Estd: 2008

JNTUH College Code: PP

An ISO 9001:2015 Certified Institution



ANUBOSE INSTITUTE OF TECHNOLOGY

(Approved by AICTE, New Delhi and Affiliated to JNTUH Hyderabad)

KSP Road, New Paloncha – 507115, BhadradriKothagudem Dist., Telangana State.

Website: www.abit.ac.in
Email Id: abitjntu@gmail.com
Cell: +91-9246907407

DATE: 31/03/2023

PROCEEDINGS

As per request received from all faculty members & approved by head of departments. It is resolved to sanction the research incentives to faculty members towards attending conference, workshops and professional membership fee for the academic year 2022-23. The list of faculty approved incentives is enclosed

Copy to:

All HoDs

Account Section





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	DI. D.I FAILE INSTITUTE OF TECHNOLOGY	SUSTAINABLE INNUVATION IN INDIA	P LOKESWAR RAO	2023-05-07	53 2022 - 2023
1000/-	Dr. D. V. BATIL INSTITUTE DE TECHNOLOGY	SUSTAINABLE INNOVATION IN INDIA	NSHIKANIH	2023-05-07	52 2022 - 2023
1000/-	Dr. D.Y. BATIL INSTITUTE OF TECHNOLOGY	CNOSTALN ANACISIS	G DEEP I HI	2023-01-01	51 2022 - 2023
1000/-	GITAM UNIVERSITY	CROSSTALK ANALYSIS	C DEERTHI	2023-03-07	$\overline{}$
1000/-	Dr. D.Y PATIL INSTITUTE OF TECHNOLOGY	SISTAINABIE INNOVATION IN INDIA	B BANAA CBININASA BAO	70-20-07-07	52 2022 2023
1000/-	Dr. D.Y PATIL INSTITUTE OF TECHNOLOGY	SUSTAINABLE INNOVATION IN INDIA	I PRACHANTH KUMAR	2023-05-07	
1000/-	NATIONAL INSTITUTE OF TECHNICAL TEACHERS TRAINING		B LAXMAN NAIAK	707-07-25	
1000/-	NORTH EASTERN REGIONAL INSTITUTE OF SCIENCE & TECHNOLOGY	_	VENKATA NABASIMHA PRABATH	2023-07-25	40 2022 - 2023
1000/-	JHULELAL INSTITUTE OF TECHNOLOGY	ONE WEEK FDP ON ELECTRIC VEHICLE	R SHEKAR BABU	2023-05-11	46 2022 - 2023
1000/-	ASSAM SCIENCE & TECHNOLOGY UNIVERSITY	ONE WEEK FDP ON ELECTRIC VEHICLE	MD GOUSIYA BEGUM	2023-05-11	45 2022 - 2023
1000/-	NATIONAL INSTITUTE OF TECHNICAL TEACHERS TRAINING	DESIGN OF STRUCTURE USING LATEST VERSION OF STAAD	G MADHULATHA	2023-07-25	44 2022 - 2023
-/0001	JHULELAL INSTITUTE OF TECHNOLOGY	ONE WEEK FDP ON ELECTRIC VEHICLE	SK MYBELLI	2023-05-11	43 2022 - 2023
1000/-	Dr. D.Y PATIL INSTITUTE OF TECHNOLOGY	SUSTAINABLE INNOVATION IN INDIA	TRAMBABU	2023-05-07	42 2022 - 2023
-/0001	JHULELAL INSTITUTE OF TECHNOLOGY	ONE WEEK FDP ON ELECTRIC VEHICLE	VASHOK	2023-05-11	41 2022 - 2023
1000/-	Dr. D.Y PATIL INSTITUTE OF TECHNOLOGY	SUSTAINABLE INNOVATION IN INDIA	M NAGARAJ	2023-05-07	40 2022 - 2023
1000/-	NATIONAL INSTITUTE OF TECHNICAL TEACHERS TRAINING	DESIGN OF STRUCTURE USING LATEST VERSION OF STAAD	B RAMESH	2023-07-25	39 2022 - 2023
1000/-	NATIONAL INSTITUTE OF TECHNICAL TEACHERS TRAINING	DESIGN OF STRUCTURE USING LATEST VERSION OF STAAD	B CHARAN	2023-07-25	38 2022 - 2023
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1000/-	GIHAM UNIVERSITY	CROSSTALK ANALYSIS	G DEEPTHI	2022-01-09	36 2022 - 2023
1000/-	THE INTERNATIONAL JOURNAL OF ANALTTICAL AND EXPERIMENTAL WIGGEL AWALTSIS	PAPER PUBLICATION	NV SUBBA RAO	2022-02-01	35 2022 - 2023
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1000/-	IAE IST JOURNAL FOR ADVANCED RESEARCH IN AFFICE SCIENCE	PAPER PUBLICATION	NV SUBBA RAO	2022-04-03	33 2022 - 2023
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1000/-	JOURNAL OF APPLIED SCIENCE AND COMPOTATIONS	PAPER PUBLICATION	NV SUBBA RAO	2022-04-02	24 2022 - 2023
1000/-	JOURNAL OF ENGINEERING SCINCE	PAPER PUBLICATION	A AVANI	2022-06-03	23 2022 - 2023
1000/-	JOURNAL OF ENGINEERING SCINCE	PAPER PUBLICATION	A AVANI	2022-08-07	22 2022 - 2023
1000/-	GIRDANANDA CHOWDARY INSTITUTE OF MANAGEMENT AND TECHNOLOGY	RECENT RESEARCH TRENDS IN TRIBOLOGY	VANUSHA	2022-08-02	21 2022 - 2023
1000/-	ECS JOURNAL OF SOLID STATE SCINCE AND TECHNOLOGY	QUALITY OF SIGNAL IMPROVEMENT	G DEEPTHI	2022-03-24	20 2022 - 2023
1000/-	THE INTERNATIONAL JOURNAL OF ANALYTICAL AND EXPERMENTAL MICHEL AWALTSIS	PAPER PUBLICATION	NV SUBBA RAO	2022-02-03	19 2022 - 2023
1000/-	GITAM UNIVERSITY	COMPARATIVE ANALYSIS OF CROSSTALK	G DEEPTHI	2022-08-02	18 2022 - 2023
1000/-	DEEN DAYAL UPADHYAYA COLLEGE	RESEARCH TRENDS IN TRIBOLOGY	P SUDHEER KUMAR	2022-08-03	17 2022 - 2023
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1000/-	ASSAM SCIENCE & TECHNOLOGY UNIVERSITY	RESEARCH TRENDS IN TRIBOLOGY	R SHEKAR BABU	2022-08-03	14 2022 - 2023
1000/-	ASSAM SCIENCE & TECHNOLOGY UNIVERSITY	ONE WEEK FDP ON MACHINE LEARNING	P SUDHEER KUMAR	2022-03-22	
1000/-	DEEN DAYAL UPADHYAYA COLLEGE	MACHINE LEARNING	MD TAJUDIN	2022-07-20	12 2022 - 2023
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1000/-	MHRD-INSTITUTION	MACHINE LEARNING	V RAVINDRA NAIAK	2022-07-20	
1000/-	ASSAM SCIENCE &TECHNOLOGY UNIVERSITY	MACHINE LEARNING	K CHANDULAL	2022-08-01	9 2022 - 2023
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1000/-	DEEN DAYAL UPADHYAYA COLLEGE	MACHINE LEARNING	D SWECHA	2022-07-20	7 2022 - 2023
1000/-	DEEN DAYAL UPADHYAYA COLLEGE	MACHINE LEARNING	G DEVILAL	2022-07-20	6 2022 - 2023
1000/-	NORTH EASTERN REGIONAL INSTITUTE OF SCIENCE & TECHNOLOGY	RESEARCH TRENDS IN TRIBOLOGY	K CHANDULAL	2022-08-03	5 2022 - 2023
1000/-	ASSAM SCIENCE & TECHNOLOGY UNIVERSITY	RESEARCH TRENDS IN TRIBOLOGY	D YAMUNA	2022-08-03	4 2022 - 2023
1000/-	ASSAM SCIENCE &TECHNOLOGY UNIVERSITY	MACHINE LEARNING	D YAMUNA	2022-03-22	3 2022 - 2023
1000/-	KARUNYA INSTITUTE OF TECHNOLOGY & SCIENCE	TECHNOLOGIES FOR SOCIAL NEEDS	D ASHOK KUMAR	2022-08-01	2 2022 - 2023
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Amount of support	hody for which membership fee is provided	Name of conference/ workshop attended for which financial			

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	Fina	ncial Support Request Letter
1. Nam		: P. Lokeswala Rao
2. Desi	gnation	: Assistant professor
3. Depa	artment	: MINING
4. Conf	ference/Publication/ Membersl	hip Fee/ Workshop /FDP Certificate
Deta	ils: Accelosating Cle	an. Green and Sustainable Innovation. n. indea
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7. Finai	ncial support particulars (Rs.)	······································
i.	Registration Charges	:10.00./
ii.	Travelling Allowance	:
iii.	Membership Fee	·
iv.	Others	:
Date:		Signature of the faculty member
. Recon	nmendations of the HoD:	refer
. Recon	nmendations of the IQAC:	lacht
	nmendations of the Principal:	AS

College

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Account Department

Accountant:

Date: 4/05/2022

PRINCIPA PRINCIPAL

Anubose MARIBOSEMSTITUTE OF TECHNOLOGY

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Bhadraupgera Reflagudem Dt. Telangera.



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Bhadradri Kothagudem Dist.

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CASH VOUCHER

DEBIT AMOUNT 10001 Rs. Accelerating clean, green and sustainable innovation in India P. Lokeshward Rao **PARTICULARS**

Received Rs. 1000 (Rupees Ome Thousand

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V.No.

