.Keerthivasan
Internship	Lanson Toyota	2019-2020	12-03-2019-	Nizamudeen.R
In-Plant Training	Tafe Limited	2019-2020	5/23/2019-	Raghul.D
In-Plant Training	Chennai Port	2019-2020	5/21/2019-	K.Naveen Kumar
In-Plant Training	Integral Coach Factory	2019-2020	5/29/2019-	K.Bhaskara Hariharan
In-Plant Training	Shri Pavithra Auto Product Private Limited	2019-2020	5/31/2019-	E.Vijay
In-Plant Training	Electric Locomotive Shed	2019-2020	019-	K.Karthikeyan
In-Plant Training	Cipet Institue Of	2019-2020	06-10-2019-	Yugendran P

	Plastics Technology			
In-Plant Training	Integral Coach Factory	2019-2020	12-10-2018-	Azhur
In-Plant Training	Electric Loco Shed	2019-2020	06-10-2019-	Jagan Murthi
In-Plant Training	Electric Loco Shed	2019-2020	11/19/2018-	Harikrishna. M
Internship	Maha Enterprises	2019-2020	05-03-2019-	Swaminathan.S
In-Plant Training	Chennai Port , Hinduja Fundries , Electric Loco Shed	2019-2020	06-10-2019-	V Harish
In-Plant Training	Bay Forge Pvt Limited	2019-2020	06-03-2019-	S R Thanush
In-Plant Training	Tafe	2019-2020	5/24/2019-	Akash.A
In-Plant Training	Nlc	2019-2020	5/27/2019-	M.Shrinivasan
In-Plant Training	New Autotech Industriees	2019-2020	7/22/2019-	Karthick K
In-Plant Training	New Autotech Industriees	2019-2020	5/22/2019-	Karthick K
In-Plant Training	New Autotech Industriees	2019-2020	5/22/2019-	Karthick K
In-Plant Training	Unique Technologies	2019-2020	11/16/2018-	Karthick K
In-Plant Training	Ashok Leyland,Taal ,Hyundai	2019-2020	01-02-2019-	B.U Raja Ramakrishnaa
In-Plant Training	Oneyes Technologies	2019-2020	06-07-2019-	R.Muralikumaran
In-Plant Training	Southern Railway	2019-2020	06-10-2019-	A.Gokul
In-Plant Training	Tube Investment Of India	2019-2020	5/30/2019-	M.Saravana Kumar
In-Plant Training	Bay Forge Pvt Ltd	2019-2020	06-03-2019-	S E Gouthem
In-Plant Training	Oneyes Technologies	2019-2020	06-07-2019-	Muralikumaran. R
In-Plant Training	Pantech Solutions	2019-2020	04/06/2019 - 08/06/2019	Manakshni V
In-Plant Training	Chennai Metro Rail Ltd	2019-2020	10/06/2019 - 14/06/2019	Vijay J
In-Plant Training	Ministry Of Railways	2019-2020	17/06/2019 - 22/06/2019	Manikandan R
In-Plant Training	Foreview Technologies	2019-2020	11/06/2019 - 16/06/2019	Prasanna P

In-Plant Training	Bharat Electronics	2019-2020	10/06/2019 - 15/06/2019	Narmadha M
In-Plant Training	Integral Coach Factory	2019-2020	04/06/2019 - 11/06/2019	Dickson Samuel Williams M
In-Plant Training	Forview Technologies	2019-2020	10/06/2019 - 13/06/2019	Keerthana V
In-Plant Training	Kaa Shiv Info Tech	2019-2020	10/06/2019 - 14/06/2019	Sahana U
In-Plant Training	Kaa Shiv Info Tech	2019-2020	10/06/2019 - 14/06/2019	Deepika M
In-Plant Training	Integral Coach Factory	2019-2020	10/06/2019 - 17/06/2019	Deepshikha S
In-Plant Training	Integral Coach Factory	2019-2020	10/06/2019 - 17/06/2019	Buwaneshwari S
In-Plant Training	Chennai Port	2019-2020	20/06/2019 - 25/06/2019	Deepshikha S
In-Plant Training	Integral Coach Factory	2019-2020	04/06/2019 - 11/06/2019	Natarajan N
In-Plant Training	Southern Railway	2019-2020	17/06/2019 - 22/06/2019	Merlin Gifta J
In-Plant Training	Foreview Technologies	2019-2020	11/06/2019 - 16/06/2019	Abhirami V
In-Plant Training	Ti Cycles Of India	2019-2020	10/06/2019 - 14/06/2019	Rajarajan S
In-Plant Training	Electric Loco Shed At Royapuram	2019-2020	02/12/2019 - 07/12/2019	Shlok Prakash
In-Plant Training	Electric Loco Shed At Royapuram	2019-2020	02/12/2019 - 07/12/2019	Kirubanandhan P
In-Plant Training	Uniq Technologies	2019-2020	03/12/2019 - 05/12/2019	Divya G
In-Plant Training	Power Integrated Solution	2019-2020	27/11/2019 - 29/11/2019	priya
In-Plant Training	Tangedco, Nctps	2019-2020	02/12/2019 - 06/12/2019	Yaminipriya D
In-Plant Training	Tangedco	2019-2020	26/11/2019 - 30/11/2019	Remya K S
In-Plant Training	Tangedco	2019-2020	26/11/2019 - 30/11/2019	Deepak V
In-Plant Training	Tangedco	2019-2020	26/11/2019 - 30/11/2019	Mahidhar M
In-Plant Training	Tangedco	2019-2020	26/11/2019 - 30/11/2019	Yeswanth P
In-Plant Training	Southern Railway	2019-2020	02/12/2019 - 07/12/2019	Dam odharan G

In-Plant Training	Southern Railway	2019-2020	02/12/2019 - 07/12/2019	Varadharajan S
In-Plant Training	Southern Railway	2019-2020	02/12/2019 - 07/12/2019	Shri Goakul B
In-Plant Training	Southern Railway	2019-2020	02/12/2019 - 07/12/2019	Senthamizh Arasan D
In-Plant Training	Southern Railway	2019-2020	02/12/2019 - 07/12/2019	Logesh S
In-Plant Training	Sk Engineering Solution	2019-2020	27/11/2019 - 04/12/2019	Avinash Janakiraman V
In-Plant Training	Airports Authority Of India	2019-2020	02/12/2019 - 06/12/2019	Avinash Janakiraman V
In-Plant Training	Airports Authority Of India	2019-2020	02/12/2019 - 06/12/2019	Sandhya S
In-Plant Training	Airports Authority Of India	2019-2020	02/12/2019 - 06/12/2019	Deepshikha S
In-Plant Training	Airports Authority Of India	2019-2020	02/12/2019 - 06/12/2019	Buwaneshwari S
In-Plant Training	Southern Railway	2019-2020	03/12/2019 - 08/12/2019	Rubika E
In-Plant Training	Tamilnadu Generation And Distribution Corporation Limited	2019-2020	26/11/2019 - 30/11/2019	Sahana U
In-Plant Training	Retech	2019-2020	05/12/2019 - 07/12/2019	Prabakaran K
In-Plant Training	Isro	2019-2020	06/01/2020 - 10/01/2020	Prabakaran K
In-Plant Training	Retech	2019-2020	05/12/2019 - 07/12/2019	Thati Akhil Kumar T
In-Plant Training	North Chennai Thermal Power Station I	2019-2020	26/11/2019 - 30/11/2019	Dhilip Prasad P
In-Plant Training	Southern Railway	2019-2020	02/12/2019 - 07/12/2019	Perazhagan C
In-Plant Training	Foreview Technologies Pvt. Ltd.	2019-2020	23/12/2019 - 27/12/2019	Raghul G
In-Plant Training	Foreview Technologies Pvt. Ltd.	2019-2020	23/12/2019 - 27/12/2019	Lyzul Imran A
In-Plant Training	Foreview Technologies Pvt. Ltd.	2019-2020	23/12/2019 - 27/12/2019	Nandhini N

In-Plant Training	Foreview Technologies Pvt. Ltd.	2019-2020	23/12/2019 - 27/12/2019	Dhanalaxmi Pl
In-Plant Training	Foreview Technologies Pvt. Ltd.	2019-2020	23/12/2019 - 27/12/2019	Madhuvanthi K P
In-Plant Training	Pioneer Power Ltd	2019-2020	26/12/2019 - 28/12/2019	Aakash Raj K
In-Plant Training	Pioneer Power Ltd	2019-2020	26/12/2019 - 28/12/2019	Vijay Pandiyan K
In-Plant Training	Nlc	2019-2020	06/12/2018 - 18/12/2018	Abhirami V
In-Plant Training	North Chennai Thermal Power Station2019-2020	2019-2020	02/12/2019 - 06/12/2019	Rajarajan S
In-Plant Training(Mech)	Ashok Leyland	2019-2020	06-11-2019-6/15/2019	Vijai Karthik R
In-Plant Training	Ashok Leyland	2019-2020	06-11-2019-6/15/2019	Vijai Karthik R
In-Plant Training	Ashok Leyland	2019-2020	06-11-2019-6/15/2019	Vijai Karthik R
In-Plant Training	Sr Precision Engineering	2019-2020	06-03-2019-06-08-2019	Vasanth G
Internship	Rane Madras Ltd	2019-2020	5/28/2019-06-12-2019	Anooj M
Internship	Crp India Pvt Ltd	2019-2020	5/13/2019-5/27/2019	Anooj M
In-Plant Training	Pmi Engineering Exports Pvt.Ltd.	2019-2020	06-10-2019-6/16/2019	G.Manoj Kumar
In-Plant Training	Addison &Co.,Ltd	2019-2020	06-03-2019-06-08-2019	G.Manoj Kumar
In-Plant Training	Rane Brakes Lining Limited	2019-2020	5/20/2019-5/28/2019	Gowtham Kumar K
In-Plant Training	Chennai Port Trust	2019-2020	5/21/2019-5/25/2019	Fenneth Moses G
In-Plant Training	Oneyes Technologies	2019-2020	06-07-2019-06-09-2019	Dhivakar.S
In-Plant Training	Ashok Leyland	2019-2020	6/19/2018-6/23/2019	Saran Raj. D
In-Plant Training	Sr Precision Engineering	2019-2020	06-03-2019-06-08-2019	Fenneth Moses G
In-Plant Training	Acrex Engineering	2019-2020	5/22/2019-5/27/2019	H. Mani Ponraja
Internship	Madras Engineering Industries Pvt Lmtd	2019-2020	06-05-2019-6/8/2019	Jayachandran S

In-Plant Training	Rane Brakes And Linings Limited	2019-2020	5/20/2019-5/28/2019	Surya Ss
Internship	Arihant Duraplast	2019-2020	5/13/2019-5/23/2019	Venkatasubramanian. M.A
In-Plant Training	Tractors And Farm Equipment Ltd	2019-2020	5/23/2019-06-07-2019	T.M. Barath
In-Plant Training	The Ramco Cements Ltd,	2019-2020	06-06-2019-06-12-2019	M. Sakthi Nayaghan
In-Plant Training	Brakes India Private Limited	2019-2020	5/27/2019-5/31/2019	S.Narendran
Internship	J.A Motorsports	2019-2020	5/15/2019-5/30/2019	Abhishek.G.Shanker
In-Plant Training	Nlc India Limited	2019-2020	5/27/2019-06-01-2019	Balakumar S
In-Plant Training	Acrex Engineering Private Limited	2019-2020	5/22/2019-5/27/2019	R.Vairavaraj
In-Plant Training	Electric Loco Shed , Royapuram	2019-2020	06-10-2019-6/14/2019	V.Harish
In-Plant Training	Integral Coach Factory	2019-2020	5/29/2019-06-03-2019	P. Hariharan
In-Plant Training	Semmathi Engineering	2019-2020	06-07-2019-6/17/2019	T.Keerthivasan
In-Plant Training	Lanson Toyota	2019-2020	12-03-2019-06-12-2019	Nizamudeen.R
In-Plant Training	Tafe Limited	2019-2020	5/23/2019-06-07-2019	Raghul.D
\ In-Plant Training	Chennai Port	2019-2020	5/21/2019-5/25/2019	K.Naveen Kumar
In-Plant Training Internship	Integral Coach Factory Shri Pavithra Auto Product Private Limited	2019-2020 2019-2020	5/29/2019-06-03-2019 31-5-2019-06-08-2019	K.Bhaskara Hariharan, E.Vijay
In-Plant Training	Electric Locomotive Shed	2019-2020	06-10-2019-06/14/2019	K.Karthikeyan
In-Plant Training	Cipet Institue Of Plastics Technology	2019-2020	06-10-2019-6/14/2019	Yugendran P
In-Plant Training	Integral Coach Factory	2019-2020	12-10-2019-12/17/2019	Azhur
In-Plant Training	Electric Loco Shed	2019-2020	06-10-2019-6/14/2019	Jagan Murthi
In-Plant Training	Electric Loco	2019-2020	11/19/2019-	Harikrishna. M

	Shed		11/24/2019	
In-Plant Training	Maha Enterprises	2019-2020	05-03-2019-6/13/2019	Swaminathan.S
In-Plant Training	Chennai Port , Hinduja Fundries , Electric Loco Shed	2019-2020	06-10-2019-6/14/2019	V Harish
In-Plant Training	Bay Forge Pvt Limited	2019-2020	06-03-2019-06-10-2019	S R Thanush
In-Plant Training	Tafe	2019-2020	5/24/2019-06-07-2019	Akash.A
In-Plant Training	Nlc	2019-2020	5/27/2019-06-01-2019	M.Shrinivasan
In-Plant Training	New Autotech Industriees	2019-2020	7/22/2019-30/7/2019	Karthick K
In-Plant Training	New Autotech Industriees	2019-2020	5/22/2019-30/5/2019	Karthick K
In-Plant Training	Unique Technologies	2019-2020	11/16/2019-11/8/2019	Karthick K
In-Plant Training	Ashok Leyland,Taal,	2019-2020	02-01-2019	B.U Raja Ramakrishnaa
In-Plant Training	Oneyes Technologies	2019-2020	06-07-2019-6-9-2019	R.Muralikumaran
In-Plant Training	Southern Railway	2019-2020	06-10-2019-06/14/2019	A.Gokul
In-Plant Training	Tube Investment Of India	2019-2020	5/30/2019-6/7/2019	M.Saravana Kumar
In-Plant Training	Bay Forge Pvt Ltd	2019-2020	06-03-2019-6/10/2019	S E Gouthem
In-Plant training	Oneyes Technologies	2019-2020	06-07-2019-06-09-2019	Muralikumaran. R

Industrial Visits

ASHOK LEYLAND
Aapki Jeet. Hamari Jeet.

CERT. No: HRD/T&D/**2308**

06TH FEB 2020

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Ms C V YUVHEDIKAA** student of **"SRI SAIRAM INSTITUTE OF TECHNOLOGY"** has Completed her Internship Training at **ASHOK LEYLAND Ltd**, ENNORE, Chennai, from 09.01.2020 to 06.02.2020 Successfully .

Her conduct and character during the period of training was found to be good.

S. THANGAVEL
SENIOR MANAGER (L&D)

ASHOK LEYLAND LTD. ENNORE CHENNAI-57

BOLT

Inventrom/HRD/2020/FREEVIC8965
20/03/2020

INTERNSHIP COMPLETION CERTIFICATE

To Whom It May Concern

This is to certify that HARANVIGNESHWARAAN S, a student of Sri Sairam Institute Of Technology has successfully completed a Student Partner Internship at Inventrom Private Limited for the duration of 2 months from 20/01/2020 to 19/03/2020. During this internship, the tasks undertaken by HARANVIGNESHWARAAN were related to popularising the concepts of Internet of Things(IoT) and Machine Learning(ML), brand awareness and business development of the Bolt IoT and ML online video training.

We take this opportunity to thank HARANVIGNESHWARAAN for his/her contribution during this internship and wish them all the best for their future.

Note for hiring companies: To verify the authenticity of this certificate, please email to hr@boltiot.com with the code - FREEVIC8965

Yours sincerely,
For Inventrom Private Limited (Bolt IoT)

Joyner Fernandes
Human Resources Manager
Inventrom Private Limited (Bolt IoT)

एन एस आई सी
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ISO 9001 : 2015

राष्ट्रीय लघु उद्योग निगम लिमिटेड

NATIONAL SMALL INDUSTRIES CORPORATION LIMITED

(A Govt. of India Enterprise)

NSIC - TECHNICAL SERVICES CENTRE,

Sector B-24, Guindy Industrial Estate, Ekkaduthangal, Chennai - 600 032

CERTIFICATE

This is to certify that Mr./Ms. **ANDRA NARENDRA KUMAR** S/o/ D/o Shri. **ANDRA ERUKALAIAH** student of III year B.E (ECE), Sri Sai Ram Institute of Technology, Chennai, has undergone Internship Training on **Industrial Based Real Time Embedded System Design and Development with IoT** at our centre for a period of **Two weeks** from 23.12.2019 to 03.01.2020.

COURSE CO-ORDINATOR

CENTRE HEAD

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NSIC
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No : 9344
राष्ट्रीय लघु उद्योग निगम लिमिटेड
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NSIC - TECHNICAL SERVICES CENTRE,
Sector B-24, Guindy Industrial Estate, Ekkaduthangal, Chennai - 600 032
CERTIFICATE
This is to certify that Mr./Ms. POLU RAHUL SAINADH REDDY S/o/ D/o Shri. POLU ANKI REDDY student of III year B.E (ECE), Sri Sai Ram Institute of Technology, Chennai, has undergone Internship Training on Industrial Based Real Time Embedded System Design and Development with IoT at our centre for a period of Two weeks from 23.12.2019 to 03.01.2020.
CENTRE HEAD

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NSIC
ISO 9001 : 2015
No. : 8346
राष्ट्रीय लघु उद्योग निगम लिमिटेड
NATIONAL SMALL INDUSTRIES CORPORATION LIMITED
(A Govt. of India Enterprise)
NSIC - TECHNICAL SERVICES CENTRE,
Sector B-24, Guindy Industrial Estate, Ekkaduthangal, Chennai - 600 032
CERTIFICATE
This is to certify that Mr./Ms. BELLAMKONDA RAKESH S/o/ D/o Shri. BELLAMKONDA ROSAIAH student of III year B.E (ECE), Sri Sai Ram Institute of Technology, Chennai, has undergone Internship Training on Industrial Based Real Time Embedded System Design and Development with IoT at our centre for a period of Two weeks from 23.12.2019 to 03.01.2020.
COURSE CO-ORDINATOR
CENTRE HEAD

Sri SAI RAM INSTITUTE OF TECHNOLOGY

(Managed by Sapthagiri Educational Trust, Chennai - 17)

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Founder Chairman : MJF. Ln. Leo Muthu

Dr.K.PALANIKUMAR, M.E.,Ph.D.,
Principal

Letter No.SSIT/I.V/Civil/2019-20, dt.09.08.2019

To

The Chief Engineer,
Water Resource Department,
Design – Research and Construction Support (DRCS),
Chepauk,
Chennai-05.

Please give permission

Sir / Madam,

Sub: SSIT, Chennai-44-Industrial Visit- Permission to visit Poondi Reservoir at Tiruvallur District , chennai- Requested-Reg.

****

"**SAPTHAGIRI EDUCATIONAL TRUST**" established by a Philanthropist **MJF.Ln.LEO MUTHU**, Managing Director of Leo Group of Companies, started SRI SAI RAM INSTITUTE OF TECHNOLOGY in the year 2008, at Sai Leo Nagar, Dharkast, near Tambaram, a few kilometers away from Kishkinta a well known amusement park. The college has Six branches of Engineering at the under Graduate Level, and MBA course at the post Graduate level. We have come a long way from our modest beginning and our college is approved by AICTE, New Delhi and affiliated to Anna University. Our Institute is Accredited by National Board of Accredited (NBA) and also Accredited by NAAC with "A+" Grade.

Our third year B.E., CIVIL students (45 Nos.) accompanied by 2 of our teaching staff are desirous of visiting IHH Poondi model studies **" Poondi Reservoir "** on **16th August 2019** so as to get an exposure to the technical development taking place in the technical field and how they are implemented in your esteemed organization. This will greatly help them in developing their academic skills. Hence, I request that they may kindly be permitted to visit your organization.

Thanking you and with regards,

Yours faithfuily,

PRINCIPAL

Principal
Sri Sai Ram Institute Of Technology
Chennai - 44.

SRI SAI RAM INSTITUTE OF TECHNOLOGY Truth Love Peace

From

Xavier Vedha Rayan BS
Assistant professor,
Department of Civil Engineering,
Sri Sai Ram Institute of Technology,
West Tambaram.

To

The Principal,
Sri Sai Ram Institute of Technology,
West Tambaram.

Respected Sir,

Sub: Requisition for arranging Industrial visit for final year students Reg.

We have planned for arranging Industrial visit for Final year Civil Engineering Students on **05.02.2020** to '**Aditya Birla - Ultra Tech Cement'**, located at Arakkonam . A Total of 63 students will be accompanied by 3 staff members. So kindly grand us permission for Industrial Visit and provide us necessary Transportation facilities. Please do the needful from your end.

Thanking you,

Yours Truly,
[Signature]
XAVIER VEDHA RAYAN BS].

forwarded to principal
23/01/2020

27/01/2020

CH.P.T. Item Code No. C-81804355
500 Pads 27-11-2018

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ADMINISTRATIVE OFFICE
राजाजी सालै, चेन्नै- 600 001.
Rajaji Salai, Chennai-600 001.
Website : www.chennaiport.gov.in

No. JDR/610/2018/E 18.07.2019

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr. S.Dhanush**, third year B.E (Civil Engineering) student of Sri Sai Ram Institute of Technology, Chennai has undergone in-plant training in Civil Engineering Department from 17.06.2019 to 21.06.2019. During this period, the student was briefed about the principles and design of Marine structures and provided first-hand information on Hydrographic Survey procedures. The student was also given an opportunity to visit sites of Major ongoing projects and inspect marine structures. The student has satisfactorily completed his training. I wish him all success in his future endeavours.

18/7/19
for CHIEF ENGINEER

सीएसआईआर – केन्द्रीय चर्म अनुसंधान संस्थान
CSIR - CENTRAL LEATHER RESEARCH INSTITUTE
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद Council of Scientific & Industrial Research)
सरदार पटेल रोड Sardar Patel Road, अड्यार Adyar, चेन्नई Chennai - 600 020
तमिलनाडु Tamil Nadu, भारत INDIA, वेबसाइट website : www.clri.org
CSIR-CLRI

Date: 06.12.2019

TO WHOMSOEVER IT MAY CONCERN:

This is to certify that **Mr. M. Vijhay Sundhar, Register No. 412417103043** a student of **Bachelor of Engineering (B.E.,) in Civil Engineering in Sri Sai Ram Institute of Technology, Chennai - 600017** has completed the **Internship at CSIR - Central Leather Research Institute, Adyar, Chennai- 600020** under the guidance of **Mr. V. Rajesh, Assistant Engineer (Civil),** Civil Engineering Division for the period from 25-11-2019 to 06-12-2019.

He was given an exposure to various fields of Civil Engineering activities of campus as detailed below:

- An overview of the campus and detailing the plan.
- He got exposure to the Renovation of Tannery work which includes Mezzanine floor, wooden flooring, Polyvinyl Flooring, Epoxy flooring, Ornamental false ceiling and Toughen glass partitions, etc.
- Renovation of the VIP guest house and Construction of Modernised kitchen.
- Estimation and costing for the compound wall of the CLRI Institute.
- An outline of the constructional requirements for the Animal House.
- Exposed to knowledge in replacement of damaged pipe line system with systematic tracking system for betterment.
- Processing details of Scientific Apparatus in Glass Blowing laboratory.
- Processing and manufacturing of leather and leather-based products (Tannery and CLAD Departments).
- He was exposed to an On-going Indo-German research project on Bio-gas generation from leather and vegetable waste at Environmental Department.
- A visit to GAIT lab and Fermentation lab, frequent discussions on the evolution of trends in Civil Engineering.

We wish him all success in his future endeavours.

V. 06/12/2019
V. RAJESH
Assistant Engineer (Civil)
Central Leather Research Institute
Council of Scientific & Industrial Research
Sardar Patel Road Adyar CHENNAI 600 020

C.L.R.I., CHENNAI-20.

वरि.सीओए Sr. CoA दूरभाष Phone : 044 - 2445 5822, 2443 7184 फैक्स Fax : 044 - 2445 0901 ई-मेल e-mail : srcoa@clri.res.in
एओ AO दूरभाष Phone : 044 - 2491 5852, 2443 7140 फैक्स Fax : 044 - 2491 1589 ई-मेल e-mail : admnofficer@clri.res.in

सीएसआईआर – केन्द्रीय चर्म अनुसंधान संस्थान
CSIR - CENTRAL LEATHER RESEARCH INSTITUTE
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद Council of Scientific & Industrial Research)
सरदार पटेल रोड Sardar Patel Road, अड्यार Adyar, चेन्नई Chennai - 600 020
तमिलनाडु Tamil Nadu, भारत INDIA, वेबसाइट website : www.clri.org
CSIR-CLRI

Date: 06.12.2019

TO WHOMSOEVER IT MAY CONCERN:

This is to certify that **Mr. A. Anbucheziyan, Register No. 412417103002** a student of **Bachelor of Engineering (B.E.,) in Civil Engineering in Sri Sai Ram Institute of Technology, Chennai - 600017** has completed the **Internship at CSIR - Central Leather Research Institute, Adyar, Chennai- 600020** under the guidance of **Mr. V. Rajesh, Assistant Engineer (Civil),** Civil Engineering Division for the period from 25-11-2019 to 06-12-2019.

He was given an exposure to various fields of Civil Engineering activities of campus as detailed below:

- An overview of the campus and detailing the plan.
- He got exposure to the Renovation of Tannery work which includes Mezzanine floor, wooden flooring, Polyvinyl Flooring, Epoxy flooring, Ornamental false ceiling and Toughen glass partitions, etc.
- Renovation of the VIP guest house and Construction of Modernised kitchen.
- Estimation and costing for the compound wall of the CLRI Institute.
- An outline of the constructional requirements for the Animal House.
- Exposed to knowledge in replacement of damaged pipe line system with systematic tracking system for betterment.
- Processing details of Scientific Apparatus in Glass Blowing laboratory.
- Processing and manufacturing of leather and leather-based products (Tannery and CLAD Departments).
- He was exposed to an On-going Indo-German research project on Bio-gas generation from leather and vegetable waste at Environmental Department.
- A visit to GAIT lab and Fermentation lab, frequent discussions on the evolution of trends in Civil Engineering.

We wish him all success in his future endeavours.

C.L.R.I., CHENNAI-20.

06/12/2019
V. RAJESH
Assistant Engineer (Civil)
Central Leather Research Institute
Council of Scientific & Industrial Research
Sardar Patel Road Adyar CHENNAI 600 020

वरि.सीओए Sr. CoA दूरभाष Phone : 044 - 2445 5822, 2443 7184 फैक्स Fax : 044 - 2445 0901 ई-मेल e-mail : srcoa@clri.res.in
एओ AO दूरभाष Phone : 044 - 2491 5852, 2443 7140 फैक्स Fax : 044 - 2491 1589 ई-मेल e-mail : admnofficer@clri.res.in

CH.P.T. Item Code No. C-81804355
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ADMINISTRATIVE OFFICE
राजाजी सालै, चेन्नै- 600 001.
Rajaji Salai, Chennai-600 001.
Website : www.chennaiport.gov.in

No. JDR/610/2018/E 14.01.2020

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr.M.Gautham**, third year B.E.(Civil Engineering) student of Sri Sai Ram Institute of Technology, Chennai has undergone in-plant training in Civil Engineering Department from **02.12.2019 to 06.12.2019**. During this period, the student was briefed about the principles and design of Marine structures and provided first-hand information on Hydrographic Survey procedures. The student was also given an opportunity to visit sites of Major ongoing projects and inspect marine structures. The student has satisfactorily completed his training. I wish him all success in his future endeavours.

14/1/2020
for CHIEF ENGINEER

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NLC India Limited

CREATING WEALTH FOR WELLBEING

(formerly - Neyveli Lignite Corporation Ltd.,) "NAVRATNA" - Govt. of India Enterprise

ISO 9001:2015 REGS NO.RQ91/3567

LEARNING & DEVELOPMENT CENTRE

CERTIFICATE FOR INTERNSHIP TRAINING

This is to certify that Mr/Ms ABHIRAMI V, B.E / EEE

SRI SAI RAM INSTITUTE OF TECHNOLOGY, CHENNAI has undergone Internship Training in **NLC India Limited,** Neyveli between 06.12.2018 and 18.12.2018.

NLCIL wishes him / her Success in all future endeavours.

15 DEC 2018

HEAD / L&D
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SOFTWARE DEVELOPMENT & ELECTRONICS / IOT RESEARCH COMPANY

X-41, shivanantha Building, 5th Floor, 2nd Avenue, Anna Nagar, Chennai - 40

www.kaashivinfotech.com

ORACLE Certified Expert

Certificate of Completion

Mr./ Ms. M. DEEPIKA

a Student of SRI SAIRAM INSTITUTE OF TECHNOLOGY

has done his/her In-Plant Training in Our Company held from 10-06-2019

to 14-06-2019 and completed the Training Successfully.

J. VENKATESAN PRABU
Managing Director

KAASHIV INFOTECH
X-41, Shivanantha Building,
5th Floor, 2nd Avenue,
Anna Nagar, Chennai - 600 040.
Ph : 7667662428

J. ARUNACHALAM
Project Manager

***This Hands-On Training is Provided by 10 Years Microsoft Awarded Most Valuable Professional, 13 International Certified Expert - Recognized Top Azure Specialist in the World.

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SOUTHERN RAILWAY

Office of the Senior Divisional Electrical Engineer,
Rolling Stock,
Electric Loco Shed, Royapuram-600 013.

Telefax:044-2590 2250
e-mail:srdeerspm@mas.railnet.gov.in

This is to certify that Mr.A.Gokul , Reg No.412417114026 Second Year B.E Mechanical Engineering Branch Student from Sai Ram Institute of Technology , Sai Leo Nagar , West Tambaram, Chennai-44. had completed "Inplant Training" at Electric Loco Shed, Royapuram from 10-06-2019 to 14-06-2019. During the course of training, his performance was Good.

Date:14.06.2019

(BACHU RAMESH)
Divisional Electrical Engineer,
Incharge, Rolling Stock,
Royapuram

ELECTRIC LOCO SHED
ROYAPURAM

CREATING WEALTH FOR WELLBEING

NLC India Limited

"NAVRATNA" - Govt. of India Enterprise

ISO 9001:2015
REGS NO.RQ91/3667

LEARNING & DEVELOPMENT CENTRE

CERTIFICATE FOR INTERNSHIP TRAINING

This is to certify that Mr./Ms. PURUSHOTH E, BE / MECH

SRI SAI RAM INSTITUTE OF TECHNOLOGY, CHENNAI *has undergone Internship Training in* **NLC India Limited,** *Neyveli between* 25.11.2019 *and* 07.12.2019

NLCIL wishes him / her Success in all future endeavours.