K.S.P. Road, Palvoncha, Bhadradri Kothagudem Dt, Telangana.

Signature

Cashier

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Dr. D. Y. Patil Institute of Technology, Pimpri, Pune



ASSOCHAM GEM Green Building Council, New Delhi

"Accelerating Clean, Green and Sustainable Innovation in India" Faculty Development Program on

Certificate of Participation
P. Lokeswaaa Rab
This certificate is awarded to

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in recognition to attending the FDP on "Accelerating Clean, Green and Sustainable Innovation In India" organized by

Department of Electrical Engineering and Department of Instrumentation Engineering of Dr. D. Y. Patil Institute of

Technology, Pimpri, Pune in collaboration with ASSOCHAM GEM Green Building Council, New Delhi, during 7th

May 2023 to 14th June 2023

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19/04/2022

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3. Dep4. ConDeta		•	S. Sandhya
4. Con	signation		-Assistant professor
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	on Ad	yance in Sign	nd processing and Machine Learning
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6. Ass	sociating prof	essional body	:Deen Dayal DpadhyayaCollege
7. Fina	ancial suppor	t particulars (Rs.)	1
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ii	i. Travellin	g Allowance	
iii	i. Members	ship Fee	
iv	7. Others		
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Date:			Signature of the faculty member
1. Reco	ommendation	s of the HoD:	nf-
2. Recc	ommendation	s of the IQAC:	
3. Recc	ommendation	s of the Principal:	
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K.S.P. Road, Palvoncha,

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Bhadradri Kothagudem Dt, Telangana, Bhadradri Kothagudem Dist.

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Received Rs. 1000 (Rupees One Thousand being.

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Bhadradri Kothagudem Dist.



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Department of

Advances in Signal Processing and Machine Learning

lointly organized by

MHRD-Institution Innovation Council, DDUC Chapter, Deen Dayal Upadhyaya College, University of Delhi (Under the aegis of DBT Star College Program)

Department of Electronic Science, University of Delhi & National Academy of Sciences India (NASI) - Delhi Chapter Supported By

EEE Electron Device Society (EDS), Delhi Chapter

July 20, 2022- July 26, 2022

Certificate of Completion

This is to certify that

S. Sandhya

Has Completed Online Summer School-cum-Faculty Development Program on Advances in Signal Processing and Machine Learning ASSISTANT PROFESSOR, DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING, ANUBOSE INSTITUTE OF TECHNOLOGY



Deen Dayal Upadhyaya College Dr. Hem Chand Jain Officiating Principal Jniversity of Delhi Certificate No.2022/MHRDJICDDUC/Online Summer School/July/76

Registered Email ID of Attendee

: swpatra@gmail.com

University of Delhi South Campus, New Delhi 110021, India Deen Dayal Upadhyaya College, University of Delhi Professor Mridula Gupta, SMIEEE, FIETE Head, Department of Electrofic Science Chairperson-IEEE EDS Delhi Chapter

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Bhadradri Kothagudem Dt, Telangaha. K.S.P. Road, Palvoncha,

Dr. Manoj Saxena, MNASc

Convener-Summer School

Coordinator-DBT Star College Program (DDU) Solonio S

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	<u>Financia</u>	al Support Request Letter
1. Name of the facult	=	D. Ashak Kumer
2. Designation	:	-Assistant professor
3. Department	:	MBA
	_	Fee/ Workshop /FDP Certificate
Details: 1.e.chn	ologies for	Societ I Needs Real time appli
- Ction	of A1.	ML and Research Initiatives
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5. Duration of the Pro	gram	01/08/2022 - 07/08/2022
6. Associating profess	sional body	: Karunya Institute of Technology & S
7. Financial support p	oarticulars (Rs.)	
i. Registration	n Charges	. [000]
ii. Travelling	Allowance	
iii. Membershi	p Fee	:
iv. Others		······
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Date:		Signature of the faculty member
1. Recommendations o	f the HoD: Qu	· ·
2. Recommendations o	f the IQAC: Nu	
3. Recommendations o	f the Principal:	NR STATE OF THE ST
		Sanctioned/Not Sanctio

Account Department

Accountant: Date: 01/08/2021

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Bhadradri Kothagudem Dt. Jelangan acthogudem

ANU BOSE INSTITUTE OF TECHNOLOGY

K.S.P.Road, NEW PALONCHA-507 115, Bhadradri Kothagudem Dist.

Date: 25/07/2

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and research Initiatives		
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D. Ashok Kumar		
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KSP Road, Palvancha,
Bhadradii Kothogudem Dist.

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K.S.P. Road, Palvoncha,
Bhadradri Kothagudem Dt, Telangana.

Ashakkung Signature

Cashier









CERTIFICATE OF PARTICIPATION

D. Ashok Kumas This is to certify that

Anubose Institute of Technology

participated in the

from

One Week Online International Faculty Development Program on "Technologies for Societal Needs

. Real time applications of Al, ML and Research initiatives" jointly organized by Department of Computer Science and Engineering, Karunya Institute of Technology and Sciences, Tamil Nadu, India and

Department of Computer Science and Engineering, North Eastern Regional Institute of Science and

Technology, Arunachal Pradesh, India from 01-08-2022 to 07-08-2022

Dr. P. Getzi Jeba Organizing Secretary

下、下 いか、

Dr. K. Ramalakshmi Co-Convenor

Dr. Moirangthem Marjit Singh Dr. J. Immanuel Johnraja Convenor & HoD (CSE), NERIST

Stownson !

J.

HoD (CSE), KITS

Bhadradri Kothagudem Di, Telangana. K.S.P. Road, Palvoncha



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		<u>Financia</u>	al Support R	equest Letter
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7. I	Financial suppor	t particulars (Rs.)	•	
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	iv. Others		:	•••••••••••••••••••••••••••••••••••••••
Date	•		Signature	of the faculty member
1. Re	ecommendations	s of the HoD:		
2. Re	ecommendations	of the IQAC: Not		
3. Re	ecommendations	of the Principal:	NS.	·
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Accountant

ANUBOSE INSTITUTE OF TECHNOL & K.S.P. Road, Palvoncha, Bhadradri Kothagudem Dt, Telango - . Bhadradri Kothagudem Dist.

ANU BOSE INSTITUTE OF TECHNOLOGY Shadradri Kothaniida	Received Rs. 1.000 (Rupees. Ome Thou sand being.
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K.S.P.Road, NEW PALONCHA-507 115, Bhadradri Kothagudem Dist.

V.No.....

Date: 15/03/2022

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data set during the program		
D. Yamuna		

Cashier

Principal

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GIRIJANANDA CHOWDHURY INSTITUTE OF MANAGEMENT AND TECHNOLOGY



Certificate of Participation

This is to certify that

D. Yamuna

ANUBOSE INSTITUTE OF TECHNOLOGY

Tribology" organized by Department of Mechanical Engineering, GIMT Guwahati, sponsored has attended and actively participated the Webinar Series on "Recent Research Trends in by the collaborative research Scheme of Assam Science and Technology University (ASTU), under TEQIP-III from 3rd to 9th August, 2022.

Kangeette Sas

(Dr. Sangeeta Das)

GINIT-Guwahati Coordinator

(Mr. Rajib Bhowmik)

GIMT-Guwahati

HoD, ME Department Dr. Debalshi Mallick GIMT-Guwahati

Prof. Thuleswar Nath CINT-Cuwahati

(EQIP Coordinator, ASTU-Cuwahati Dr. B.R. Phukan

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Bhadradri Kothadudem Dt, Telanz

Accountant: (1)

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Bhadradri Kethagudem Dt, Telangana. Penagana.

Date: of/08/2011 Read, Polyoncha,

Finan	cial Support Request Letter
	P. Sudheer Kumst
2. Designation :	Assistant professor
3. Department	· Mechanical
4. Conference/Publication/ Membersh	ip Fee/ Workshop /FDP Certificate
Details: The webingr S.	eries on Recent Research Trends
3n Tribology	
<i>/</i>	
5. Duration of the Program	: 3rd to gth August, 2012
6. Associating professional body	: 3rd to 9th August, 2012 : Deen Dayal Opadhyaya College
7. Financial support particulars (Rs.)	•••••••••
i. Registration Charges	: 1000/
ii. Travelling Allowance	:
iii. Membership Fee	
iv. Others	•
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Date:	Signature of the faculty member
1. Recommendations of the HoD:	Joe of
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3. Recommendations of the Principal:_	- M
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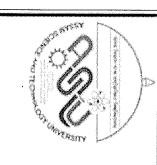
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This is to certify that

P. Sudheer Kumar

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under TEQIP-III from 3rd to 9th August, 2022. by the collaborative research Scheme of Assam Science and Technology University (ASTU), Tribology" organized by Department of Mechanical Engineering, GIMT Guwahati, sponsored has attended and actively participated the Webinar Series on "Recent Research Trends in

(Dr. Sangeeta Das) GIMT-Guwahati

(Mr. Rajib Bhowmik)

GIMT-Guwahati Coordinator

Dr. Debarshi Mallick Technolog Prof. Thuleswar Nath

A.Hop, MB Department NO HA GIMFIF-Guwahati

TEQIP Coordinator Dr. B.R. Phukan ASTU-Guwahati

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	CODE	11	DOSE	
	\mathbf{F}	inancial Support R	Request Letter	
1.	Name of the faculty member	:D Yai	พุนทร	
2.	Name of the faculty member Designation	A.fristanl	r professor	
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4.			Fee/ Workshop /FDP Certificate
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5.	Durat	ion of the Program	. 3rd to 9th August, 2012
6.	Assoc	iating professional body	: Assam Science and Technology Univers
7.	Finan	cial support particulars (Rs.)	
	i.	Registration Charges	: 1000/-
	ii.	Travelling Allowance	
	iii.	Membership Fee	
	iv.	Others	•

Date:

Signature of the faculty member

1. Recommendations of the HoD:

2. Recommendations of the IQAC: _______

3. Recommendations of the Principal:

Sanctioned/Not Sanction

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Accountant:

Date: 02/08/2022



Date: 27/07.