Page 1 / 1

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INTERNSHALA

Scholiverse Educare Pvt. Ltd.,
B-610, Unitech Business Zone
Nirvana Country, South City 2,
Gurgaon, India - 122018

16/12/2019

Dear Sabari Sastha ,

Welcome to Internshala Student Partner (ISP) 16!

We hope that you are excited to embark on a 70-day transformational journey with us. At Internshala, we consider the ISP team to be our biggest strength when it comes to educating college students across the world about the power of internships and online trainings. Thus, we take pride in hiring ONLY the best and the brightest! We are sure that you would play a vital role in helping us realize our vision of creating a world full of opportunities for the students.

Your appointment as an ISP will be governed by the terms and conditions presented in **Annexure A**

Congratulations!

Warm regards,

Samay Bhatnagar

Head - ISP Program

Internshala ~ 'connecting students with internships from 80,000+ brands'

Page 1 / 3

भाविनि
BHAVINI

भारतीय नाभिकीय विद्युत निगम लिमिटेड
(भारत सरकार का उद्यम)
BHARATIYA NABHIKIYA VIDYUT NIGAM LIMITED
(A Government of India Enterprise)

11.12.2019

No: BHAVINI/HR/2019

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Shri. A. Thangaraj (Registration No.18ME009), B.E (Mech.), II Year, IV Semester** Student of **Sri Sairam Institute of Technology, West Tambaram, Chennai - 600044.,** has undergone Inplant training on **"General Overview of Prototype Fast Breeder Reactor (PFBR)" at Bharatiya Nabhikiya Vidyut Nigam Limited (BHAVINI),** Kalpakkam, Tamil Nadu **from 28.11.2019 to 10.12.2019.**

(K. Malathi)
Sr. Manager (HR)

के. मालती K. Malathi
वरिष्ठ प्रबंधक (मा.) Senior Manager (HR)
भाविनि, कल्पक्कम / BHAVINI, Kalpakkam

कार्यालय: पीएफबीआर प्रोजीकल्प भवन, कल्पाक्कम, कांचीपुरम जिला - 603 102, तमिलनाडु, भारत
Office : PFBR Project Station Building, Kalpakkam, Kanchepuram Dist. - 603 102, Tamilnadu, India.
टेलीफोन Telephone : 044 - फैक्स Fax: 044 - ईमेल Email:
पंजीकृत कार्यालय: पद्मनि रोहन केन्द्र, डॉ. अम्बेडकर मार्ग, पल्लावरम कन्टोनमेंट, चेन्नई - 600 043.
Regd. Office : DAE Nodal Centre, Dr. Ambedkar Road, Pallavaram Cantonment, Chennai - 600 043.
टेलीफोन Telephone No: 044 2264 3374, फैक्स Fax: 044 2264 3933

TVS Training & Services

29733/TVS-TS/2019-20

Certificate

Mr. Dinesh M

of Sri Sairam Institute of Technology

(Department of Mechanical Engineering)

has participated in Industrial Training on Industry 4.0

conducted by TVS Training and Services Limited

from 02nd-Dec-19 to 06th-Dec-19

TVS TRAINING AND SERVICES LTD. CHENNAI 600 058

Authorized Signatory

TVS TRAINING AND SERVICES LTD.

No. 61, Reddy Street, Vanagaram Main Road, Athipattu, Ambattur Industrial Estate, Chennai - 600 058 Tel : +91-44-2613 6600 www.tvsts.com

सवारी डिब्बा कारखाना, चेन्नै – 600038

रेल मंत्रालय की एक उत्पादन इकाई

INTEGRAL COACH FACTORY, CHENNAI - 600 038

A Production Unit Under Ministry of Railways

(AN ISO: 9001, ISO:14001 AND BS : 18001 CERTIFIED PRODUCTION UNIT)

Sl.No. : M/877/2018

Date : 17.12.2018

Certificate

This is to certify that Mr. S. AZHUR

Regn.No 412017[illegible] *Course* B.E

Branch MECHANICAL *II Year, Student of*

SRI SAIRAM INSTITUTE OF TECHNOLOGY,

has undergone Inplant Training from 10.12.2018 *to* 17.12.2018

at Integral Coach Factory.

Principal
Technical Training Centre
ICF, Chennai-38

BOLT

Inventrom/HRD/2020/FREEIIT9444
17/04/2020

INTERNSHIP COMPLETION CERTIFICATE

To Whom It May Concern

This is to certify that SRI PRIYA K, a student of Sri Sairam Institute Of Technology has successfully completed a Student Partner Internship at Inventrom Private Limited for the duration of 2 months from 17/02/2020 to 16/04/2020. During this internship, the tasks undertaken by SRI PRIYA were related to popularising the concepts of Internet of Things(IoT) and Machine Learning(ML), brand awareness and business development of the Bolt IoT and ML online video training.

We take this opportunity to thank SRI PRIYA for his/her contribution during this internship and wish them all the best for their future.

Note for hiring companies: To verify the authenticity of this certificate, please email to hr@boltiot.com with the code - FREEIIT9444

Yours sincerely,
For Inventrom Private Limited (Bolt IoT)

Joyner Fernandes
Human Resources Manager
Inventrom Private Limited (Bolt IoT)

#79, First Floor, 5th main road, 11th cross road, Bhimanisangala, Stage 1, Indiranagar, Bengaluru - 560038
Ph : 8881287188 E-mail: contactus@boltiot.com, Website : www.boltiot.com

SkillSanta

OFFER LETTER

10th August '20

Dear Subhashini Thiyagarajan,

Based on the recent discussions with you, SkillSanta (officially registered as INTERVIEWMILES PRIVATE LIMITED) is pleased to offer you the position of **Instructor.** At SkillSanta, we believe that our team is our biggest strength and we take pride in hiring "ONLY" the best and the brightest. We are confident that you would play a significant role in the overall success of the venture and wish you the most enjoyable, learning packed and truly meaningful work experience with SkillSanta.

Your appointment will be governed by the terms and conditions presented in **Annexure A and B.**

We look forward to you joining us. Please do not hesitate to call us for any information you may need. Also, please sign the duplicate of this offer as your acceptance and forward the same to us.

Congratulations!

Gaurav Gupta

CHA. LIC. No.159/2011

PROFESSIONAL FREIGHT LOGISTICS

AIR & SEA CLEARING FORWARDING, FREIGHT AGENT & TRANSPORTATION

Old No.43, New No.94, First Floor, Sembudoss Street, Parrys, Chennai - 600 001.
Phone : 044 - 4206 1421, 4206 1422 Fax : 4216 1723
E-mail : info@pflogistic.com

DATE: 10-Jun-2019

TO WHOMSEVER IT MAY CONCERN

This is to certify that **Miss. Suthanthira .S** from Sri Sairam Institute of Technology , B.Tech (IT) Second year has worked as an **Intern** at **PROFESSIONAL FREIGHT LOGISTICS,** Chennai-600001 from 03'rd June 2019 to 07'th June 2019.

During the tenure as an Intern, She has evinced keen i to learn.

Her conduct and character found to be good.

We wish him all success in her future endeavors.

For PROFESSIONAL FREIGHT LOGISTICS,

Authorized Signatory.

RETECH SOLUTIONS PVT.LTD.

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **S SUTHANTHIRA** student of **SRI SAIRAM INSTITUTE OF TECHNOLOGY, BTECH/IT** has undergone the internship in our concern entitled **IOT** during the period of **05th December 2018 to 07th December 2018** in relevant departments related to their academic studies.

During the above period, the performance was good & we wish great success in all your future endeavours.

Authorised Signature

No. 31, 1st Floor, Alagesan Street,
West Tambaram, Chennai - 600 045.
Office : 044-4207 7204
Cell : +91 96888 81150

No. 13, 1st Floor, Ramanuja Koodam Street,
Poonamallee, Chennai - 600 056.
Office : 044 - 4855 5575

RETECH SOLUTIONS PVT.LTD.

TO WHOMSOEVER IT MAY CONCERN

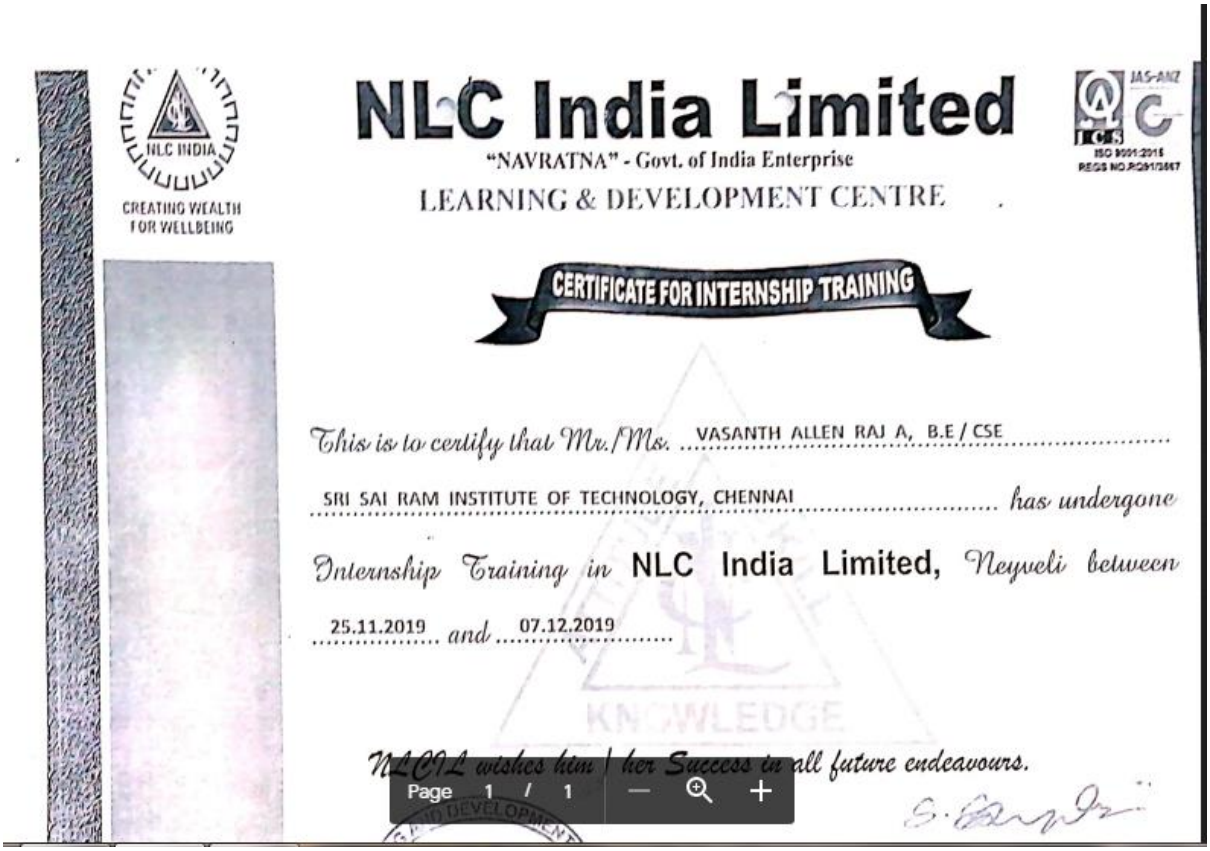
This is to certify that **S SUTHANTHIRA** student of **SRI SAIRAM INSTITUTE OF TECHNOLOGY, BTECH/IT** has undergone the internship in our concern entitled **IOT** during the period of **05th December 2018 to 07th December 2018** in relevant departments related to their academic studies.

During the above period, the performance was good & we wish great success in all your future endeavours.

Authorised Signature

No. 31, 1st Floor, Alagesan Street,
West Tambaram, Chennai - 600 045.
Office : 044-4207 7204
Cell : +91 96888 81150

No. 13, 1st Floor, Ramanuja Koodam Street,
Poonamallee, Chennai - 600 056.
Office : 044 - 4855 5575



NLC INDIA
CREATING WEALTH FOR WELLBEING

NLC India Limited

"NAVRATNA" - Govt. of India Enterprise

LEARNING & DEVELOPMENT CENTRE

JAS-ANZ
ISO 9001:2015
REGS NO.RQ91/3667

CERTIFICATE FOR INTERNSHIP TRAINING

This is to certify that Mr./Ms. VASANTH ALLEN RAJ A, B.E / CSE

SRI SAI RAM INSTITUTE OF TECHNOLOGY, CHENNAI has undergone Internship Training in **NLC India Limited,** Neyveli between 25.11.2019 and 07.12.2019

NLCIL wishes him / her Success in all future endeavours.

Page 1 / 1

Date: 02-Dec-2019
Ref No: ZCPL-4776/12/2019

To

Mr. SAIRAM T ,
PLOT NO: 200, HARSHITHA HOMES, PRAKASH NAGAR,
8TH CROOS STREET, THIRUNINDRAVUR,
CHENNAI - 602 024.

Dear Mr. SAIRAM T ,

We are pleased to offer you employment for the position of **MEMBER TECHNICAL STAFF** with **ZOHO CORPORATION PRIVATE LIMITED**.

INTERNSHIP AND STIPEND

You are expected to do the final semester project of your curriculum in our organisation. We expect you to work on the project on a full time basis for a period of 5-6 months. During this period you will be paid a monthly stipend of **Rs.15000/- (RUPEES FIFTEEN THOUSAND ONLY)** . The following offer is valid subject to successful completion of your project.
(Note: The above may not apply to you if your college does not permit internships).

DATE OF JOINING

Your date of appointment is effective from your date of joining after successful completion of your curriculum.

REMUNERATION

Your annual cost to company will be **Rs.396000/- (RUPEES THREE LAKH NINETY SIX THOUSAND ONLY) plus variable benefits.** The breakup of your gross salary and benefits details are set out in Annexure to this letter. Salary will be paid by the last day of each month.

PROBATION

Upon joining you will be on probation, at a minimum, until completion of the performance review cycle that immediately follows completion of six months from your date of joining, provided that your performance is determined to be satisfactory. If your performance is not satisfactory, your probation may be extended until your performance is determined to be satisfactory. Upon completion of the probation period you will be confirmed on the rolls of the company.

SALARY REVISION

Revision to your compensation will be after one year from the date of joining, subject to satisfactory completion of the probation by you. Zoho operates a Pay-for-performance Policy and any salary revision will take your performance into account.

Prepared by

Shankar
Sairam-7-237

Verified by

Vijay

s@itech Informatics

Saitech Informatics

43, Arthi Flats, Haridoss Main Road, Kolathur, Chennai - 600 099.
https://saitechinfo.net | https://saitechinfo.com

Chennai-99

08 June 2019

CERTIFICATE

This is to certify that **SAI KARTHIK,** an engineering student from **Sri Sai Ram Institute of Technology** has been working as an internship candidate at Saitech Informatics from 1st June 2019 to 8th June 2019. He has been working on a small assignment on **"DEVELOPMENT OF JAVA SCRIPT BASED BOT PROGRAM BY INTEGRATING TELEGRAM AND GOOGLE SPREADSHEET TO SUPPORT ONLINE TIME STAMPING OF CHECK IN AND CHECK OUT OF TRAINEES".** He completed the scripting and deployment successfully. We wish him a grand success in his future career.

Best wishes Sai Karthik!