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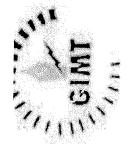
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Georgeetts Stass

(Dr. Sangeeta Das)

GIMT-Guwahati Coordinator

(Mr. Rajib Bhowmik) ORMT-Currahati Coordinator

Prof. Thuleswar Nath

Dr. B.R. Phukan

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Dr. Debarshi Mallick

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	<u>Fir</u>	nancial Support Request Letter
1.	Name of the faculty member	: KChandulal
2.	Designation	: Assistant professor
3.	Department	: Mechanical
4.	Conference/Publication/ Membe	ership Fee/ Workshop /FDP Certificate
		r Series On Recent Research Trends
	in Ix	î.belogy.
5.	Duration of the Program	: 3rd to 9th August, 2021
6.	Associating professional body	: North Eastern Region of Institute of science
7.	Financial support particulars (Rs	5.)
	i. Registration Charges	: 1000/-
	ii. Travelling Allowance	

Date:

Signature of the faculty member

1. Recommendations of the HoD:

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2. Recommendations of the IQAC:

Membership Fee

Others

3. Recommendations of the Principal:

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Date: 02/08/2012

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CERTIFICATE OF PARTICIPATION

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K. Chandulal

_ participated in the

from

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One Week Online International Faculty Development Program on "Technologies for Societal Needs

. Real time applications of Al, ML and Research initiatives, jointly organized by Department of Computer Science and Engineering, Karunya Institute of Technology and Sciences, Tamil Nadu, India and

Department of Computer Science and Engineering, North Eastern Regional Institute of Science and

Technology, Arunachal Pradesh, India from 01-08-2022 to 07-08-2022.

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Dr. P. Getzi Jeba Organizing Secretary

Dr. Moirangthem Marjit Singh Couvenorsk HoD (CSE), NERIST Dr. K. Ramalakshmi Co-Convenor

HoD (CSE), KITS

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1. Name of the fac	culty member :	GDev	elal
2. Designation	:	- Assist	ant professor
3. Department	:	ECE	•••••
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July 20, 2022 - July 26, 2022

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Deen Dayal Upadhyaya College Dr. Hem Chand Jain Officiating Principal Jniversity of Delhi

Certificate No.2022/MHRDIICDDUC/Online Summer School/July/76 : swpatra@gmail.com

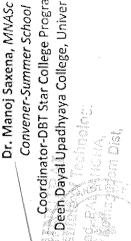
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Professor Mridula Gupta, SMIEEE, FIETE Head, Department of Electronic Science Chairperson-IEEE EDS Delhi Chapter

Deen Dayal Upadhyaya College, University of Delhi Coordinator-DBT Star College Program (DDU) Convener-Summer School University of Delhi Sow Gampus, New Delhi 110021, India



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	•	Fin	ancial Support Request Letter	^
1.	Name	of the faculty member	:D. Swecha	•••••
2.	Desig	nation	: Assistant profess	?ox
3.	Depa	rtment	ECE	•••••
4.	Confe	erence/Publication/ Member	rship Fee/ Workshop /FDP Certi	ificate
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5.	Durat	ion of the Program	: 20th - 26th Tul	1,2021
6.	Assoc	iating professional body	: 20th-26th July : Deen Dayal Up	radby aya College
7.	Finan	cial support particulars (Rs.		
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	ii.	Travelling Allowance	•	••••••
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DEBIT AMOUNT 10001 Ŗs. on advances in signal processing summer school-cumaculty development program & machine learning **PARTICULARS** D. Swecha mline

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supers only being.....

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Deen Dayal Upadhyaya College Officiating Principal University of Delhi

Certificate No.2022/MIRDIICDDUC/Online Summer School/July/76 : swpatra@gmail.com Registered Email ID of Attendee

Head, Department of Electronic Science

Coordinator-DBT Star College Program (DDU)

Deen Dayal Upadhyaya College, University of Delhi University of Delhi South Campus, New Delhi 110021, India

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2. Designation	. Assistant professor
3. Department	
4. Conference/Publication/ Membersh	nip Fee/ Workshop /FDP Certificate
Details: Online Summer Sc	chool- Cum-faculty Development program
	nd processing & Machine learning
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7. Financial support particulars (Rs.)	· · · · · · · · · · · · · · · · · · ·
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Date:	Signature of the faculty member
1. Recommendations of the HoD: 🕱	go.
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3. Recommendations of the Principal:_	DR.
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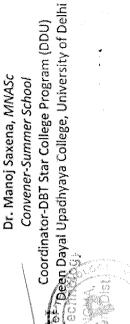
Dr. Hem Chand Jain Officiating Principal Deen Dayal Upadhyaya College University of Delhi Registered Email ID of Attendee : swpatra@gmail.com Certfficate No.2022/MHRDIICDDUC/Online Summer School/July/76



Professor Mridula Gupta, SMIEEE, FIETE
Chairperson-IEEE EDS Delhi Chapter
Head, Department of Electronic Science NOID

Head, Department of Electronic Science NOTE Coordinator-DBT Star University of Delhi South Campus, New Delhi 110021, India Campus Upadhyaya

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		<u>Fina</u>	ncial Support Request Letter
1.	Name	of the faculty member	: K: Chandulal.
2.	Design	nation	: Assistant Professor
3.	Depar	tment	: Mechasical
4.	Confe	rence/Publication/ Member	ship Fee/ Workshop /FDP Certificate
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	i.	Registration Charges	1000/-
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(Mr. Rajib Bhowmik) GIMT-Guwahati Coordinator (Dr. Sangeeta Das) GINIT-Guwahati Coordinator

HoD, ME Department Dr. Debarshi Mallick

Prof. Thateswar Nath

TEGIP Coordinator, Sel-ASTU-Guwahati

GIMT-Guwahati PRACIPAL GIMT-GURANAH

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2. D	Vame of the faculty member : Designation : Department	cial Support Request Letter V. Ravindra Naik Assistant professor ECE
2. D	Designation :	-Assistant professor
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Date: 13/07/2

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Has Completed Online Summer School-cum-Faculty Development Program on Advances in Signal Processing and Machine Learning ASSISTANT PROFESSOR, DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING, ANUBOSE INSTITUTE OF TECHNOLOGY

Deen Dayal Upadhyaya College Dr. Hem Chand Jain Officiating Principal University of Delhi

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Professor Mridula Gupta, SIMIEEE, FIETE Head, Department of Electronic Science Chairperson-IEEE EDS Deshi Chapter

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Dr. Manoj Saxena, MNASc Convener-Summer School

Deen Dayal Upadhyaya College, University of Delhi Coordinator-DBT Star College Program (DDU)

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Date: 01/08/2022

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Cell:+91-9246907407

Counselling

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			ancial Support Request Letter
1.	Name	of the faculty member	:TVenKataKarunakar
2.	Desig	nation	: Assistant professor
3.	Depar	tment	· MRA
4.	Confe	erence/Publication/ Member	rship Fee/ Workshop /FDP Certificate
			for Societal Needs Real time application
		ion of the Program iating professional body	:01-08-2022 to 07-08-2022 :North Eastern Regional Institute
7.	Financ	cial support particulars (Rs.) :
	i.	Registration Charges	10001
	ii.	Travelling Allowance	·
	iii.	Membership Fee	•
	iv.	Others	:
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K.S.P. Road, Palvoncha, Bhadradri Kothagudem Dt, Telangana.

K.S.P.Road, NEW PALONCHA-507 115, Bhadradri Kothagudem Dist. De

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CERTIFICATE OF PARTICIPATION

This is to certify that

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Anubose Institute of Technology

participated in the

from

One Week Online International Faculty Development Program on "Technologies for Societal Needs

Computer Science and Engineering, Karunya Institute of Technology and Sciences, Tamil Nadu, India and . Real time applications of AI, ML and Research initiatives" jointly organized by Department of

Department of Computer Science and Engineering, North Eastern Regional Institute of Science and

Technology, Arunachal Pradesh, India from 01-08-2022 to 07-08-2022.

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Dr. P. Getzi Jeba

Organizing Secretary

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Dr. K. Ramalakshmi Co-Convenor

Dr. Moirangthem Marjit Singh

Dr. J. Immanuel Johnraja HoD (CSE), KITS

Stowner,

Convenor & HoD (CSE), NERIST ANU BOSE INSTITUTE OF TECHNOLOGY The forthagudem Dt. Telangan K.S.P. Road, Palvoncha,

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Date:

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		CODE	PP	BOSE
			Financi	ial Support Request Letter
1.	Name	of the fact	llty member :	MD Tajudin
2.	Desig	nation		Assistant professor
3.	Depar	tment	:	ECE
4.			-	Fee/ Workshop /FDP Certificate
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K.S.P.Road, NEW PALONCHA-507 115, Bhadradri Kothagudem Dist.

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Online Summer School-cum-Faculty Development Program

Advances in Signal Processing and Machine Learning

Jointly organized by

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Department of Electronic Science, University of Delhi & National Academy of Sciences India (NASI) - Delhi Chapter

IEEE Electron Device Society (EDS), Delhi Chapter Supported By

July 20, 2022- July 26, 2022

Certificate of Completion

This is to certify that

MD. Tajudin

Has Completed Online Summer School-cum-Faculty Development Program on Advances in Signal Processing and Machine Learning ASSISTANT PROFESSOR, DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING, ANUBOSE INSTITUTE OF TECHNOLOGY

Deen Dayal Upadhyaya College Dr. Hem Chand Jain Officiating Principal University of Delhi

Certificate No.2022/MHRDIICDDUC/Online Summer School/July/76 : swpatra@gmail.com Registered Email ID of Attendee



University of Delhí South Campus, New Delhi 110021, India Professor Mridula Gupta, SMIEEE, FIETE Head, Department of Electronic Science Chairperson-IEEE EDS Delhi Chapter

Dr. Manoj Saxena, MNASc Convener-Summer School

Deen Dayal Upadhyaya College, University of Delhi Coordinator-DBT Star College Program (DDU)

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K.S.P.Road, NEW PALONCHA-507 115, Bhadradri Kothagudem Dist.

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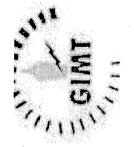
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Bhadradri Kothagudem Dist



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Kerngeette Sas

(Dr. Sangeeta Das) GINT-Guwahari

(Mr. Rajib Bhowmik)

Dr. Debaszli Mallick

HoD, ME Department

Bhadradri Kothagudem Dt, Telangana,

KS. P Road, Palvonoha,

Prof. Thuleswar Nath GIMT-Guwahari

JEQIP Coordinator, ASTU-Guwahati O.W. B.R. Phukan



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		CODE		PP		BOSE
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PARTICULARS	AMOUNT Rs. ps.
The webinar series on recent- research trends in Tribology	70001
R. Sekhar babu	
Cashier	Principal

Signature

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Kongeeth Stas

(Dr. Sangeeta Das) GIMT-Guwahati Coordinator

(Mr. Rajib Bhowmik)

HoD, ME Department Dr. Downskii Mallick

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Prof. Thuleswar Nath GIMT-Guwahati

echnology EQIP Coordinator, ASTU-Guwahati

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	~~~	College		Counselling	
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		Financial	Support Requ	est Letter	
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Sampeeter Sax

(Mr. Rajib Bhowmik) GIMT-Guwahati

(Dr. Sangeeta Das)

CINIT-Cuwahati Coordinator

HoD, ME Department Dr. Debarshi Mallick GIMT-Guwahati

Prof. Thuleswar Nathrute of Fechnology (IP Coordinator. ASTU-Guwahati

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Date: 12/07/2022ANU BOSE BUSTITUTE OF TECHNOLOGY Anubose Institute of Technology K.S.P Read, Palvoncha, HISP Resd, PALVANCHA.

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Varalanyi Signature



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# Online Summer School-cum-Faculty Development Program



## Advances in Signal Processing and Machine Learning

Jointly organized by

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Department of Electronic Science, University of Delhi & National Academy of Sciences India (NASI) – Delhi Chapter (Under the aegis of DBT Star College Program)

EEE Electron Device Society (EDS), Delhi Chapter Supported By

July 20, 2022- July 26, 2022

### Certificate of Completion

This is to certify that

M. Vazalaxmi

Has Completed Online Summer School-cum-Faculty Development Program on Advances in Signal Processing and Machine Learning ASSISTANT PROFESSOR, DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING, ANUBOSE INSTITUTE OF TECHNOLOGY



Deen Dayal Upadhyaya College Dr. Hem Chand Jain Officiating Principal University of Delhi

Certificate No.2022/MHRDIICDDUC/Online Summer School/July/76 : swpatra@gmail.com Registered Email ID of Attendee



Coordinator-DBT Star College Program (DDU) Dr. Manoj Saxena, MNASc Convener-Summer School Professor Mridula Gupta, SIVIEEE, FIETE Head, Department of Electronic Science Chairperson-IEEE EDS Delhi Chapter

Deep-Payal Upadhyaya College, University of Delhi

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Cell:+91-9246907407

		College	Counselling
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1.	Name of the fac	ulty member :	Nagendre.Bah
2.	Designation	:	S.S.I. S. tant profession echanical
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**Account Department** 

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Bhadradri Kothagudem Dt, Telangana. K.S.P. Road, Palvoncha, Signature YOU BOSE INSTITUTE OF TECHNOLOGY a.a.a.t Received Rs... Cashier V.No..... ANU BOSE INSTITUTE OF TECHNOLOGY Online Summer School-Cenn-Faculty K.S.P.Road, NEW PALONCHA-507 115, Bhadradri Kothagudem Dist. **PARTICULARS** CASH VOUCHER meetine 10001 Rs. AMOUNT Principal

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# Online Summer School-cum-Faculty Development Program







# Advances in Signal Processing and Machine Learning

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Department of Electronic Science, University of Delhi & National Academy of Sciences India (NASI) - Delhi Chapter Supported By

IEEE Electron Device Society (EDS), Delhi Chapter

July 20,2022- July 26,2022

### Certificate of Completion

K. Nagendra Rabu This is to certify that

ASSISTANT PROFESSOR, DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING, ANUBOSE INSTITUTE OF TECHNOLOGY

Has Completed Online Summer School-cum-Faculty Development Program on Advances in Signal Processing and Machine Learning

Deen Dayal Upadhyaya College Dr. Hem Chand Jair University of Delhi Officiating Principal

Professor Mridula Gupta, SMIEGE, FIETE

Head, Department of Electronic Science Chairperson-IEEE EDS Delhi/Chapter

University of Delhi South Cappys, New Delhi 110021, India

Deen Dayal Upadhyaya College, University of Delhi 

Coordinator-DBT Star College Program (DDU)

Dr. Manoj Saxena, MNASo Convener-Summer School

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### Comparative Analysis of Crosstalk Effects in Dielectric Inserted Horizontal and Vertical Multi-layer GNR Interconnects for Ternary Logic System

Gurijala Deepthi² and Madhavi Tatineni

Department of Electronics and Communication Engineering, GITAM Deemed to be university, Visakhapatnam, 530045, India

In this work, the performance of copper (Cu), dielectric inserted horizontal graphene nanoribbon (Di-HGNR) interconnect and dielectric inserted vertical graphene nanoribbon (Di-VGNR) interconnects are investigated using active shielding and passive shielding techniques. However, the analysis is carried out by adapting driver-interconnect-load system. This analysis considers the interconnect length from 500 to 2000  $\mu$ m for 10 nm technology node. Further, the crosstalk induced effects on various interconnect structures are examined. It is envisaged that Di-VGNR exhibits lowest propagation delay compared to Cu and Di-HGNR. Further, the in-phase and out-phase crosstalk delay among the coupled interconnect lines is determined. It is investigated that active shielded Di-VGNR has least crosstalk induced delay compared to other interconnect structures considered in this study. Therefore, Di-VGNR interconnects outperforms Cu and Di-HGNR and are best suited for future VLSI interconnects.

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As the technology scales down from micro to nano scale, interconnect delays are more prevailing than the gate delays. At high frequencies inductive and capacitive natures of interconnect conductors dominate the resistive nature. 1-3 These impedance parameters are susceptible to the choice of interconnect material and also have a significant impact on crosstalk effects and speed of the circuitry. The best choice for building the interconnects are metals and their alloys due to their high electrical conductivity. Right from the start of semiconductor industry, aluminum and copper were the most common metals. But in today's higher data rate applications, Cu suffers from higher resistivity due to significant effects of joule heating, grain and surface scattering. 4.5 Also due to the increasing demand for integration, performance and reliability, a handful of various interconnect materials like carbon nanotubes (CNTs) and graphene nanoribbons (GNRs) are used. 6-12 CNTs and GNRs play a pivotal role during the relentless drive insight of miniaturization scale, owing to their remarkable structural properties. CNT appears in the form of cylindrical carbon molecules exhibiting greater mechanical strength, possess unique electrical properties and are efficient conductors of heat.^{12–14} The intrinsic properties of CNT becomes useful in solving the problems that are plaguing the metallic interconnects and proves to be an appropriate interconnect material for nanoelectronic devices. CNT comes in a couple of varieties as SWCNTs and MWCNTs. SWCNT is just a single cylindrical wall possessing both metallic and semiconductor properties whereas MWCNTs which are always metallic in nature are composed of multiple concentric cylinders.

GNRs are planar, quasi 1-D graphene structures which can be patterned using high resolution lithography. However, GNRs are believed to be more controllable from fabrication point of view due to its planar nature and are much preferred than CNTs. GNRs can be categorized based on their chirality as either metallic or semiconductive in nature. The most preferred one for interconnect application is the metallic type. GNRs are also associated with single layer GNR (SLGNRs) and multilayer GNRs (MLGNRs). Due to high resistance in SLGNRs, they are not considered as feasible materials for interconnect applications. Coming to the GNR metal contacts, it can be realized either by top contact MLGNRs (TC-MLGNRs) or side contact MLGNRs (SC-MLGNRs). Further, the presence of multiple parallel conduction paths in SC-MLGNR reduces the equivalent resistance making it well suited for interconnect applications compared to TC-MLGNR interconnects. However, the concept of interlayer electron hopping confines the

number of stacked GNR layers in SC-MLGNR. This arises from the point of modulation in carbon-carbon bond lengths by the elastic strain produced in the stacked layers.¹⁵ Hence, results in the reduction of mean free path (MFP) causing increase in the equivalent resistance of SC-MLGNR. The adverse effects of interlayer electron hopping can be eased off by the introduction of high-k material among the subsequent layers of GNR which leads to improved MFP and reduced equivalent resistance. 16,17 Though researchers have provided a bountiful of work on these novel materials but still the performance of CNTs and GNRs in various applications is a big challenge. Therefore, the efficaciousness of dielectric inserted GNR (Di-GNR) can be enriched by placing it either in vertical direction or in horizontal direction. Horizontal GNRs (HGNRs) perpetuate high level of performance, but the critical issues emerging in HGNRs are related to thermal challenges and the problems which arouse related to electrical contact. Due to anisotropic property, they may hinder heat dissipation in vertical direction. Unlike HGNRs, VGNRs have high electrical conductivity as each and every layer take part in electron transport. 18 Also, VGNR can offer a promising solution towards the thermal challenges tackled by the HGNR.