For Saitech Informatics,

E. Ramanathan
8/6/19

(E. RAMANATHAN)

CHIEF CONSULTANT

u·n·i·q technologies

services | technology | development

ISO 9001:2015 CERTIFIED

CERTIFICATE OF MERIT

This is to certify that RAVI MOUNIKA *(Reg No.* 412418104061 *) has successfully completed the internship in* cloud computing *Application Development in our concern from* 29-11-19 *to* 11-12-19 .

During the internship period, the performance of the intern was found to be GOOD .

Program Coordinator

HR Head

RETECH
SOLUTIONS PVT. LTD.
An ISO 9001:2015 certified company

INT:RE1950650

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **RAVI MOUNIKA** student of **SRI SAIRAM INSTITUTE OF TECHNOLOGY, BE/CSE** has undergone the internship in our concern entitled **MACHINE LEARNING** from **24th December 2019 to 26th December 2019** in relevant departments related to their academic studies.

During the above period, the performance was good & we wish great success in all your future endeavours.

RETECH SOLUTIONS PVT. LTD. CHENNAI

Authorised Signature

No.31, 1st Floor, Alagesan Street, Tambaram West, Chennai-45.
Office : 044-42077204 | +91-8122066653 www.retechsolutions.in

An ISO 9001 : 2008 Certified Company
ONEYES TECHNOLOGIES
INTERNSHIP
CERTIFICATE OF COMPLETION
This is to certify that Mr/Mrs/Miss JAI KARTHIKA. S
studying CSE department
in SRI SAIRAM INSTITUTE OF TECHNOLOGY
has undergone Internship on INTERNET OF
THINGS [IoT] from 03-DEC-2019 to 07-DEC-2019
for ONEYES
Trainer
Co-ordinator
ONEYES TECHNOLOGIES
CHENNAI
INTERNSHIP

FOREVIEW TECHNOLOGIES PVT. LTD.

No.13, II nd Floor, Rajagopal Mudhaliyar Street,
Opp. National Theatre, West Tambaram, Chennai - 600 045

Internship Certificate

This is to Certify that ~~Mr/~~Ms. HARITHA .V.K.

Representing SRI SAIRAM INSTITUTE OF TECHNOLOGY

has Completed Internship in

" C , C++ "

DATE: 22.09.19 to 26.09.19

Director

foreview
TECHNOLOGIES PVT LTD

FOREVIEW TECHNOLOGIES PVT. LTD.

No.13, II nd Floor, Rajagopal Mudhaliyar Street,
Opp. National Theatre, West Tambaram, Chennai - 600 045

Internship Certificate

This is to Certify that ~~Mr/~~Ms. RAJESHWARI · A

Representing SRI SAIRAM INSTITUTE OF TECHNOLOGY

has Completed Internship in

" C , C++ "

DATE: 02·12·19 to 06·12·19

Director

foreview
TECHNOLOGIES PVT LTD

3.5.3 MoUs signed with institutions of national, international importance, other universities, industries, corporate houses etc. during the year			
Organization With Which MOU Is Signed	**YEAR OF Signing MOU**	**Purpose of Activities**	**Number of students/teachers participated under MoUs**
CISCO	2019-20	Industry linked activities (Internship , Placements & Consultancy)	280
EPR LABS	2019-20	Industry linked activities	300
SANDS	2019-20	Industry linked activities	120
SALESFORCE TECHNOLOGIES	2019-20	Industry linked activities	280
NASSCOM	2019-20	Industry linked activities	340
REDHAT	2019-20	Industry linked activities	325
Peecee Castle software service Pvt Ltd	2019-20	Industry linked activities	285
ICT Academy	2019-20	Industry linked activities	180
ORACLE Academy	2019-20	Industry linked activities	180
Technocrat Automation Solution PVT LTD	2019-20	Industry linked activities	120
BSNL,Rajiv Gandhi Memorial Telecom Training centre	2019-20	Industry linked activities	320
P2B ENGINEERS & TECHNOLOGIES	2019-20	Industry linked activities	240
THERMAL ENERGY SYSTEMS	2019-20	Industry linked activities	240
PROFESSIONAL ELEVATORS PVT LTD	2019-20	Industry linked activities	120
RASCI INSTRUMENTS	2019-20	Industry linked activities	120
Stigmata Techno Solutions LLP,	2019-20	Industry linked activities	320
CADEM TECHNOLOGIES	2019-20	Industry linked activities	120
REVO TECHNOLOGIES	2019-20	Industry linked activities	120
AMS CONSTRUCTIONS	2019-20	Industry linked activities	120
COURSE ERA	2019-20	Online courses	More than 1500
EDX	2019-20	Online courses	More than 1500

தமிழ்நாடு TAMIL NADU 21-9-22 78AB 181197

G. SIVAKUMAR

IMARTICUS LEARNING PVT. LTD.

MEMORANDUM OF UNDERSTANDING

This memorandum of understanding (MoU) is executed on this [Date]

By and between

SRI SAI RAM INSTITUTE OF TECHNOLOGY here in after for the sake of convenience and brevity referred to as "Data Science Club Partner" (which term and expression shall, wherever the context so admits, be deemed to mean and include its successors-in-office and interest and permitted assigns) of the FIRST PART

And

IMARTICUS LEARNING PVT LTD., a company within the meaning of the Companies Act, 1956 having its corporate office at 5TH Floor, B-Wing, Kaledonia, HDIL Building, Sahar Road, Andheri East, Mumbai- 400058 hereinafter for the sake of convenience and brevity referred to as **"ILPL"** (which term and expression shall, wherever the context so admits be deemed to mean and include its successors in-office and interest and permitted assigns) of the SECOND PART

The Data Science club partner and **ILPL** are hereinafter jointly referred to as "Parties" and individually as a "Party".

WHEREAS

A. **ILPL** is engaged in the business of education, workshops hence providing vocational training programs in various streams.

B. The Data Science club partner is in the business as provided under Annexure 1;

C. **ILPL** intends to enter into an agreement with the Data Science Club Partner to set up the Data Science club in the institution of Data Science Club Partner.

D. The Data Science Club Partner has represented that it has necessary skill, expertise and requisite knowledge to run the club in his/her institutions.

The Data Science Club Partner and **ILPL** are hereinafter jointly referred to as "Parties" and individually as a "Party".

THIS AGREEMENT WITNESSETH AND THE PARTIES HERE TO AGREE AS FOLLOWS

1. OBJECTIVE

1.1 The objective of entering into this Agreement by the Parties are

1.1.1 To establish a closer co-operation and relationship between Data Science club partner and ILPL keeping in mind the primary objective of establishing a Data Science Club at "Data Science Club partner Institute"

1.1.2 To work towards conducting the activities, as mentioned in Clause 2, of Data Science club within the institution.

2. RESPONSIBILITIES OF THE PARTIES

2.1 ILPL agrees

2.1.1 To conduct regular Industry guest lectures/ webinars in the Data science domain and the students of Data Science Club Member gets access to all webinars.

2.1.2 To conduct two National level hackathons in Data science in which the students of Data science club member can participate at no cost.

2.1.3 To organize regular Faculty Development programmes on the Data science domain in which the faculties/ lecturers/professors of Data Science club member can participate at no cost.

2.1.4 To open up job opportunities for students of Data science club member who performs well at national level events conducted by Data science Club.

2.2 Data Science Club partner agrees

2.2.1 To encourage/ ensure maximum participation of students in all the activities/ events of Data Science Club.

2.2.2 The Data Science club partner understands and acknowledges that **ILPL** shall solely own the intellectual property and the rights associated with the **ILPL** programs, marketing literature, collaterals etc. and any other content and all related material that **ILPL** provides to aid Data Science Club partner for the conduction of the Services.

3. COMMERCIALS

It is clarified that other than the above obligations there are no monetary obligations on both the parties whatsoever.

4. TERM AND TERMINATION

4.1. This Agreements hall continue to be in full force and effect for a period of 3 years from the date of signing

4.2. ILFL and Data Science Club Partner will perform its responsibilities during this tenure

4.3. **ILFL** may terminate this Agreement in the event the Data Science club Partner fails to perform its obligations mentioned herein in this Agreement and any other reasonable instructions issued by **ILFL** from time to time.

4.4. Either Party shall have the right to terminate this Agreement vide a prior written notice of thirty(30 days to the other Party.

IN WITNESS WHEREOF THE PARTIES HERETO HAVE SET THEIR RESPECTIVE HANDS ON THE DATE AND YEAR FIRST HEREINBEFORE MENTIONED, IN DUPLICATE, EACH TO BE TREATED AS AN ORIGINAL.

Signed and delivered by:

SRI SAI RAM INSTITUTE OF TECHNOLOGY.
Name/Designation:

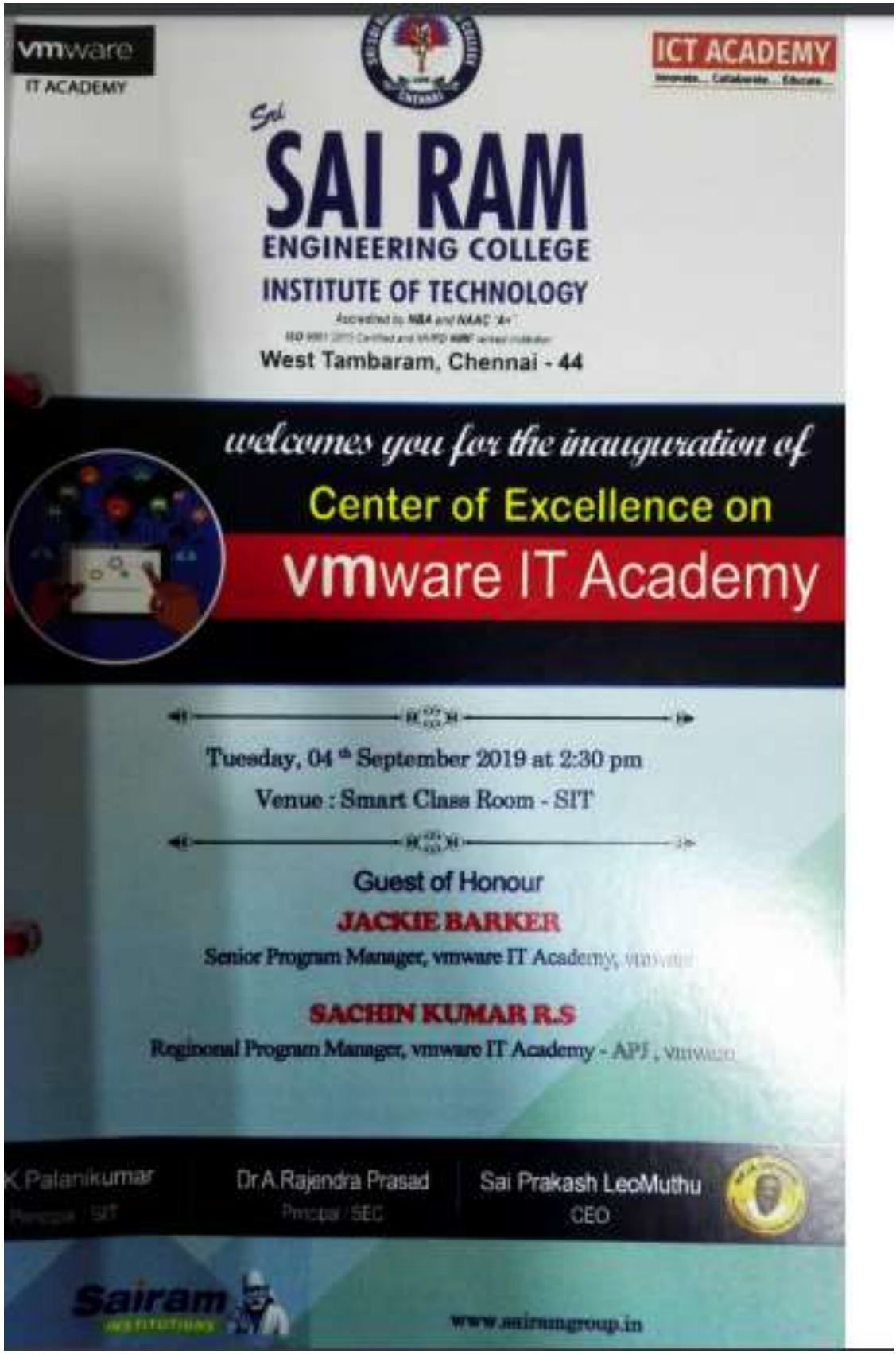
Witness:

Dr. B. SREEDEVI
HEAD OF THE DEPARTMENT
COMPUTER SCIENCE AND ENGINEERING
SRI SAIRAM INSTITUTE OF TECHNOLOGY
SAI LEO NAGAR, CHENNAI - 600 044.

Signed and delivered by

IMARTICUS LEARNING PVT LTD.
Name/Designation:
Sonya Hooja
Director
Mumbai

Witness:
Ahamed Khalid
Vice President & Business Head
Chennai


vmware
IT ACADEMY
ICT ACADEMY
Sai
SAI RAM
ENGINEERING COLLEGE
INSTITUTE OF TECHNOLOGY
West Tambaram, Chennai - 44
welcomes you for the inauguration of
Center of Excellence on
vmware IT Academy
Tuesday, 04 th September 2019 at 2:30 pm
Venue : Smart Class Room - SIT
Guest of Honour
JACKIE BARKER
Senior Program Manager, vmware IT Academy, vmware
SACHIN KUMAR R.S
Regional Program Manager, vmware IT Academy - APJ , vmware
K.Palanikumar
Principal / SIT
Dr.A.Rajendra Prasad
Principal / SEC
Sai Prakash LeoMuthu
CEO
Sairam
INSTITUTIONS
www.sairamgroup.in

ICT ACADEMY
VMware is proud to award
SRI SAIRAM INSTITUTE OF TECHNOLOGY
CHENNAI
the status of
VMware IT Academy
in recognition of successful completion of all
program participation requirements
vmware IT ACADEMY
Certificate No: VMW-19-2005
Valid till: 30 Aug 2020
PAT GELSINGER, CHIEF EXECUTIVE OFFICER

Between

National Association of Software and Service Companies (NASSCOM) having its head office at Plot No – 7-10, Sector – 126, Noida, Uttar Pradesh – 201303, India hereinafter called "NASSCOM/First Party", represented by Vice President NASSCOM/Executive Director, IT-ITeS Sector Skills Council NASSCOM which expression shall, where the context so admits, be deemed to include its successors, executors and administrators of the ONE PART

And

Sairam Institutions, having its head office at 'SAI BHAVAN'No.31, Madley Road, T.Nagar, Chennai – 600 017, India (hereinafter referred to as Sairam Institutions/Second Party), represented by CEO, Sri Sai Ram Engineering College, which expression shall, where the context so admits be deemed to include its successor in office, legal representatives and permitted assigns of the SECOND PART

...

Whereas IT-ITeS Sector Skills Council NASSCOM (SSC NASSCOM / NASSCOM) an integral part of NASSCOM is the skill standard setting body of the IT-ITeS Industry and is also the education & skill development initiative of NASSCOM. SSC NASSCOM works with its industry members and select academic and skill development institutions to help improve the quality and quantity of the employable workforce available to this industry.

The Project here is the "Foundation Skills in Internet of Things" (FSIOT) Program, which is a part of The "Engineering Proficiency Program" (EPP) for scaling quality capacity.

Sairam Institutions and NASSCOM / SSC NASSCOM will herein be referred to independently as 'Party', and collectively referred to as 'Parties'.

THE MoU WITNESSED AND THE PARTIES HERETO AGREE AS FOLLOWS:

1. **Objective of the MoU**

To introduce the Foundation Skills in Internet of Things (FSIOT) courseware developed by NASSCOM / SSC NASSCOM for students as an Elective/Add On in **Sairam Institutions**

2. **Period of MoU**

This MoU shall come into force on June 21, 2018 and shall be valid for 3 years, but is open to mutual revision annually.

PARTNER ACCEPTANCE DOCUMENT
INDIA

redhat

Parties	
Partner Information	**Red Hat India Private Limited**
Company name: **Sri Sairam Institute of Technology**	Contact Name: Abhijeet Roy
Address: Sai Leo Nagar, West Tambaram, CHENNAI, Tamil Nadu, IN, 600044	Email: aroy@redhat.com
Contact name: Dr.K.Palanikumar	Tel no: +91-22-61147588
Email: principal@sairamit.edu.in	Fax: +91-22-61147580
Telephone: 9677082339	

Territory
India

This Partner Acceptance Document, upon execution, authorizes you to participate in one or more of the Red Hat Partner Programs marked below in the Territory indicated above and sets forth the terms of your participation. If no Territory is identified above, the Territory will default to the country of your address above. The "Agreement" is comprised of this Partner Acceptance Document(s), the Partner Terms and Conditions, each applicable Program Appendix and transaction document(s) (which may be referred to as "Order Forms") entered into pursuant to these terms (collectively, the "**Agreement**"). Additional Program Appendices may be added by executing additional Partner Acceptance Documents.

Applicable Program Appendices	Program(s)	Location of Program Terms
(mark all that apply)		
X	Red Hat Academy Program	Attached

Applicable Terms and Conditions *(choose only one)*	Partner Terms and Conditions
X	The Partner Terms and Conditions set forth in the attached Appendix 1 and, if not attached, then as set forth at www.redhat.com/licenses/partners/.

Additional Terms

Please sign below and fax this Partner Acceptance Document to +91-22-61147588 or send a pdf file by e-mail to aroy@redhat.com. Also, please courier the original signed document to Abhijeet Roy. Each Party has executed this Partner Acceptance Document by its duly authorized representative and by its signature agrees to be bound by the terms of the Agreement.

Sri Sairam Institute of Technology	**Red Hat India Private Limited**
Signature	Signature
Printed Name: Dr.K.PALANI KUMAR	Printed Name
Title: PRINCIPAL	Title
SRI SAIRAM INSTITUTE OF TECHNOLOGY	
SAI LEO NAGAR, CHENNAI-600 044	
Date	Date: 3/5/18

redhat
BUSINESS APPROVED
Initials/Date: 2/2/19

தமிழ்நாடு TAMIL NADU

Sri Sairam Institute of Technology Chennai 44

45AB 086026

A. POONGAVANAM (S.V.)
15191 / B / 34-1/ dt. 9-4-88
TAMBARAM, CHENNAI - 45.
Phone : 22263213

MEMORANDUM OF UNDERSTANDING

THIS MEMORANDUM OF UNDERSTANDING (MOU) made and executed on 19th July 2017.

BETWEEN:

SRI SAIRAM INSTITUTE OF TECHNOLOGY, SAI LEO NAGAR, DHARKHAST,WEST TAMBARAM, CHENNAI -600 044,TAMIL NADU, represented by Dr.K.Palanikumar, Principal on behalf of Department of Electronics and Communication Engineering which expression shall include its Successor, Legal Representatives and Assigns, of the FIRST PART;

AND

Stigmata Techno Solutions LLP, (Address: #31, Vembuli amman kovil street, Pazhavanthangal,Chennai-600114), represented by Mr. Jerome Melkisidak, which term shall mean and include, unless repugnant to the context and meaning thereof, its Successor, Legal Representatives and Assigns, of the OTHER PART:

For Stigmata Techno Solutions LLP

Mr. Jerome Melkisidak,
CEO, Stigmata Techno Solutions LLP

For Sri Sai Ram Institute of Technology

Dr.K.Palanikumar
Sri Sai Ram Institute of Technology
PRINCIPAL
SRI SAIRAM INSTITUTE OF TECHNOLOGY
SAI LEO NAGAR, DHARKHAST, 044.

Scanned by CamScanner

MEMORANDUM OF UNDERSTANDING

Between

SRI SAI RAM INSTITUTE OF TECHNOLOGY

(An ISO 9001:2008 Certified Institute)

Chennai

Tamilnadu

INDIA

And

TESLA MINDS

No.7/3 , Second Floor,

Madely Road,

T.Nagar,

Chennai-600 017.

India.

Memorandum of Understanding (MoU)

The MoU is made and entered in to on this day of 7th March,2018 (Wednesday)

Between

TESLA MINDS No.7/3, Second Floor, Madely Road,T.Nagar,Chennai-600 017,(Hereinafter referred to as "**TESLA MINDS**") which expression, unless repugnant to the context or meaning hereof, shall include its successors, administrators or permitted assignees and represented by Founder & Head **Mr. T. Jayanandan**, M/S TESLA MINDS,Chennai-600 017 of the first part

And

SRI SAI RAM INSTITUTE OF TECHNOLOGY, located in Chennai, Tamil Nadu, India (Hereinafter referred to as "**SAIRAMIT**")which expression shall, unless repugnant to the context, include its successors and assigns; and at present represented by its Principal **Dr.K.PALANIKUMAR** of the second part.

SRI SAI RAM INSTITUTE OF TECHNOLOGY, located in Chennai, Tamil Nadu, India and "**TESLA MINDS**" TESLA MINDS No.7/3 , Second Floor, Madely Road,T.Nagar,Chennai-600 017, are hereinafter individually referred to as '**Party**' and collectively as '**Parties**'

TAMIL NADU 4AAB 069352

A. VALLINAYAGAN (8.1
06 / CH (5) / 2008 Dt. 19-11-201
West Tambaram, Chennai - 45.
Cell: 9840386492

This agreement is made at Tambaram on the 23 day of APRIL, 2018, between

Regional Telecom Training Centre, Chennai at Periyar Salai, SIDCO Industrial Estate, Maraimalai Nagar-603209, under the control of Chennai Telephones District, Bharat Sanchar Nigam Limited (A Govt. of India Enterprise and a Company incorporated under the Companies Act, 1956, having its Registered Office at Bharat Sanchar Bhawan, Harish Chandra Mathur Lane, Janpath, New Delhi- 110001), hereinafter referred to as **"RTTC Chennai"** which expression shall, unless repugnant to the context or meaning hereof, shall include its executors, successors, administrators and permitted assigns and represented by its Principal, of the First part.

AND

Sri Sai Ram Institute of Technology, West Tambaram, Chennai -44. hereinafter referred as **"SSIT"**, which expression shall, unless repugnant to the context, include its executors, successors, administrators and permitted assigns and at present represented by its Principal of the Second part.

RTTC Chennai and Sri Sai Ram Institute of Technology are hereinafter individually referred to as 'Party' and collectively as 'Parties'.

Signature
(for RTTC)
प्रधान अध्यापक
Principal
आर.टी.टी.सी चेन्नै/RTTC
बी.एस.एन.एल.मरैमलैनगर-603 209
BSNL, Maraimalai Nagar-603 209.

Signature
(for SSIT)

between

National Association of Software and Service Companies (NASSCOM) having its head office at Plot No – 7-10, Sector – 126, Noida, Uttar Pradesh - 201303, India hereinafter called 'NASSCOM/First Party', represented by Vice President NASSCOM/Executive Director, IT-ITeS Sector Skills Council NASSCOM which expression shall, where the context so admits, be deemed to include its successors, executors and administrators of the ONE PART

And

Sairam Institutions, having its head office at 'SAI BHAVAN'No.31, Madley Road, T.Nagar, Chennai – 600 017, India (hereinafter referred to as Sairam Institutions/Second Party), represented by CEO, Sri Sai Ram Engineering College, which expression shall, where the context so admits be deemed to include its successor in office, legal representatives and permitted assigns of the SECOND PART

...

Whereas IT-ITeS Sector Skills Council NASSCOM (SSC NASSCOM / NASSCOM) an integral part of NASSCOM is the skill standard setting body of the IT-ITeS Industry and is also the education & skill development initiative of NASSCOM; SSC NASSCOM works with its industry members and select academic and skill development institutions to help improve the quality and quantity of the employable workforce available to this industry;

The Project here is the "Foundation Skills in Internet of Things" (FSIOT) Program, which is a part of The "Engineering Proficiency Program" (EPP) for scaling quality capacity.

Sairam Institutions and NASSCOM / SSC NASSCOM will herein be referred to independently as 'Party', and collectively referred to as 'Parties'.

THE MoU WITNESSED AND THE PARTIES HERETO AGREE AS FOLLOWS:

1. **Objective of the MoU**

To introduce the Foundation Skills in Internet of Things (FSIOT) courseware developed by NASSCOM / SSC NASSCOM for students as an Elective/Add On in **Sairam Institutions**

2. **Period of MoU**

This MoU shall come into force on June 21, 2018 and shall be valid for 3 years, but is open to mutual revision annually.

This Memorandum of Understanding entered into at Chennai on this 5th Day of August month in the year 2019

BETWEEN

M/s **ICT Academy**, a non-profit Society incorporated under the Tamil Nadu Societies Registration Act, 1975 and having its Office at ELCOT Complex, 2-7 Developed Plots, Industrial Estate, Perungudi, Chennai 600 096 (hereinafter called as "**ICT Academy**" which expression shall, wherever the context so permits mean and include successors and assigns.)

AND

Sri Sairam Institute of Technology, Chennai being the beneficiary of this MoU having its principal place of business at Sairam Campus, Sai Leo Nagar,West Tambaram,Chennai - 600044 duly represented (hereinafter referred to as, Sri Sairam Institute of Technology, Chennai which expression shall, wherever the context so permits mean and include successors and assigns.)

WHERE AS

ICT Academy is interalia established as a society with Consortium of Government of India, Government of Tamil Nadu and Industry. It is the pioneering venture under the Public-Private-Partnership (PPP) model that endeavours to train the higher education teachers of Tamil Nadu in the areas of Information and Communication Technology (ICT) thereby making their students to be industry-ready.

The core objective of ICT Academy is to train the faculty members of Engineering, Arts and Science Colleges, Polytechnics and ITI's across Tamil Nadu. ICT Academy will develop and maintain a world class ICT industry related curriculum and content in close association with Academia and industry, which would be made available to faculty members throughout the state through an online portal. Industry experts would train the learned faculty to keep them abreast of the industry demands and thereby the students.

The Academy shall have a core team of faculty members to conduct the training. This core team would be supported by faculty members deputed from Industry as well drawn from the educational Institutions.
The ICT Academy is led by a Governing body chaired by Thiru Lakshmi Narayanan Emeritus Vice Chairman, Cognizant Technologies. Other members are Thiru. M Vijayakumar IAS, Managing Director, ELCOT, Thiru. Santosh K. Misra IAS, Commissioner, Tamil Nadu E-Governance Agency, Director, ELCOT, Thiru. Santhosh Babu IAS, Principal Secretary - IT Department, Government of Tamil Nadu, Thiru V.Balakrishnan, Chairman of Microgroam, Thiru Krish Ganesan - Vice President, Human Resources of TCS and Thiru. M. Sivakumar- CEO, ICT Academy.

ICT Academy is agreeable to enter into this MoU Sri Sairam Institute of Technology, Chennai as per the terms and conditions set out hereunder.

भारतीय गैर न्यायिक

बीस रुपये

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Rs.20

TWENTY RUPEES

INDIA

INDIA NON JUDICIAL

தமிழ்நாடு तमिलनाडु TAMIL NADU

60AB 295826

EPR LABS

CHENNAI

12626
26.9.18

K. VIJAYAPATHY (S.V.)
[illegible], MUTHURANGAM ROAD,
TAMBARAM, CHENNAI-45.
[illegible] / C / [illegible]
[illegible]

Memorandum of Understanding

This Memorandum of Understanding (MoU) is entered into and executed on this day of 26th September , 2018

Between

SRI SAI RAM INSTITUTE OF TECHNOLOGY, WEST TAMBARAM, CHENNAI, an Educational Institution with various courses, programs and research, with its registered office at – 'SAI BHAVAN' No.31, Madley Road, T. Nagar, Chennai-600017 (herein after referred to as the "SSIT ", Which expression shall, unless it be repugnant to the context or meaning thereof, be deemed to include its administrators, executors, successors and permitted assignees) and represented by its PRINCIPAL, SRI SAI RAM INSTITUTE OF TECHNOLOGY.

and

Electronics Platform Research Labs, (EPRLABs) whose address is 88/234, Rangarajapuram Main Road, Kodambakkam, Chennai 24 (herein after referred to as the " EPRLABs ", which expression shall, unless it be repugnant to the context or meaning thereof, be deemed to include its Directors, administrators, executors, successors and permitted assignees) and represented by its Chief Technical Officer, Mr. T. Karthikeyan

Memorandum of Understanding

This **Memorandum of Understanding (MoU)** is entered into and executed on this day of the **20.09.18**

Between

SRI SAIRAM INSTITUTE OF TECHNOLOGY,WEST TAMBARAM,CHENNAI, an Educational Institution with various courses, programs and research, with its registered office At –'SAI BHAVAN' No.31,Madley Road,T.Nagar,Chennai-600017 (herein after referred to as the **"SSIT "**, Which expression shall, unless it be repugnant to the context or meaning thereof, be deemed to include its administrators, executors, successors and permitted assignees) and represented by its **PRINCIPAL, SRI SAIRAM INSTITUTE OF TECHNOLOGY.**

And

Signals & Systems (India) Pvt Ltd., Chennai an Electrical / Electronics Manufacturing Organization with its **Industrial Unit at - 15/D – 19, Third Main Road, SIPCOT IT Park. Siruseri, OMR, Chennai – 603 103** (herein after referred to as the **"SANDS"**, which expression shall, unless it be repugnant to the context or meaning thereof, be deemed to include its Directors, administrators, executors, successors and permitted assignees) and represented by its Senior Manager - R&D Dept. Embedded Solution, (Mr. Karthik Venkatesh)

As required, **Sri Sai Ram Institute of Technology** and **SANDS** shall collectively be referred as **"Parties"** and individually **"Sri Sairam Institute of Technology"** as **" Party - 1"** and SANDS as **"Party – 2 "**.

MOU related activity

PALS academy

PALS

PALS VIRTUAL INDUSTRY VISIT ATTENDANCE CERTIFICATE

DATE: 4th NOVEMBER 2020

To,

The Chairman / Principal

SAIRAM GROUP OF INSTITUTIONS

Dear Sir / Madam

Greetings from PALS!

This is to inform you that below students / faculty from your college attended the **VIRTUAL INDUSTRY VISIT** to **ALKYLAMINES** on **4th NOVEMBER 2020**.