Traditionally switching theory was used for the digital design which is limited to two valued logics. Thereby the complexity of interconnects is increased due to the transmission of limited amount of information. Onsequently, for the breakthrough of bit density limit, multi valued logic (MVL) has been brought to play. Owing to this, connections among the chip can be reduced and subsequently more amount of data can be transacted. In ternary logic system the radix is three and the value is nearer to e = 2.718. In ternary logic system, the logic levels are characterized by three voltage levels as 0,  $0.5V_{dd}$  and  $V_{dd}$  which are equivalent to logic 0, logic 1 and logic 2 levels, respectively. Optimization of radix can avoid the hardware implementation issues. Conversely, the ternary logic system is more vulnerable to noise and crosstalk effects due to its lower noise margin.

As a consequence of this, there has been a recurring interest in the topics of interconnect widening, buffer insertion and shielding for the analysis of crosstalk effects. ²¹⁻²⁹ Crosstalk refers to the unintentional effects which causes functional failure in the chip. Due to capacitive coupling, the signal switching in one net causes effect on the neighboring one. This inturn causes noise and delay across the interconnect lines. Hence, it can be compensated by introducing a shield wire between the aggressor line and the victim line. It can be of two ways active and passive. In active shielding a dedicated shield line is used and its switching pattern depends on the switching of adjacent lines. Crosstalk noise and delay can be reduced effectively in active shielding but due to high switching activity, more amount

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### An Implementation of SSSC-Based Power Flow Enhancement in Transmission Lines

Dr.N.V.Subba Rao

Anu Bose Institute of Technology, Paloncha, India

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### **ABSTRACT**

The SSSC is used to operate the transmission line at stable condition. Various schemes of SSSC is already proposed. And a still lot of scope is left in this development to make it more efficient in terms of voltage stress, switching losses and harmonic suppression. The scheme proposed here is used to produce a H - bridge based cascaded inverter. It can produce the pulses with different width and magnitude. It almost resembles a sine wave at the output of transformer. The output results are compared with conventional type SSSC with cascaded type. This paper solved only the simulation part of this work. In the proposed work a scale down model of the SSSC can be proposed to build. This scale down model can be used to analysis the different situations like voltage compensation part. The sample of voltage and current will be taken from the transmission line and is given to the processor to decide the angle of firing for the thyristor device. A cascaded type H - bridge based multilevel inverter is used as SSSC. Three DC separate DC sources are used here as energy source for the SSSC. These three DC source can be interfaced with SSSC in a sequential manner as explained in different modes. This sequential switching is helpful in reducing switching losses and switching stresses.

### **I.INTRODUCTION**

Static Synchronous Series Compensator (SSSC) is a FACTS device which has its wide range of applications in transmission lines and grids. In power system, several FACTS devices such as STATCOM, static VAR compensator, UPFC, TCSC etc are employed in maintaining power stability and

operate the transmission system as reliable one. Based on the performance of these FACTS devices flickering and SSR can also be reduced in transmission grids. SSSC based hybrid series compensation scheme combine the capacitor action with TCSC and SSSC are employed in damping of SSR(subsynchronous resonance)[I]. In this hybrid

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### Quality of Signal Improvement in Prominent CNTFET Based Ternary Logic System for Futuristic Dielectric Inserted MLGNRs for Integrated Circuit Designs

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Booming VLSI technology has graciously facilitated down-scaling dimensions of on-chip devices and interconnects in integrated circuits (ICs) to nano-miniaturized scale. However, at nano-dimensions where added benefits of scaling are constrained by associated highly-dense on-chip nano-interconnect structures, their electro-migration effects and several limiting signal-integrity issues. These cumulatively affect the quality of signal (QoS) at output. Improving output QoS is essential for attaining faithful system performance. The present paper judiciously attempts to address as well as limit this graving issue and is successfully proven by obtained results. Firstly, different structures and their performance of futuristic graphene based multi-layer graphene nano ribbon (MLGNR) interconnect is investigated. These include basic MLGNR and dielectric inserted side contact MLGNR (DS-MLGNR). Secondly, to improve data rates and performance, efficient and novel carbon nanotube field effect transistors (CNTFETs) based ternary logic system is incorporated for the prominent nano-MLGNR interconnects. Thirdly, QoS enhancement of highly potential DS-MLGNR interconnect is proposed using active shielding technique. Finally, is chase to further enrich QoS, adaptive least mean square (LMS) equalization technique is used at the receiver. The proposed work comprising of futuristic novel graphene interconnects with efficient ternary logic system together with adaption of several QoS improvement techniques are magnificent and panacea solution to limiting nano-interconnects in advanced ICs. Several interesting and seminal analyses such as delay, power, power-delay product, crossialk, eye-diagram are performed that supports the novelty and effectiveness of the proposed work. The vivid performance analyses have been implemented at nano-size 10 nm technology node © 2022 The Electrochemical Society ("ECS"). Published on behalf of ECS by IOP Publishing Limited. [DOI: 10.1149/2162-8777/

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On-chip interconnects are paramount connecting structures in integrated circuits (ICs) alike street and highways linking each and every parts within and outside the country. Over time, continuous increase in vehicles on physical roads has adversity affected the traffic, reach out time, pollution and several other issues. The onchip interconnects could not remain aloof of the similar effects (as experienced in physical roads) wherein scaling of technology has resulted in smaller and dense interconnect structures that leads to congestion in signal movement, increased delay, elevated power dissipation, coupling, electro-migration and several signal integrity issues in ICs. 1.2 The focus of the present paper is to energize and improve the performance of this nano on-chip interconnects that are also many times referred to as life-line of ICs.

The on-chip interconnects have been widely realized using copper (Cu) material. The Cu on-chip interconnects offer economical and good conductivity those are essentially needed for large scale production and to attain good performance in ICs. However, with miniaturization of technology at nano-dimensions, Cu on-chip interconnects are constraint by several non-ideal effects such as surface scattering, grain boundaries, hillock formation, Joule heating, electro-migration issues which in-turn lowers on-chip conductivity significantly.^{3,4} Hunt for high performance connectivity has triggered revolutionary researches globally.^{5–8} One of the prospective outcomes of these researches have been proposed to replace Cu with fascinating graphene material. 9,10 Graphene can be patterned in different structures as its circular form referred to as carbon nanotube (CNT) and planar form as graphene nano-ribbon (GNR). CNT and GNR possess huge potential and are prospective on-chip interconnects due to their inimitable electrical, physical, thermal and mechanical properties which include larger mean free path (MFP), higher thermal conductivity and better current carrying capability. GNRs are easier to fabricate due to their planar structure over cylindrically patterned CNTs. Henceforth, GNRs are considered in the present paper.

The GNR interconnects can be classified as single layer GNR (SLGNR) and multilayer GNR (MLGNR) depending on the number of layers present. SLGNRs possess single layer while MLGNRs

constituted of multiple layers of nano-graphene ribbons. Owing to presence of only single layer in SLGNR, its resistance is too high to be considered as for on-chip interconnect applications. Henceforth, SLGNRs are not preferred. On the other hand, MLGNR attributes lower resistance due to parallel configured graphene ribbons which effectively reduce the equivalent resistance. Hence, MLGNR are favorably good for the present interest of research work. The connection to MLGNR can be made through either side ways that is referred as side-contacted MLGNR (SC-MLGNR) or from top termed as top-contacted MLGNR (TC-MLGNR). 11.12 SC-MLGNR is mostly preferred due to lesser resistance owing to presence of multiple parallel conduction paths. However, the concept of interlayer electron hopping confines the number of stacked GNR layers in SC-MLGNR. This arises due to the modulation in carbon-carbon bond lengths by the elastic strain produced in the stacked layers. This effectively causes reduction of MFP that result in increased equivalent resistance of SC-MLGNR. The diminishing effects of interlayer electron hopping can be significantly mitigated by introduction of high-k dielectric material between the subsequent layers of graphene nano ribbons. 14,15 This structure is referred to as dielectric inserted SC-MLGNR (DS-MLGNR). Introduction of dielectric between graphene layers prevents its conversion into graphite, thereby improving its further MFP and lowering scattering rate which results in increase in conductivity in each graphene layer. Henceforth, prominent DS-MLGNR interconnects is considered in the current paper.

The on-chip interconnects are often driven and loaded with silicon based CMOS inverters that operate in binary logic (2-level) system. However, to improve the system performance in terms of higher bandwidth, multi-value logic (MVL) such as ternary logic system can be incorporated. 16-24 Ternary logic system is an eminent approach for sending more number of bits/information per transmission which enables attaining higher throughput. ¹⁶ In Ref. 17, a resistive based MVL system using CNTFET for realization of standard ternary inverter (STI) is presented. However, feasibility to integrate large resistors along with carbon nanotube field effect transistor (CNTFET) technology is challenging and more space consuming. This leads to increased area overheads and more power consumption. Sheng Lin et al. have proposed a novel structure of CN/TFET based STI that contains no lumped resistive element.13

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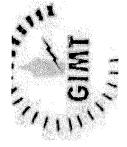
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# Smart grids are able to provide optimal energy trading with demand responses via the use of cloud computing enabled virtual power plants.