PRABU.D -MECH-ASSISTANT PROFESSOR

KURINJIMALAR L-EEE-ASSISTANT PROFESSOR

SUMATHI K-ECE-ASSOCIATE PROFESSOR

JAYANTHI G-INSTRUMENTATION AND CONTROL ENGINEERING-ASSISTANT PROFESSOR

NITIN BALASUBRAMANIAN-MECH-II YEAR

HARISH K-MECH-II YEAR

SWETHA R-Instrumentation and control engineering-II YEAR

RASHITH AHAMED.S-ICE-II YEAR

LOKESH KUMAR S-Instrumentation and Control Engineering-II YEAR

SAI SANTHOSH L-ICE-II YEAR

S. RAJA PANDIAN-CIVIL-III YEAR

AUGMENTING ENGINEERING EDUCATION

IIT Madras Alumni Association Office,
CCW building,
IIT M Campus,
Chennai – 600 036

PHONE +91 98405 50470
PHONE +91 70100 94702
EMAIL palspgm@gmail.com
WEB SITE www.palspgm.com

GOWRI MANOHARI S -Instrumentation and control engineering -II YEAR

DEEPAK SINGH L V-ICE-II YEAR

KOUSIK NAARAYANAN R-MECH-II YEAR

SRINIDHI S-CIVIL-II YEAR

DURGA NANDHINI S-CIVIL-II YEAR

BALAKRISHNAN R-ECE-IV YEAR

HARIPRIYA S-ECE-IV YEAR

NANDHINI G-ECE-III YEAR

V.VENKATESH-MECH-II YEAR

SUMAN BABU-EEE-III YEAR

KUMARESH R K-EEE-III YEAR

KARTHICK VISHNU -MECH-III YEAR

JEYASHRI.R -EEE-III YEAR

KARTHIKEYAN I-MECH-III YEAR

DEEPTHI K-EEE-III YEAR

Best Regards

P V Mohan,
Chairman, PALS

3.5.3 MoUs signed with institutions of national, international importance, other universities, industries, corporate houses etc. during the year			
Organization With Which MOU Is Signed	**YEAR OF Signing MOU**	**Purpose of Activities**	**Number of students/teachers participated under MoUs**
CISCO	2019-20	Industry linked activities (Internship , Placements & Consultancy)	280
EPR LABS	2019-20	Industry linked activities	300
SANDS	2019-20	Industry linked activities	120
SALESFORCE TECHNOLOGIES	2019-20	Industry linked activities	280
NASSCOM	2019-20	Industry linked activities	340
REDHAT	2019-20	Industry linked activities	325
Peecee Castle software service Pvt Ltd	2019-20	Industry linked activities	285
ICT Academy	2019-20	Industry linked activities	180
ORACLE Academy	2019-20	Industry linked activities	180
Technocrat Automation Solution PVT LTD	2019-20	Industry linked activities	120
BSNL,Rajiv Gandhi Memorial Telecom Training centre	2019-20	Industry linked activities	320
P2B ENGINEERS & TECHNOLOGIES	2019-20	Industry linked activities	240
THERMAL ENERGY SYSTEMS	2019-20	Industry linked activities	240
PROFESSIONAL ELEVATORS PVT LTD	2019-20	Industry linked activities	120
RASCI INSTRUMENTS	2019-20	Industry linked activities	120
Stigmata Techno Solutions LLP,	2019-20	Industry linked activities	320
CADEM TECHNOLOGIES	2019-20	Industry linked activities	120
REVO TECHNOLOGIES	2019-20	Industry linked activities	120
AMS CONSTRUCTIONS	2019-20	Industry linked activities	120

COURSE ERA	2019-20	Online courses	More than 1500
EDX	2019-20	Online courses	More than 1500

WHEREAS

A. **ILPL** is engaged in the business of education, workshops hence providing vocational training programs in various streams.

B. The Data Science club partner is in the business as provided under Annexure 1.

C. **ILPL** intends to enter into an agreement with the Data Science Club Partner to set up the Data Science club in the institution of Data Science Club Partner.

D. The Data Science Club Partner has represented that it has necessary skill, expertise and requisite knowledge to run the club in his/her institutions.

The Data Science Club Partner and **ILPL** are hereinafter jointly referred to as "Parties" and individually as a "Party".

THIS AGREEMENT WITNESSETH AND THE PARTIES HERE TO AGREE AS FOLLOWS

1. OBJECTIVE

1.1 The objective of entering into this Agreement by the Parties are:

1.1.1 To establish a closer co-operation and relationship between Data Science club partner and ILPL keeping in mind the primary objective of establishing a Data Science Club at "Data Science Club partner Institute"

1.1.2 To work towards conducting the activities, as mentioned in Clause 2, of Data Science club within the institution.

2. RESPONSIBILITIES OF THE PARTIES

2.1 ILPL agrees

2.1.1 To conduct regular Industry guest lectures/ webinars in the Data science domain and the audience of Data Science Club Member gets access to all webinars.

2.1.2 To conduct two National level hackathons in Data science in which the students of Data science club member can participate at no cost.

2.1.3 To organize regular Faculty Development programmes on the Data science domain in which the faculties/ lecturers/professors of Data Science club member can participate at no cost.

2.1.4 To open up job opportunities for students of Data science club member who performs well at national level events conducted by Data science Club.

2.2 Data Science Club partner agrees

2.2.1 To encourage/ ensure maximum participation of students in all the activities/ events of Data Science Club.

2.2.2 The Data Science club partner understands and acknowledges that **ILPL** shall solely own the intellectual property and the rights associated with the **ILPL** programs, marketing literature, collaterals etc. and any other content and all related material that **ILPL** provides to aid Data Science Club partner for the conduction of the Services.

3. COMMERCIALS

It is clarified that other than the above obligations there are no monetary obligations on both the parties whatsoever.

4. TERM ANDTERMINATION

4.1 This Agreements hall continue to be in full force and effect for a period of 3 years from the date of signing

4.2 ILFL and Data Science Club Partner will perform its respocsibilities during this tenure

4.3 **ILFL** may terminate this Agreement in the event the Data Science club Partner fails to perform its obligations mentioned herein in this Agreement and any other reasonable instructions issued by **ILFL** from time to time.

4.4 Either Party shall have the right to terminate this Agreement vide a prior written notice of [thirty] 30 days to the other Party

IN WITNESS WHEREOF THE PARTIES HERETO HAVE SET THEIR RESPECTIVE HANDS ON THE DATE AND YEAR FIRST HEREINBEFORE MENTIONED, IN DUPLICATE, EACH TO BE TREATED AS AN ORIGINAL.

Signed and delivered by:

SRI SAI RAM INSTITUTE OF TECHNOLOGY.
Name/Designation

Witness:

Dr. B. SREEDEVI

Dr. B. SREEDEVI
HEAD OF THE DEPARTMENT
COMPUTER SCIENCE AND ENGINEERING
SRI SAIRAM INSTITUTE OF TECHNOLOGY
SAI LEO NAGAR, CHENNAI - 600 044.

Signed and delivered by

IMARTICUS LEARNING PVT LTD.
Name/Designation
Sonya Hooja
Director
Mumbai.

Sonya Hooja

Witness
Ahamed Khalid
Vice President & Business Head
Chennai

vmware
IT ACADEMY

ICT ACADEMY
Innovate... Collaborate... Educate...

Sri
SAI RAM
ENGINEERING COLLEGE
INSTITUTE OF TECHNOLOGY

Accredited by NBA and NAAC 'A+'
ISO 9001:2015 Certified and IIRF ranked institution

West Tambaram, Chennai - 44

welcomes you for the inauguration of

Center of Excellence on
vmware IT Academy

Tuesday, 04 th September 2019 at 2:30 pm

Venue : Smart Class Room - SIT

Guest of Honour

JACKIE BARKER

Senior Program Manager, vmware IT Academy, vmware

SACHIN KUMAR R.S

Regional Program Manager, vmware IT Academy - APJ , vmware

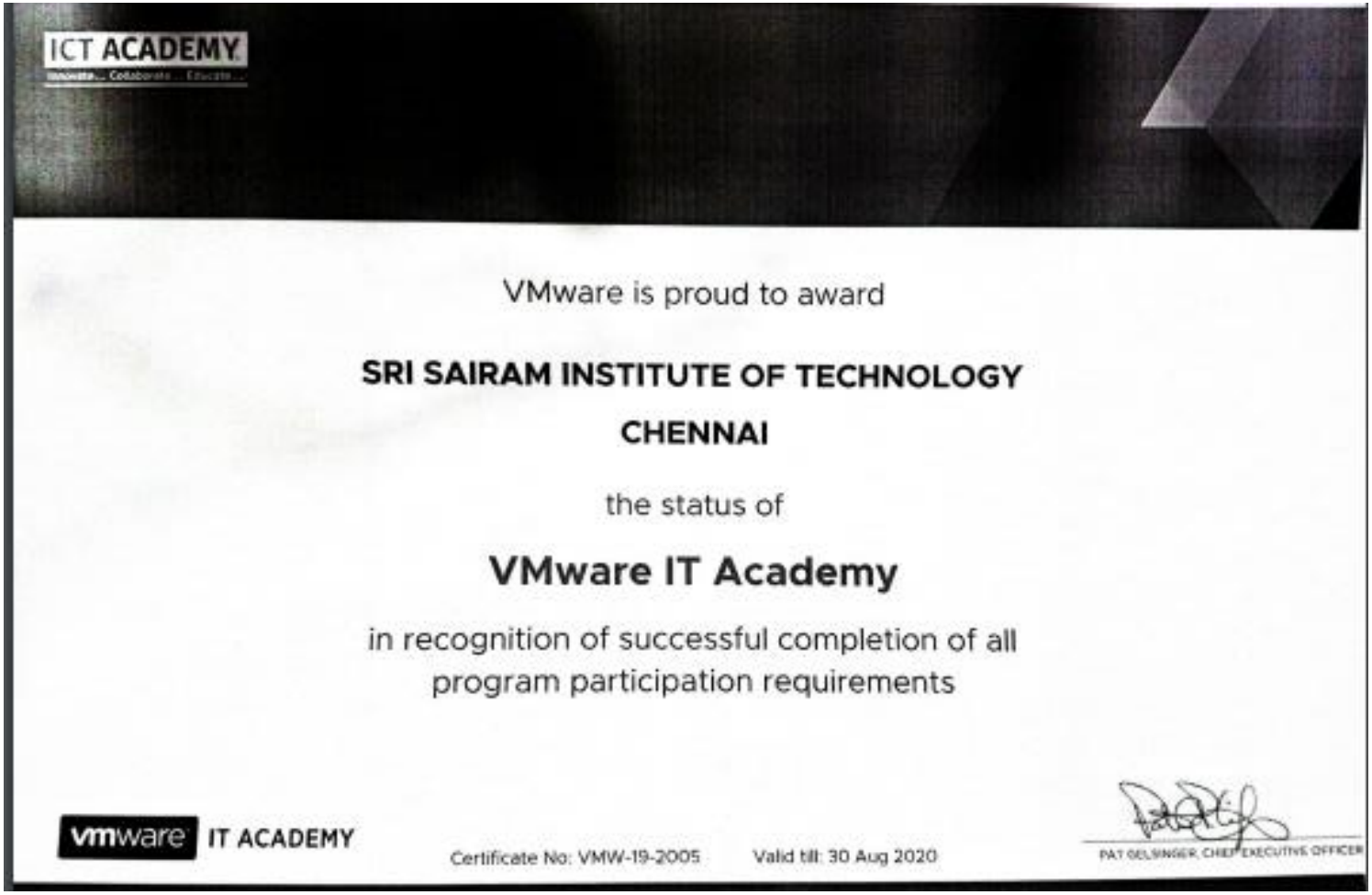
K Palanikumar
Principal / SIT

Dr.A.Rajendra Prasad
Principal / SEC

Sai Prakash LeoMuthu
CEO

Sairam
INSTITUTIONS

www.sairamgroup.in


ICT ACADEMY
VMware is proud to award
SRI SAIRAM INSTITUTE OF TECHNOLOGY
CHENNAI
the status of
VMware IT Academy
in recognition of successful completion of all
program participation requirements
vmware IT ACADEMY
Certificate No: VMW-19-2005
Valid till: 30 Aug 2020
PAT GELSINGER, CHIEF EXECUTIVE OFFICER

Between

National Association of Software and Service Companies (NASSCOM) having its head office at Plot No – 7-10, Sector – 126, Noida, Uttar Pradesh - 201303, India hereinafter called "NASSCOM/First Party", represented by Vice President NASSCOM/Executive Director, IT-ITeS Sector Skills Council NASSCOM which expression shall, where the context so admits, be deemed to include its successors, executors and administrators of the ONE PART

And

Sairam Instituitons, having its head office at 'SAI BHAVAN'No.31, Madley Road, T.Nagar, Chennai – 600 017, India (hereinafter referred to as Sairam Instituitons/Second Party), represented by CEO, Sri Sai Ram Engineering College, which expression shall, where the context so admits be deemed to include its successor in office, legal representatives and permitted assigns of the SECOND PART

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Whereas IT-ITeS Sector Skills Council NASSCOM (SSC NASSCOM / NASSCOM) an integral part of NASSCOM is the skill standard setting body of the IT-ITeS Industry and is also the education & skill development initiative of NASSCOM, SSC NASSCOM works with its industry members and select academic and skill development institutions to help improve the quality and quantity of the employable workforce available to this industry;

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1. **Objective of the MoU**

   To introduce the Foundation Skills in Internet of Things (FSIOT) courseware developed by NASSCOM / SSC NASSCOM for students as an Elective/Add On in **Sairam Instituitons**

2. **Period of MoU**

   This MoU shall come into force on June 21, 2018 and shall be valid for 3 years, but is open to mutual revision annually.

THE DECCAN MERCHANT CO-OP BANK LTD.
DIVISION 1 NO. 154/164-A, BHIMA SADAN
DR. AMBEDKAR ROAD, DIVISION (EAST)
MUMBAI - 400 027

Authorised Signatory

A-2019

redhat

PARTNER ACCEPTANCE DOCUMENT
INDIA

+91 22 61147588 www.redhat.com

INDIA STAMP DUTY MAHARASHTRA

Parties	
Partner Information	**Red Hat India Private Limited.**
Company name: **Sri Sairam Institute of Technology**	Contact Name: Abhijeet Roy
Address: Sri Leo Nagar, West Tambaram, CHENNAI, Tamil Nadu, IN 600044	Email: aroy@redhat.com
	Tel no: +91-22-61147588
Contact name: Dr.K.Palanikumar	Fax: +91-22-61147589
Email: principal@sairamit.edu.in	
Telephone: 9677053338	

Territory

India

This Partner Acceptance Document, upon execution, authorizes you to participate in one or more of the Red Hat Partner Programs marked below) in the Territory indicated above and sets forth the terms of your participation. If no Territory is identified above, the Territory will default to the country of your address above. The "Agreement" is comprised of this Partner Acceptance Document(s), the Partner Terms and Conditions, each applicable Program Appendix and transaction document(s) (which may be referred to as "Order Forms") entered into pursuant to these terms (collectively, the "**Agreement**"). Additional Program Appendices may be added by executing additional Partner Acceptance Documents.

Applicable Program Appendices	Program(s)	Location of Program Terms
(mark all that apply)		
X	Red Hat Academy Program	Attached

Applicable Terms and Conditions (choose only one)	Partner Terms and Conditions
X	The Partner Terms and Conditions set forth in the attached Appendix 1 and, if not attached, then as set forth at www.redhat.com/licenses/partners/.

Additional Terms

Please sign below and fax this Partner Acceptance Document to +91-22-61147588 or send a pdf file by e-mail to aroy@redhat.com Also, please courier the original signed document to Abhijeet Roy. Each Party has executed this Partner Acceptance Document by its duly authorized representative and by its signature agrees to be bound by the terms of the Agreement.

Sri Sairam Institute of Technology	Red Hat India Private Limited
Signature	Signature
Printed Name: Dr.K.PALANI KUMAR	Printed Name
Title: PRINCIPAL SRI SAIRAM INSTITUTE OF TECHNOLOGY SAI LEO NAGAR, CHENNAI-600 044	Title
Date	Date 3/2/18

Red Hat India Pvt. Ltd. Mumbai

redhat
BID DESK APPROVED
2/2/19
Initials/Date

தமிழ்நாடு तमिलनाडु TAMIL NADU

Sri Sairam Institute of Technology Chennai AP

45AB 086026

A. POONGAVANAM (S.V.)
15191 / B / 84-1/ dt. 9-4-88
TAMBARAM, CHENNAI - 45.
Phone : 22263213

MEMORANDUM OF UNDERSTANDING

THIS MEMORANDUM OF UNDERSTANDING (MOU) made and executed on 19th July 2017.