Dr. A. Avani

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### **ABSTRACT**

The growing penetration of energy from renewable sources and electric vehicles (EVs) presents a substantial challenge for something like the operator of the power grid in the form of an increase in peak demand as well as a loss in power quality. In addition, there is an increasing need for services that provide fast charging in smart grids. It might be difficult to keep up with the ever-increasing demand for quick charging services. In order to overcome this obstacle, we present in this article a new data mining architecture for managing virtual power plants (VPPs) in smart grids that is founded on cloud computing and combines commodities trading with services provision. This architecture is designed to manage virtual nuclear reactors. By buying electricity via an online energy trading platform hosted in the cloud, the planned system would enable electric vehicles (EVs) to be fueled at increased power rates without having an impact on the functioning of the power grid.

In addition, customers that own storage devices have the ability to sell any excess energy they produce to the market. The energy trading platform may, on the one hand, be seen of as a domestic market that is part of the VPP and is designed to increase that organization's income. On the other hand, it is in the owners of electric vehicles (EVs) best interest to keep the cost of charging as low as possible. Because of this, we represent the interactions that take place seen between EV owners and the VPP as a competitive game rather than a cooperative one.

In order to find the Nash equilibrium (NE) of the game, we first need to create an algorithm and then investigate the amount of computation and communication overhead it entails. In order to test the effectiveness of the proposed algorithm, we make use of actual data provided by the California Independent System Operator (CAISO). According to the findings of our research, users who own merely storage devices have the potential to receive an average income increase of approximately 200% by participating in the suggested single market. In addition, customers who use just electric vehicles may cut their charging expenses by roughly half, on average. Consumers that own electric vehicles as well as storage devices are able to cut their charging expenses even lower, by about 120%; in this scenario, users make a profit by making advantage of the single market.

# I. INTRODUCTION

The rising contribution of renewable energy resources in the distribution grid is being driven in large part by the environmental advantages and economic incentives provided by these resources.

New challenges to the reliable and stable operations of the power grid, particularly during peak hours, have been introduced as a result of the uncertainties associated with the production of green sources, the substantial increase in the capacity of

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# Operating an I-GMM-based data preparation approach on a cloud platform

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### ABSTRACT

The amount of information that is kept in the sustainable energy cloud platform may be significantly improved via the use of pre-processing, which in turn makes the process of data analysis more effective. In this research, an updated GMM model is used to build a technique for the preparation of data pertaining to power grids. The solution is based upon the distributed architecture of cloud computing. This method starts with building a smart grid cloud platform on top of the cloud storage architecture. After that, you should execute feature extraction on the grid data that has been saved on the cloud platform. In order to finish the preparation of the data, the upgraded GMM model is employed to both categorise and preserve raw grid data. This brings the whole process full circle. Experiments have been conducted to prove, in the end, that this strategy is effective.

### I. INTRODUCTION

The energy demand in a number of different places is expanding at a quick rate as a direct result of the rapid expansion of economic development. During the same time period, the growth and maturation of the Internet of Things technology has also led to its widespread use in the electrical grid. Because of all of these factors, the data included in the smart grid indicates a meteoric rise [1][2]. However, these data types are diverse [3,] the data sources are complex [4,] and there are also issues such as missing data. abnormal data, and inconsistent formats [5,] which cause significant disruption to power grid companies' data gathering and analysis. [As an example:] [As an example:] [As an example:] [As an example:] [ Therefore, preparing the data in the smart grid, and then categorising and storing it, may significantly increase the data's overall quality while also reducing the amount of computation time and storage space that is necessary for data analysis. These have the potential to lower the costs associated with running the grid.

According to various processing aims, data preparation may be split into data cleaning, data integration, and data categorization, et cetera. The primary goal of data cleaning is to get rid of any errors, such as missing noise pollution, inconsistent formatting, and so on. For instance, Lin et al. [6] find a solution to the issue of anomalous converter status data by using a data cleaning method that is based on cluster analysis analysis and neural networks; and Lv et al. [7] propose a smart grid incomplete data verifying algorithm that is based on machine learning. Both of these methods are able to solve the problem. The primary goal of data integration is to transform information obtained from a wide variety of data sources into a form that can be stored consistently. For instance, Li et al. [8] presented a wide-area distributed power quality data integration architecture for power grids. This design would make use of distributed data integration technology as well as wide-area distributed backup recovery technology. [Citation needed] The process of distinguishing data based on its origin, format, and application

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# Using Dynamic Voltage Restorer To Enhance/ Improvement of Power Quality

Dr.N.V.Subba Rao

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# ABSTRACT:

Power Quality is a fundamental worry in the advanced power framework that can influence customers also, utility. The combination of environmentally friendly power sources, savvy lattice frameworks and broad utilization of force hardware gear led to heap issues in the cutting edge electric power framework. Current and voltage sounds, voltage list, and swell can harm the delicate hardware. These gadgets are vulnerable to input voltage varieties made by obstruction with different pieces of the framework. Subsequently, in the advanced age, with an expansion in delicate and costly electronic gear, power quality is fundamental for the power framework's dependable and safe activity. Dynamic Voltage Restorer (DVR) is a potential Distribution Flexible AC Transmission System (D-FACTS) gadget generally took on to conquer the issues of non-standard voltage, current, or recurrence in the appropriation matrix. It infuses voltages in the appropriation line to keep up with the voltage profile and guarantees consistent burden voltage. The reproductions were directed in MATLAB/Simulink to show the DVR-based proposed methodology's viability to smooth the twisted voltage because of music. A power framework model with a programmable power source is utilized to incorporate third also, fifth sounds. The frameworks' reaction for load voltage is assessed for with and without DVR situations. It has been noticed that the proposed DVR based system has actually dealt with the voltage mutilation, and a smooth remunerated load voltage was accomplished. The heap voltage THD rate was around 18% and 23% with addition third and fifth sounds in the stockpile voltage, separately. The incorporation of the proposed DVR has decreased THD around under 4% in the two cases.

### INTRODUCTION:

Electrical Energy is imperceptible, a general ware that is promptly accessible in the vast majority of the world, and it has now been perceived as regular customer need [1]. Sustainable power Systems (RESs) is utilized to help the essential energy interest in sun oriented, Solar warm, wind energy, and so on. The discontinuous idea of RESs, sounds, what's more, receptive power issues end the power framework's execution by beginning steadiness worries in the power framework [2], [3]. The Flexible AC Transmission Systems (Realities) gadgets are broadly adjusted for responsive power remuneration, voltage steadiness, and power quality in dissemination matrices all over the planet [4], [5]. Notwithstanding, Reality

gadgets additionally change various boundaries the transmission and appropriation framework [6]. This work presents an investigation of the power quality and focuses. on recognizing the reasons for unfortunate power quality and give the answers for these power quality issues. Some gear like PCs, PCs, transfers, strong state gadgets, flexible speed drives, and optical gadgets are known as delicate gear. These gadgets are powerless to enter voltage varieties made by obstruction with different pieces of the framework.

The power framework is partitioned into the accompanying parts as age, transmission, conveyance, and by utilizing other transmission line power frameworks is taken care of to various burdens on the circulation side. Power

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# Authentication upon that Blockchain that Is Completely Anonymous Together with Addition To improvements with Distributed Generation Computation Offloading Network

Dr. A. Avani

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# **ABSTRACT**

Conventional virtualized smart grid systems have a number of significant obstacles, two of the most significant of which are obtaining low-latency and offering real-time services. As a result, there has been a growing tendency toward shifting toward edge computing. Existing cryptographic methods often do not enable conditional anonymous or flexible identity management, despite the fact that there have been a number of cryptographic protocols developed specifically to make it easier to maintain encrypted systems in smart grid networks.

In light of this, the purpose of this article is to provide a mutual authentication and key negotiation methodology for edge computing-based smart grid systems that is based on blockchain technology. Specifically, by using blockchain technology, the protocol is able to offer efficient conditional anonymity as well as access control. This is accomplished without the use of any extra complicated encryption algorithms. The security analysis demonstrates that the protocol delivers a fair degree of safety assurance. Furthermore, the comparison summary for both safety and efficacy hints that the suggested technique may have use in the context of a power system implementation.

### I. INTRODUCTION

One of the many categories of the Industrial Internet of Things (IIoT), smart grid systems are among those that have the potential to increase the dependability, flexibility, and quality of distribution [1]. However, when the system grows in size (for example, as the number of customers grows), it may become more difficult to achieve certain goals, such as reducing latency and enhancing quality of service (QoS) [2]. As a result, there have been attempts made to use edge computing to mitigate these challenges, such as utilising electric vehicle charging stations to act as edge computing devices and facilitate real-time decision making, and as a result. improving provisioned quality of service

and eco-friendliness in latency-sensitive applications [3, 4]. In addition, there have been attempts made to use edge computing to improve provisioned QoS and eco-friendliness in latency-sensitive applications [5, 6].

It is a well-known cliché that there is no such thing as a completely safe system, and this adage holds true for smart grid security as well.

For instance, the characteristics that are inherent to the architecture of edge computing, such heterogeneity, as mobility, geo-distribution, and locationawareness, can be exploited by attackers to carry out their malicious activities. These characteristics include heterogeneity, mobility, geo-distribution, and locationawareness. In light of

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# Optimizing Routing and Storage Node Deployment Together for Consistent Data Storage in Multicultural WSN

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### ABSTRACT:

Sensor networks have been widely used in the big data age, yielding a lot of data for several purposes. However, handling the enormous amount of data is a highly difficult problem since sensor networks are often installed in hostile locations. In this research, the topic of data storage reliability in heterogeneous wireless sensor networks, where robust storage nodes are placed in sensor networks and data redundancy is used via coding approaches, is the major emphasis. We create an algorithm to jointly optimize data routing and storage node placement in order to reduce the expenses associated with data delivery and data storage. Since the issue is NP-hard and may be expressed as a binary nonlinear combinatorial optimization problem, it is very difficult to construct approximation techniques. We carefully propose an effective algorithm powered by a continuous-time Markov chain to plan the deployment of the storage node and associated routing strategy by using the Markov approximation framework. We also do in-depth simulations to confirm the effectiveness of our method.