BETWEEN:

SRI SAIRAM INSTITUTE OF TECHNOLOGY, SAI LEO NAGAR, DHARKHAST,WEST TAMBARAM, CHENNAI -600 044.TAMIL NADU, represented by Dr.K.Palanikumar, Principal on behalf of Department of Electronics and Communication Engineering which expression shall include its Successor, Legal Representatives and Assigns, of the FIRST PART;

AND

Stigmata Techno Solutions LLP, (Address: #31, Vembuli amman kovil street, Pazhavanthangal,Chennai-600114), represented by Mr. Jerome Melkisidak, which term shall mean and include, unless repugnant to the context and meaning thereof, its Successor, Legal Representatives and Assigns, of the OTHER PART:

For Stigmata Techno Solutions LLP

Mr. Jerome Melkisidak,
CEO, Stigmata Techno Solutions LLP

For Sri Sai Ram Institute of Technology

Dr.K.Palanikumar
Sri Sai Ram Institute of Technology
PRINCIPAL
SRI SAIRAM INSTITUTE OF TECHNOLOGY
SAI LEO NAGAR, CHENNAI-600 044.

Scanned by CamScanner

MEMORANDUM OF UNDERSTANDING

Between

SRI SAI RAM INSTITUTE OF TECHNOLOGY

(An ISO 9001:2008 Certified Institute)

Chennai

Tamilnadu

INDIA

And

TESLA MINDS

No.7/3 , Second Floor,

Madely Road,

T.Nagar,

Chennai-600 017.

India.

Memorandum of Understanding (MoU)

The MoU is made and entered in to on this day of 7th March,2018 (Wednesday)

Between

TESLA MINDS No.7/3, Second Floor, Madely Road,T.Nagar,Chennai-600 017,(Hereinafter referred to as "**TESLA MINDS**") which expression, unless repugnant to the context or meaning hereof, shall include its successors, administrators or permitted assignees and represented by Founder & Head **Mr. T. Jayanandan,** M/S TESLA MINDS,Chennai-600 017 of the first part

And

SRI SAI RAM INSTITUTE OF TECHNOLOGY, located in Chennai, Tamil Nadu, India (Hereinafter referred to as "**SAIRAMIT**")which expression shall, unless repugnant to the context, include its successors and assigns; and at present represented by its Principal **Dr.K.PALANIKUMAR** of the second part.

SRI SAI RAM INSTITUTE OF TECHNOLOGY, located in Chennai, Tamil Nadu, India and "**TESLA MINDS**" TESLA MINDS No.7/3 , Second Floor, Madely Road,T.Nagar,Chennai-600 017, are hereinafter individually referred to as '**Party**' and collectively as '**Parties**'

TAMIL NADU 44AB 069352

A. VALLIMANAVALAN (A.V
06 / CH (S) / 2008 Dt. 19-11-200
West Tambaram, Chennai - 45.
Cell: 9840386492

This agreement is made at Tambaram on the 23 day of APRIL, 2018, between

Regional Telecom Training Centre, Chennai at Periyar Salai, SIDCO Industrial Estate, Maraimalai Nagar-603209, under the control of Chennai Telephones District, Bharat Sanchar Nigam Limited (A Govt. of India Enterprise and a Company incorporated under the Companies Act, 1956, having its Registered Office at Bharat Sanchar Bhawan, Harish Chandra Mathur Lane, Janpath, New Delhi- 110001), hereinafter referred to as **"RTTC Chennai"** which expression shall, unless repugnant to the context or meaning hereof, shall include its executors, successors, administrators and permitted assigns and represented by its Principal, of the First part.

AND

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RTTC Chennai and Sri Sai Ram Institute of Technology are hereinafter individually referred to as 'Party' and collectively as 'Parties'.

Signature
(for RTTC)
प्रधान अध्यापक
Principal
आर.टी.टी.सी चेन्नै/RTTC
बी.एस.एन.एल.मरैमलैनगर-603 209
BSNL, Maraimalai Nagar-603 209.

Signature
(for SSIT)

Between

National Association of Software and Service Companies (NASSCOM) having its head office at Plot No. – 7-10, Sector – 126, Noida, Uttar Pradesh - 201303, India hereinafter called "NASSCOM/First Party", represented by Vice President NASSCOM/Executive Director, IT-ITeS Sector Skills Council NASSCOM which expression shall, where the context so admits, be deemed to include its successors, executors and administrators of the ONE PART

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Sairam Insititutons, having its head office at 'SAI BHAVAN'No.31, Madley Road, T.Nagar, Chennai – 600 017, India (hereinafter referred to as Sairam Institutions/Second Party), represented by CEO, Sri Sai Ram Engineering College, which expression shall, where the context so admits be deemed to include its successor in office, legal representatives and permitted assigns of the SECOND PART

...

Whereas IT-ITeS Sector Skills Council NASSCOM (SSC NASSCOM / NASSCOM) an integral part of NASSCOM is the skill standard setting body of the IT-ITeS Industry and is also the education & skill development initiative of NASSCOM; SSC NASSCOM works with its industry members and select academic and skill development institutions to help improve the quality and quantity of the employable workforce available to this industry;

The Project here is the "Foundation Skills in Internet of Things" (FSIOT) Program, which is a part of The "Engineering Proficiency Program" (EPP) for scaling quality capacity.

Sairam Institutions and NASSCOM / SSC NASSCOM will herein be referred to independently as 'Party', and collectively referred to as 'Parties'.

THE MoU WITNESSED AND THE PARTIES HERETO AGREE AS FOLLOWS:

1. **Objective of the MoU**

To introduce the Foundation Skills in Internet of Things (FSIOT) courseware developed by NASSCOM / SSC NASSCOM for students as an Elective/Add On in **Sairam Insititutons**

2. **Period of MoU**

This MoU shall come into force on June 21, 2018 and shall be valid for 3 years, but is open to mutual extension annually.

This Memorandum of Understanding entered into at Chennai on this 5th Day of August month in the year 2019.

BETWEEN

M/s **ICT Academy**, a non-profit Society incorporated under the Tamil Nadu Societies Registration Act, 1975 and having its Office at ELCOT Complex, 2-7 Developed Plots, Industrial Estate, Perungudi, Chennai 600 096 (hereinafter called as "**ICT Academy**" which expression shall, wherever the context so permits mean and include successors and assigns.)

AND

Sri Sairam Institute of Technology, Chennai being the beneficiary of this MoU having its principal place of business at Sairam Campus, Sai Leo Nagar,West Tambaram,Chennai - 600044 duly represented (hereinafter referred to as, Sri Sairam Institute of Technology, Chennai which expression shall, wherever the context so permits mean and include successors and assigns.)

WHERE AS

ICT Academy is interalia established as a society with Consortium of Government of India, Government of Tamil Nadu and Industry. It is the pioneering venture under the Public-Private-Partnership (PPP) model that endeavours to train the higher education teachers of Tamil Nadu in the areas of Information and Communication Technology (ICT) thereby making their students to be industry-ready.

The core objective of ICT Academy is to train the faculty members of Engineering, Arts and Science Colleges, Polytechnics and ITI's across Tamil Nadu. ICT Academy will develop and maintain a world class ICT industry related curriculum and content in close association with Academia and industry, which would be made available to faculty members throughout the state through an online portal. Industry experts would train the learned faculty to keep them abreast of the industry demands and thereby the students.

The Academy shall have a core team of faculty members to conduct the training. This core team would be supported by faculty members deputed from Industry as well drawn from the educational Institutions.
The ICT Academy is led by a Governing body chaired by Thiru.Lakshmi Narayanan Emeritus Vice Chairman, Cognizant Technologies. Other members are Thiru. M Vijayakumar IAS, Managing Director, ELCOT, Thiru. Santosh K. Misra IAS, Commissioner, Tamil Nadu E-Governance Agency, Director, ELCOT, Thiru. Santosh Babu IAS, Principal Secretary - IT Department, Government of Tamil Nadu, Thiru.V.Balakrishnan, Chairman of Microgaam, Thiru.Krish Ganesan - Vice President, Human Resources of TCS and Thiru. M. Sivakumar- CEO, ICT Academy.

ICT Academy is agreeable to enter into this MoU Sri Sairam Institute of Technology, Chennai as per the terms and conditions set out hereunder.

भारतीय गैर न्यायिक

बीस रुपये

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Rs.20

TWENTY RUPEES

INDIA

INDIA NON JUDICIAL

தமிழ்நாடு तमिलनाडु TAMIL NADU

60AB 295826

EPR LABS

CHENNAI

12626
26.9.18

K. VIJAYAPATHY (S.V.)
[illegible], MUTHURANGAM ROAD,
TAMBARAM, CHENNAI-45.
[illegible] / C / [illegible]
[illegible]

Memorandum of Understanding

This Memorandum of Understanding (MoU) is entered into and executed on this day of 26th September , 2018

Between

SRI SAI RAM INSTITUTE OF TECHNOLOGY, WEST TAMBARAM, CHENNAI, an Educational Institution with various courses, programs and research, with its registered office at – 'SAI BHAVAN' No.31, Madley Road, T. Nagar, Chennai-600017 (herein after referred to as the "SSIT ", Which expression shall, unless it be repugnant to the context or meaning thereof, be deemed to include its administrators, executors, successors and permitted assignees) and represented by its PRINCIPAL, SRI SAI RAM INSTITUTE OF TECHNOLOGY.

and

Electronics Platform Research Labs, (EPRLABs) whose address is 88/234, Rangarajapuram Main Road, Kodambakkam, Chennai 24 (herein after referred to as the " EPRLABs ", which expression shall, unless it be repugnant to the context or meaning thereof, be deemed to include its Directors, administrators, executors, successors and permitted assignees) and represented by its Chief Technical Officer, Mr. T. Karthikeyan

96352
23/8/18 Sri Sai Ram Institute of Technology

Memorandum of Understanding

This **Memorandum of Understanding (MoU)** is entered into and executed on this day of the **20.09.18**

Between

SRI SAIRAM INSTITUTE OF TECHNOLOGY,WEST TAMBARAM,CHENNAI, an Educational Institution with various courses, programs and research, with its registered office At –'SAI BHAVAN' No.31,Madley Road,T.Nagar,Chennai-600017 (herein after referred to as the **"SSIT "**, Which expression shall, unless it be repugnant to the context or meaning thereof, be deemed to include its administrators, executors, successors and permitted assignees) and represented by its **PRINCIPAL, SRI SAIRAM INSTITUTE OF TECHNOLOGY.**

And

Signals & Systems (India) Pvt Ltd., Chennai an Electrical / Electronics Manufacturing Organization with its **Industrial Unit at - 15/D – 19, Third Main Road, SIPCOT IT Park, Siruseri, OMR, Chennai – 603 103** (herein after referred to as the **"SANDS"**, which expression shall, unless it be repugnant to the context or meaning thereof, be deemed to include its Directors, administrators, executors, successors and permitted assignees) and represented by its Senior Manager - R&D Dept. Embedded Solution, (Mr. Karthik Venkatesh)

As required, **Sri Sai Ram Institute of Technology** and **SANDS** shall collectively be referred as**"Parties"** and individually **"Sri Sairam Institute of Technology" as " Party - 1"** and SANDS as **"Party – 2 "**.

SRI SAI RAM INSTITUTE OF TECHNOLOGY :: CHENNAI -44

Innovative Projects/ Products converted as Patents – R& D Activity

Sl. No.	Title of the Invention	Date and Year of Submission	Patent Number	Status
1	Woven Aloevera/Sisal/Kenaf Fibre Epoxy Composites For Corrugated Roof Sheet	17.06.2016	201641012809	Published & FER Replayed, waiting for grant of patent
2	A Multi-Layered Natural Fiber Reinforced Composite Sheet Laminate	11.11.2016	201641036636	Published & FER Replayed, waiting for grant of patent
3	A Durable Multi-Layered Protective cover enclosing the Head and Neck of the fire fighters	30.12.2016	201641044018	Published & FER Replayed, waiting for grant of patent
4	Egensor	30.03.2017	201741011384	Published & FER Replayed, waiting for grant of patent
5	A Cattail Fiber Activated Charcoal Cartridge for the Filtration and Removal of the PAH from the AQUE	07.04.2017	201741010893	Granted
6	Phoneme Encryptor	11.04.2017	201741012896	Published & FER Replayed, waiting for grant of patent
7	A fibre reinforced hybrid polymer composite protective mechanism for the head	08.05.2017	201741016072	Published & FER Replayed, waiting for grant of patent
8	A system and a method for toggling the operating state of electrical appliances through user gesture	03.08.2017	201741027560	Published & FER Replayed, waiting for grant of patent
9	An automatic system and method for the detecting and arresting of the LPG spillage from the gas stoves	07.08.2017	201741028002	Published & FER Received
10	Exo Skeleton Arm using Block and Tackle Mechanism	08.12.2017	201741042997	Published & FER Replayed, waiting

				for grant of patent
11	An Exo Frame Structure Utilizing Electrical Actuators For Arm Rehabilitation And Effortless Load	09.07.2018	201841025468	Published
12	Mind controlled gaming for the differently abled	01.05.2018	201841016343	Published
13	An Authentication Slip Procurement System For A Public Transport Vehicle	05.03.2019	201941008408	Published
14	Wireless security camera for stalker and threat identification	28-03-2019	201941012141	Published
15	A Seven Degrees Of Freedom Serial Robotic Manipulator For Detecting And Rectifying The Weld Defect On The Circumference Of The Storage Steel Cylindrical Canister	27.03.2020	202041011372	Published
16	A device and method for assisting in self-learning of the braille language to visually impaired end	16.10.2020	202041045084	Published
17	An Automatized Load Carrying Electric Vehicle With Custom Path Navigation	14.10.2020	202041044652	Published
18	E-GLOVE	01.10.2020	202041042710	Published
19	AUTO NAVIGATION DRONE SYSTEM	27/11/2020	202041051703	Published
20	A Height adjusting mechanism for Two wheelers	08/01/2021	202141001042	Published
21	vehicular pollution monitoring and risk management system	05/06/2020	202041018449	Published

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GOVERNMENT OF INDIA

Controller General of Patents,Designs and Trademarks
Department of Industrial Policy and Promotion
Ministry of Commerce and Industry

Application Details	
APPLICATION NUMBER	201641012809
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	12/04/2016
APPLICANT NAME	1 . A. SHADRACH JEYA SEKARAN 2 . K.PALANI KUMAR
TITLE OF INVENTION	WOVEN ALOEVERA/SISAL/KENAF FIBRE EPOXY COMPOSITES FOR CORRUGATED ROOF SHEET
FIELD OF INVENTION	CIVIL
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	shadji2000@yahoo.co.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	01/06/2016
PUBLICATION DATE (U/S 11A)	17/06/2016
REPLY TO FER DATE	04/03/2020

Application Status	
APPLICATION STATUS	Application in Hearing

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Department of Industrial Policy and Promotion
Ministry of Commerce and Industry

Application Details	
APPLICATION NUMBER	201641036636
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	26/10/2016
APPLICANT NAME	1 . K. PALANI KUMAR 2 . S. DILIP KUMAR 3 . C. AMARNATH 4 . C. RAKESH
TITLE OF INVENTION	A MULTI-LAYERED NATURAL FIBER REINFORCED COMPOSITE SHEET LAMINATE
FIELD OF INVENTION	GENERAL ENGINEERING
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	dilipkumar.sdk@gmail.com
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	26/10/2016
PUBLICATION DATE (U/S 11A)	11/11/2016
REPLY TO FER DATE	05/03/2020