### I INTRODUCTION:

Wireless Sensor Networks (WSNs) have rapidly advanced in a variety of applications during the last several decades [1]. A variety of sensors have been widely installed and networked for monitoring and surveying purposes in the big data era[2-5]. Data storage has still grown to be a highly challenging task as a consequence of the

development of WSNs, which generates enormous sensory data [6-11]. Difficult problem. Due to their limited resources (such as computation, data processing, and storage capabilities), sensor nodes are often unable to provide professional data storage services. Employing designated storage nodes in a heterogeneous wireless sensor network is one way to increase the capacity of data storage in a WSN. The data detected

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# Analysis Modelling & Simulation of grid connected STATCOM

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# **ABSTRACT**

The increasing Industrialization, urbanization of life style has lead to increasing dependency on the electrical energy. This has resulted into rapid growth of power systems. This rapid growth has resulted into few uncertainties. Power disruptions and individual power outages are one of the major problems and affect the economy of any country. These constraints affect the quality of power delivered. However, these constraints can be suppressed by enhancing the power system control. Now a days Flexible AC Transmission Systems (FACTS) devices are very useful for the compensation and control of active power in transmission and distribution power system network. This will improve the stability of system under faulty condition and under varying condition. In these FACTS devices STATCOM is used to control power issues like Power unbalances, harmonics distortion, Faults and short circuit interruptions. STATCOM improve the stability of the power system. In this Paper, Pulse width Modulation technique with PI Controller is being proposed for compensation of Power in transmission lines. Simulation results carried out by MATLAB/SIMULINK to evaluate the performance of the proposed method. Simulation results determine that the proposed model is the most efficient solution for the problem in Power systems.

# **I.INTRODUCTION**

The FACTS is a generic term representing the application of power electronics based solutions to AC power system. These systems can provide compensation in series or shunt or a combination of both series and shunt. The FACTS can attempt the compensation by modifying impedance, voltage or phase angle. Flexible AC transmission systems (FACTS) devices have been proposed and implemented in many power systems. In which, static synchronous compensator (ST A TCOM) plays an

important role to improve the power quality. Such as, ST A TCOM is connected at the point of common coupling (PCC) to maintain stable voltage to improve the power quality by protecting DFIG-based wind farm interconnected to weak grid from going offline during and after disturbances. A design procedure for ST A TCOM with constantly updates parameters of PI controller for voltage regulator to enhance the voltage profile of the multi-machine system under dynamic disturbances has been proposed STATCOM can combine with Power System Stabilizer (PSS) in multi-machine

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# Power System Stability Enhancement using Unified **Power Flow Controller**

Dr.N.V.Subba Rao Professor, Department of EEE, Anu Bose Institute of Technology, Paloncha, India nvsubbarao@rediffmail.com

### ABSTRACT:

With the growing demand of electricity, at times, it is not possible to erect new lines to face the situation. Flexible AC Transmission System (FACTS) uses the thyristor controlled devices and optimally utilizes the existing power network. FACTS devices play an important role in controlling the reactive and active power flow to the power network and hence both the system voltage fluctuations and transient stability. This paper proposes the Unified Power Flow Controller (UPFC) as a power electronic based device that has capability of controlling the power flow through the line by controlling its series and shunt converters, also combined with Distributed Generation (DG) connected in the DC link to mitigate power quality disturbances. The proposed control will enable increased connections of renewable energy sources in the smart grid. The function of the scheme has been investigated the improvement of transient stability and voltage fluctuations of inter-area power system.

# **I.INTRODUCTION**

The solutions to improve the quality of supply in the electrical networks with distributed generation go through the applications of the developments semiconductor power devices, that is to say, the utilization of static power converters in electrical energy networks [1].technological advances in power semiconductors are permitting development of devices that react more like switch, totally controllable, admitting high frequencies of commutation to major levels of tension and power [2]. The concept of distributed generation (DG) is generally associated to the development of the renewable energy sources such as fuel cells, wind energy and solar cells, another factor to keep in mind in the development

and configuration of the electrical system. The DG will need important electronic equipment based on power converters that facilitate the integration of these sources of energy, without damaging over the reception quality of the users connected to the electricity network [3].

The FACTS controllers offer opportunities to regulate the transmission of alternating current (AC), increasing or diminishing the power flow in specific lines and responding almost instantaneously to the stability problems. The potential of this technology is based on the possibility of controlling the route of the power flow and the ability of connecting networks that are not adequately interconnected, giving the possibility of trading energy between distant agents [4]. One particular concept, called the

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# The Wireless Sensor Network Implementation of a Hybrid Fault-Tolerant Routing Based on the Gaussian Network

Dr. A. Avani

Assistant Professor, Department of CSE, Anu Bose Institute of Technology, Paloncha, India avanialla@gmail.com

# ABSTRACT:

Throughout this publication, we develop a dynamic fault-tolerant routing as a solution to the problem of fault-tolerance in wireless sensor networks (WSNs) that are based on hierarchical topology. Clustering and the labelling of sensor nodes as Gaussian integers are also components of the hierarchical topology. As a result, the area of the network is segmented into smaller square grids, and the cluster head of each grid is denoted by an integer based on the Gaussian distribution. A Gaussian network has been created using these cluster heads by connecting them all together. In this paper, a hybrid fault-tolerant clustering routing protocol for wireless sensor networks based on the Gaussian network is proposed. This protocol makes use of node symmetry, the shortest distance in the Gaussian network, as well as the benefits of multi-path routing (FCGW). The goal of the Fault Tolerance, Increased Data Reliability, and Energy Consumption (FCGW) project is to make wireless sensor networks more resilient to failures, increase the reliability of their data, and The findings of the experiments that were conducted in order to test the suggested scheme demonstrate that the FCGW protocol has a high level of data dependability. Additionally, the FCGW protocol uses approximately 48% of the energy that is available in the network, whereas other protocols use approximately 70% more energy.

# I INTRODUCTION:

In wireless sensor networks (WSN), the metrics such as data reliability, optimum power consumption, defined as repeated, and data latency are some of the significant issues in the efficient implementation of the network [1-3]. In particular, in WSN, incorrect connections are constantly caused by the limited number of sensor nodes, as well as by severe communication settings like as rain, wind, snow, and water. This can be seen in [4]. As a result, increasing the failover clustering of the networks will result in an improvement in the quality and services and dependability provided by the WSN. Since that time, resolving concerns with high availability has been an essential necessity for the design of WSNs.

As of right now, there are a few different fault-tolerant strategies that have been suggested as ways to make fault tolerance better. These fault-tolerant strategies will be organised into three primary categories: mechanisms that are based on redundancy, mechanisms that are based on clustering, and mechanisms that are based on deployment, as described in [5]. To be more specific, the following are some of the benefits and drawbacks associated with each mechanism:

Mechanisms that are based redundancy: The fault tolerance may be increased by including redundancy components into the system, such as duplicate routing pathways, redundant time, and data duplication [6]. Active replicating and passively replicating both play a role in this mechanism's primary

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# Compensation of Voltage Sag and Swell Using DVR

Dr.N.V.Subba Rao Anu Bose Institute of Technology, Paloncha, India nvsubbarao@rediffmail.com

### ABSTRACT:

The most significant disturbances in the Power systems are Voltage sags and swellswhich may bring great economic losses to the sensitive customers. To solve this problem, installation ofFACTSdevice has become necessary. Dynamic Voltage Restorer (DVR), one of the FACTSdevice is being installed in the power system at both transmission and distribution level in order to presenteffective solution to this problem of voltage sags/swells. The Dynamic Voltage Restorer (DVR) has recently been introduced to protect sensitive loads from voltage sags and swells other voltage disturbance. It is a series connected power electronic based device. Its appeal includes smaller size and fast dynamic response to disturbances. In this paper, Sinusoidal pulse width modulation technique with PI Controller is being proposed for compensation of Voltagesag/swell.Simulation results carried out by MATLAB/SIMULINK to evaluate the performance of the proposed method. Simulation results determine that the proposed model is the most efficient solution for the problem of voltage sag/swell.

### **I.INTRODUCTION**

In modern technology, there are two major challenges that power system must deal with: one is voltage fluctuations and the other is short circuit faults. Present days, many power loads have become more sensitive to the disturbances due to voltage fluctuations, flickers that are produced because of wide use of non-linear loads. Because these disturbances quality fluctuations of power distributed or transmitted has become low. Faults in power system can cause voltage sag or swell in the entire system or major part of it. In addition, harmonics, voltage transients, flickers are also one of the voltage quality problems [1].

Consumers need constant sine wave shape, constant frequency and symmetrical voltage

with a constant root mean square (rms) value to continue the production. To satisfy these demands, the disturbances must be eliminated from the system. The typical power quality disturbances are voltage sags, voltage swells, interruptions, phase shifts, harmonics and transients. Voltage sag can be either balanced or unbalanced which mostly depending on type of faults. The main sources of voltage sag are any type of faults in power system.voltage sags are considered as major threats to the power quality. Similarly voltage swells occurs at any instant of time ranging from 1.1 to 1.8 p.u and that lasts for half a cycle to one minute. But voltage swells are less frequent compared to that of voltage sags which are mainly produced because of sudden switching off of large loads or energization of capacitor banks [3].