Application Status	
APPLICATION STATUS	Reply Filed. Application in amended examination

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Application Details	
APPLICATION NUMBER	201641044018
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	23/12/2016
APPLICANT NAME	1 . K.Palanikumar 2 . K.R.BHARAT
TITLE OF INVENTION	A DURABLE MULTI-LAYERED PROTECTIVE COVER ENCLOSING THE HEAD AND NECK OF THE FIREFIGHTERS
FIELD OF INVENTION	GENERAL ENGINEERING
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	Palanikumar@sairamit.edu.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	23/12/2016
PUBLICATION DATE (U/S 11A)	30/12/2016
REPLY TO FER DATE	01/10/2020

Application Status	
APPLICATION STATUS	Reply Filed. Application in amended examination

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Ministry of Commerce and Industry

Application Details	
APPLICATION NUMBER	201741011384
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	30/03/2017
APPLICANT NAME	1 . K.PALANIKUMAR 2 . ARVINDH.R 3 . SHUBHAM SHEKHAR 4 . VENKATESAN.M 5 . VIGNESH.A 6 . L.VIJAYARAJA
TITLE OF INVENTION	EGENSOR
FIELD OF INVENTION	ELECTRICAL
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	palanikumar@sairamit.edu.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	30/03/2017
PUBLICATION DATE (U/S 11A)	21/04/2017
REPLY TO FER DATE	05/05/2020

Application Status	
APPLICATION STATUS	Reply Filed. Application in amended examination

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Application Details	
APPLICATION NUMBER	201741010893
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	28/03/2017
APPLICANT NAME	1 . K.Palanikumar 2 . T. Gowshik 3 . S. Balaji 4 . R.satish 5 . Grandhe Venkata Karthik 6 . S.Aiswarya Devi 7 . R.M.Asha
TITLE OF INVENTION	A CATTAIL FIBER ACTIVATED CHARCOAL CARTRIDGE FOR THE FILTRATION AND REMOVAL OF THE PAH FROM THE AQUE
FIELD OF INVENTION	CHEMICAL
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	gowshik4124@gmail.com
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	28/03/2017
PUBLICATION DATE (U/S 11A)	07/04/2017
REPLY TO FER DATE	18/10/2019

Application Status	
APPLICATION STATUS	IN ORDER FOR GRANT UNDER SECTION 43,AWAITING NBA APPROVAL

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Application Details	
APPLICATION NUMBER	201741012896
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	11/04/2017
APPLICANT NAME	1 . DR.K.PALANIKUMAR, 2 . J. ILAKKIYA, 3 . A. SUBATHRA, 4 . S. RAGAVI,
TITLE OF INVENTION	PHONEME ENCRYPTOR
FIELD OF INVENTION	COMPUTER SCIENCE
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	palanikumar@sairamit.edu.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	11/04/2017
PUBLICATION DATE (U/S 11A)	21/04/2017
REPLY TO FER DATE	27/11/2020

Application Status	
APPLICATION STATUS	Reply Filed. Application in amended examination

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Application Details	
APPLICATION NUMBER	201741016072
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	08/05/2017
APPLICANT NAME	1 . Dr.K.PALANIKUMAR 2 . K.R.BHARAT
TITLE OF INVENTION	A FIBRE REINFORCED HYBRID POLYMER COMPOSITE PROTECTIVE MECHANISM FOR THE HEAD
FIELD OF INVENTION	TEXTILE
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	palanikumar@sairamit.edu.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	08/05/2017
PUBLICATION DATE (U/S 11A)	19/05/2017
REPLY TO FER DATE	13/11/2020

Application Status	
APPLICATION STATUS	Reply Filed. Application in amended examination

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Application Details	
APPLICATION NUMBER	201741027560
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	03/08/2017
APPLICANT NAME	1 . K.PALANIKUMAR 2 . R.NAGAMMAI NACHU 3 . V.KAYALVIZHI 4 . S.MYTHILI 5 . S.MALATHY 6 . S.RAJARAJAN
TITLE OF INVENTION	A SYSTEM AND A METHOD FOR TOGGLING THE OPERATING STATE OF ELECTRICAL APPLIANCES THROUGH USER GESTURE
FIELD OF INVENTION	MECHANICAL ENGINEERING
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	palanikumar@sairam.edu.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	03/08/2017
PUBLICATION DATE (U/S 11A)	11/08/2017
REPLY TO FER DATE	10/08/2020

Application Status	
APPLICATION STATUS	Reply Filed. Application in amended examination

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Application Details	
APPLICATION NUMBER	201741028002
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	07/08/2017
APPLICANT NAME	1 . K. PALANIKUMAR 2 . T. SRINIVASAN 3 . E. THAMIZHMARAN 4 . S. RAHAVENDHOR 5 . B. ABHIJEETH 6 . S. SOLOMON JAISINGH
TITLE OF INVENTION	AN AUTOMATIC SYSTEM AND METHOD FOR THE DETECTING AND ARRESTING OF THE LPG SPILLAGE FROM THE GAS STOV
FIELD OF INVENTION	PHYSICS
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	principal@sairamit.edu.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	07/08/2017
PUBLICATION DATE (U/S 11A)	25/08/2017
REPLY TO FER DATE	28/12/2020

Application Status	
APPLICATION STATUS	Reply Filed. Application in amended examination

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Ministry of Commerce and Industry

Application Details	
APPLICATION NUMBER	201741042997
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	30/11/2017
APPLICANT NAME	1 . Dr. K. Palanikumar 2 . G.Shanmugasundar 3 . Tanush.H.Bhaskar 4 . N. Kishore 5 . ANISSH KHAAN.I 6 . S.A.VETRI GANESH
TITLE OF INVENTION	EXO SKELETON ARM USING BLOCK AND TACKLE MECHANISM
FIELD OF INVENTION	MECHANICAL ENGINEERING
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	palanikumar@sairam.edu.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	30/11/2017
PUBLICATION DATE (U/S 11A)	08/12/2017
REPLY TO FER DATE	21/05/2020

Application Status	
APPLICATION STATUS	Reply Filed. Application in amended examination

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Application Details	
APPLICATION NUMBER	201841025468
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	09/07/2018
APPLICANT NAME	1 . K. PALANIKUMAR 2 . G. SHANMUGASUNDAR 3 . TANUSH.H.BHASKAR 4 . N.KISHORE 5 . S.A.VETRI GANESH 6 . ANISSH KHAAN.I
TITLE OF INVENTION	AN EXOARM FRAME STRUCTURE UTILIZING ELECTRICAL ACTUATORS FOR ARM REHABILITATION AND EFFORTLESS LOAD
FIELD OF INVENTION	BIO-MEDICAL ENGINEERING
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	palanikumar@sairamit.edu.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	09/07/2018
PUBLICATION DATE (U/S 11A)	13/07/2018

Application Status	
APPLICATION STATUS	Application referred u/s 12 for examination.

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Department of Industrial Policy and Promotion
Ministry of Commerce and Industry

Application Details	
APPLICATION NUMBER	201841016343
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	01/05/2018
APPLICANT NAME	1 . K. PALANIKUMAR 2 . B. SREEDEVI 3 . P. NAVANEETH 4 . H. AKSHAY 5 . M. NIRMALRAJ 6 . S. ATHREYA
TITLE OF INVENTION	MIND CONTROLLED GAMING FOR THE DIFFERENTLY ABLED
FIELD OF INVENTION	MECHANICAL ENGINEERING
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	pnavaneeth23@gmail.com
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	01/05/2018
PUBLICATION DATE (U/S 11A)	11/05/2018

Application Status	
APPLICATION STATUS	Application referred u/s 12 for examination.

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Application Details	
APPLICATION NUMBER	201941008408
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	05/03/2019
APPLICANT NAME	1 . DR. K. PALANIKUMAR 2 . Sharmila P 3 . Skanda Gurunathan R 4 . S. Vivekanandan 5 . Shankar T 6 . Aravind G
TITLE OF INVENTION	AN AUTHENTICATION SLIP PROCUREMENT SYSTEM FOR A PUBLIC TRANSPORT VEHICLE
FIELD OF INVENTION	COMPUTER SCIENCE
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	palanikumar@sairamit.edu.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	05/03/2019
PUBLICATION DATE (U/S 11A)	17/05/2019
REPLY TO FER DATE	28/12/2020

Application Status	
APPLICATION STATUS	Reply Filed. Application in amended examination

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Department of Industrial Policy and Promotion
Ministry of Commerce and Industry

Application Details	
APPLICATION NUMBER	201941012141
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	28/03/2019
APPLICANT NAME	1 . Dr. K. PALANIKUMAR 2 . Dr. V.BRINDHA DEVI 3 . P.SHARMILA 4 . NEERAJA.S 5 . PAVITRA.P 6 . QUEENCY LEENA SAWYER.W
TITLE OF INVENTION	WIRELESS SECURITY CAMERA FOR STALKER AND THREAT IDENTIFICATION
FIELD OF INVENTION	ELECTRONICS
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	palanikumar@sairamit.edu.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	28/03/2019
PUBLICATION DATE (U/S 11A)	17/05/2019

Application Status	
APPLICATION STATUS	Application referred u/s 12 for examination.

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Department of Industrial Policy and Promotion
Ministry of Commerce and Industry

Application Details	
APPLICATION NUMBER	202041011372
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	17/03/2020
APPLICANT NAME	1 . G. Shanmugasundar 2 . R. Sivaramakrishnan
TITLE OF INVENTION	A SEVEN DEGREES OF FREEDOM SERIAL ROBOTIC MANIPULATOR FOR DETECTING AND RECTIFYING THE WELD DEFECT ON THE CIRCUMFERENCE OF THE STORAGE STEEL CYLINDRICAL CANISTER
FIELD OF INVENTION	ELECTRONICS
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	shanmugasundar.mech@sairamit.edu.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	17/03/2020
PUBLICATION DATE (U/S 11A)	27/03/2020

Application Status	
APPLICATION STATUS	Application Awaiting Examination

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Department of Industrial Policy and Promotion
Ministry of Commerce and Industry

Application Details	
APPLICATION NUMBER	202041045084
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	16/10/2020
APPLICANT NAME	1 . VIJAYARAJA L 2 . DHANASEKAR R 3 . K. PALANIKUMAR 4 . DHINAKARAN M S 5 . DINESH KUMAR R 6 . JOAHNAS MATHEW SAJI 7 . VIJAY S
TITLE OF INVENTION	A DEVICE AND METHOD FOR ASSISTING IN SELF-LEARNING OF THE BRAILLE LANGUAGE TO VISUALLY IMPAIRED END USERS
FIELD OF INVENTION	ELECTRONICS
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	palanikumar@sairamit.edu.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	16/10/2020
PUBLICATION DATE (U/S 11A)	30/10/2020

Application Status	
APPLICATION STATUS	Application Awaiting Examination

INTELLECTUAL PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS
GEOGRAPHICAL INDICATIONS

सत्यमेव जयते
GOVERNMENT OF INDIA

Controller General of Patents,Designs and Trademarks
Department of Industrial Policy and Promotion
Ministry of Commerce and Industry

Application Details	
APPLICATION NUMBER	202041044652
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	14/10/2020
APPLICANT NAME	1 . G. Shanmugasundar 2 . K. Palanikumar 3 . Anooj. M 4 . Maniponraja.H 5 . Jayant.M 6 . Yokeshkrishna.P
TITLE OF INVENTION	AN AUTOMATIZED LOAD CARRYING ELECTRIC VEHICLE WITH CUSTOM PATH NAVIGATION
FIELD OF INVENTION	PHYSICS
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	palanikumar@sairamit.edu.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	14/10/2020
PUBLICATION DATE (U/S 11A)	30/10/2020

Application Status	
APPLICATION STATUS	Application Awaiting Examination

INTELLECTUAL PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS
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GOVERNMENT OF INDIA

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Application Details	
APPLICATION NUMBER	202041042710
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	01/10/2020
APPLICANT NAME	1 . G.SARAVANAN 2 . K.PALANIKUMAR 3 . HRINIKARTHIK 4 . M.UNASHALINI 5 . V.JANANI 6 . B.NIVASHINI
TITLE OF INVENTION	E-GLOVE
FIELD OF INVENTION	PHYSICS
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	palanikumar@sairamit.edu.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	01/10/2020
PUBLICATION DATE (U/S 11A)	09/10/2020

Application Status	
APPLICATION STATUS	Application Awaiting Examination

INTELLECTUAL PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS
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GOVERNMENT OF INDIA

Controller General of Patents,Designs and Trademarks
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Application Details	
APPLICATION NUMBER	202041051703
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	27/11/2020
APPLICANT NAME	1 . A.Ponmalar 2 . K.Palanikumar 3 . S.Priyanka 4 . G.Nokudaiyaval 5 . M.Saran
TITLE OF INVENTION	AUTO NAVIGATION DRONE SYSTEM
FIELD OF INVENTION	ELECTRICAL
E-MAIL (As Per Record)	
ADDITIONAL-EMAIL (As Per Record)	panalikumar@sairamit.edu.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	27/11/2020
PUBLICATION DATE (U/S 11A)	11/12/2020

Application Status	
APPLICATION STATUS	Application referred u/s 12 for examination.

INTELLECTUAL PROPERTY INDIA
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GEOGRAPHICAL INDICATIONS

GOVERNMENT OF INDIA

Controller General of Patents,Designs and Trademarks
Department of Industrial Policy and Promotion
Ministry of Commerce and Industry

Application Details	
APPLICATION NUMBER	202141001042
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	08/01/2021
APPLICANT NAME	1 . Dr.G.Anbuchezhiyan 2 . Dr.R.Rajavel 3 . Dr.N.Senthilkumar 4 . Dr. Vamsi Krishna mamidi 5 . Mr.T.S.KrishnaKumar 6 . Dr R.Selvam 7 . Mr. A.Ponshanmugakumar 8 . Dr.E.Mohan 9 . Dr.P.Nantha Kumar 10 . Dr.R.Pugazhenthi
TITLE OF INVENTION	A HEIGHT ADJUSTING MECHANISM FOR TWO WHEELERS
FIELD OF INVENTION	GENERAL ENGINEERING
E-MAIL (As Per Record)	tsgaaa1981@gmail.com
ADDITIONAL-EMAIL (As Per Record)	nagu.sajana@gmail.com
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	15/01/2021

Application Status	
APPLICATION STATUS	Awaiting Request for Examination

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Controller General of Patents,Designs and Trademarks
Department of Industrial Policy and Promotion
Ministry of Commerce and Industry

Application Details	
APPLICATION NUMBER	202041018449
APPLICATION TYPE	ORDINARY APPLICATION
DATE OF FILING	30/04/2020
APPLICANT NAME	1 . S. Deivanayagi 2 . D. Pushgara Rani 3 . V. Vishall 4 . R. Nithish Senan 5 . G. Navarasu
TITLE OF INVENTION	VEHICULAR POLLUTION MONTORING AND RISK MANAGEMENT SYSTEM
FIELD OF INVENTION	COMPUTER SCIENCE
E-MAIL (As Per Record)	abganesh@live.in
ADDITIONAL-EMAIL (As Per Record)	deivanayagi.ece@sairamit.edu.in
E-MAIL (UPDATED Online)	
PRIORITY DATE	
REQUEST FOR EXAMINATION DATE	--
PUBLICATION DATE (U/S 11A)	05/06/2020

Application Status	
APPLICATION STATUS	Awaiting Request for Examination