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# Modeling and Simulation of Grid connected **PV-System with D-STATCOM**

Dr.N.V.Subba Rao Professor, Department of EEE, Anu Bose Institute of Technology, Paloncha, India nvsubbarao@rediffmail.com

# ABSTRACT:

Due to increase demand of energy world community looking towards renewable energy and in this solar is best option due to clean energy and there are no environmental concern. Government is also providing subsidy over last decade .But due to weather dependent power generation of solar it requires to connect this with grid .For this we requires FACTS devices which will connect PV-system to grid .This paper presents grid connected PV-system with STATCOM. Now a days FACTS devices are very useful for the compensation and control of active power in transmission and distribution power system network. This will improve the stability of system under faulty condition and under varying condition. By using Matlab simulation I-V and P-V characteristic are shown. The basic control strategy which is used in this paper is dual close loop control. In this there are two control loop one is called outer control loop also called voltage control another is inner control loop also called current control loop. Which are used for active and reactive power compensation. Here P&O algorithm is used for solar MPPT. Which are easier and accurate and it requires less parameter compared to others.

# I. INTRODUCTION:

In recently with the growth of nonlinear loads demand increasing day by day and also due to industrial growth requirement of more active and reactive power to the industry and consumer with improved quality of power. But due to environmental and health impact of conventional energy source and much more cost for constructing new generating and

transmission line it is better to generate active and reactive power at the load side by using clean energy source and take small amount of power from the grid . Now renewable energy is the best option which can full fill the demand and world moving very fast towards such type of energy sources which full fill our demand without creating any environmental and health hazard problem. In this solar PV is the best option now a days it is world fastest growing

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# Authentication upon that Blockchain that Is Completely Anonymous Together with Addition To improvements with Distributed Generation Computation Offloading Network

Dr. A. Avani

Assistant Professor, Department of CSE, Anu Bose Institute of Technology, Paloncha, India avanialla@gmail.com

### ABSTRACT

Conventional virtualized smart grid systems have a number of significant obstacles, two of the most significant of which are obtaining low-latency and offering real-time services. As a result, there has been a growing tendency toward shifting toward edge computing. Existing cryptographic methods often do not enable conditional anonymous or flexible identity management, despite the fact that there have been a number of cryptographic protocols developed specifically to make it easier to maintain encrypted systems in smart grid networks.

In light of this, the purpose of this article is to provide a mutual authentication and key negotiation methodology for edge computing-based smart grid systems that is based on blockchain technology. Specifically, by using blockchain technology, the protocol is able to offer efficient conditional anonymity as well as access control. This is accomplished without the use of any extra complicated encryption algorithms. The security analysis demonstrates that the protocol delivers a fair degree of safety assurance. Furthermore, the comparison summary for both safety and efficacy hints that the suggested technique may have use in the context of a power system implementation.

# I. INTRODUCTION

One of the many categories of the Industrial Internet of Things (IIoT), smart grid systems are among those that have the potential to increase the dependability, flexibility, and quality of distribution [1]. However, when the system grows in size (for example, as the number of customers grows), it may become more difficult to achieve certain goals, such as reducing latency and enhancing quality of service (QoS) [2]. As a result, there have been attempts made to use edge computing to mitigate these challenges, such as utilising electric vehicle charging stations to act as edge computing devices and facilitate real-time decision making, and as a result, improving provisioned quality of service

and eco-friendliness in latency-sensitive applications [3, 4]. In addition, there have been attempts made to use edge computing to improve provisioned QoS and eco-friendliness in latency-sensitive applications [5, 6].

It is a well-known cliché that there is no such thing as a completely safe system, and this adage holds true for smart grid security as well.

For instance, the characteristics that are inherent to the architecture of edge computing, such as heterogeneity, mobility, geo-distribution, and locationawareness, can be exploited by attackers to carry out their malicious activities. These characteristics include heterogeneity. mobility, geo-distribution, and locationawareness. In light of this,

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# Sensor-Assisted Monte Carlo Segmentation with Robustness Boost for WSN and IOT

Dr. A. Avani

Assistant Professor, Department of CSE, Anu Bose Institute of Technology, Paloncha, India avanialla@gmail.com

# ABSTRACT:

Knowing where the geo-location sensor data was gathered from is crucial for scattered sensor systems, particularly in instances involving mobile sensors, which are often encountered in wireless sensor networks or the Internet of Things. With the exception of a radio, which is already present on sensor nodes, range-free Monte Carlo localization-based techniques are relatively energy efficient. However, the incorporation of motion sensor data based dead reckoning considerably enhances location estimations' accuracy and provides resilience against erroneous or hostile network actors. In this paper, we offer a robust sensor-assisted Monte Carlo localization method (RESA-MCL). We demonstrate the efficiency of RESA-MCL in terms of general localization accuracy as well as resilience against malicious assaults or malfunctioning nodes. We offer three attack scenarios based on malicious anchor nodes to assess and contrast our strategy against previous approaches. RESA-performance MCL's are assessed using these attack models, and our method outperforms other methods in conditions of both extremely low and high anchor node density, obtaining a localization error of 0.5 with an anchor density of 0.33. Overall, RESA-MCL does a better job than similar techniques at lower anchor density, reducing localization errors by up to 48%, and is much more resistant to attacks while requiring only a little more computing work.

### I INTRODUCTION:

In the modern world, a growing number of Internet of Things (IoT) devices with various types of sensors, as well as Wireless Sensor Networks (WSN), are being deployed to cover a wide range of scenarios, from connected devices [9] to decentralised volunteer measures for evaluating air quality [2], [17], industrial uses [10], and wildlife monitoring [16]. Knowing where the data was recorded is crucial for understanding the

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### PQ based Hysteresis Controlled Active Filter utilizing Decrease of Harmonics

Dr.N.V.Subba Rao Professor, Department of EEE, Anu Bose Institute of Technology, Paloncha, India nvsubbarao@rediffmail.com

### ABSTRACT:

A three-stage inverter-based Active Filter (AF) constrained by Instantaneous genuine and responsive power hypothesis (PQ hypothesis) based hysteresis and PI regulators are introduced in this paper. An Inverter based AF is utilized to lessen the sounds brought about by non-direct loads in the source voltage and current by infusing the remunerating flows. The hysteresis Controller produces the entryway beats expected for the activity of AF. Quick genuine and receptive power hypothesis (PQ hypothesis) screens the dynamic and responsive powers and creates the reference current as needs be. PI regulator directs the voltage of the DC interface capacitor. The MATLAB Simulink model has been intended for the proposed approach and the THD is decreased altogether.

### INTRODUCTION:

Power Quality is characterized as the appearance of issues in current, voltage or deviation of recurrence which causes to disoperation, harm, and breaking down of customer hardware. Variety in recurrence, voltage, and waveform contortion is basic power quality issues. In a new electrical framework, it is occurring extremely normal that there is an unexpected increment of non-direct loads, for example, foothold drives, customizable speed drives, battery chargers, PCs, and variable recurrence drives, and so forth. These heaps are causing music when they draw the non-sinusoidal flows from the inventory mains which misshapes the normal sinusoidal influx of both voltage and flows. The twisting in the sinusoidal wave likewise causes the unfortunate power factor, overheating of hardware, overheating of transformer units, inordinate unbiased flows, and so on. This made a premium to create and explore the gear called 'symphonious channels' to reduce the sounds existing in the power framework. Customarily, power quality issues and sounds are moderated overall and specific separately by uninvolved channels. In any case, the presentation of the inactive channels is

limited because of the issue of the absence of dynamic pay and reverberation. The dynamic power channels are created to vanquish these restrictions. There are many advantages in utilizing dynamic channels contrasted with latent channels like the better reaction than the varieties of music and shifting burdens. Likewise, a more prominent number of music, and alleviation of other power quality issues like hang, swell and gleam, and so forth can be repaid by a solitary dynamic channel. These dynamic channels dispense with the voltage and current music, accordingly counterbalance negative and zero arrangement parts and further developing the power factor. The geography of dynamic power channels (APF) is viewed as series or equal contingent upon the wellsprings of sounds. In this paper, AF is utilized to moderate sounds. In the proposed approach AF infuses the remunerating flows that are inverse and equivalent in stage with the line flows which comprise the sounds. PQ hypothesis is the control system utilized for controlling the AF. Hysteresis Controller produces the door beats for AF by contrasting the genuine line flows and the reference remunerating flows. The PI regulator directs the DC interface capacitor voltage by taking the reference DC voltage

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### Stability Enhancement In Transmission Line Using UPQC

Dr.N.V.Subba Rao

Anu Bose Institute of Technology, Paloncha, India
nvsubbarao@rediffmail.com

### **ABSTRACT**

This paper presents the power quality improvement using UPQC. UPQC consists of series inverter, shunt inverter and capacitance. Every inverter connected with pulse generator for switching on. UPQC is especially obtained to resolve different kind of power quality drawback like reactive power compensation, voltage interruption and harmonics. DVR is connected in series to deliver the active and reactive power to distribution network. DC-link capacitors stay high as a result of the DVR needs a minimum amount of DC-link voltage to compensate sag. So, DC –link voltage is connected with PV module to reduce the cost. Design of UPQC device with multi-bus system obtained using MATLAB/SIMULINK and simulation results are mentioned to support the developed conception.

### **I.INTRODUCTION**

The term "power quality" (PQ) has gained significant attention in the past years.Electrical power generated and distributed to the long distance. Some nonlinear loads are connected on the distribution side for effective flow of power to the consumers. It cause voltage flicker. distortion, transient. Hence by using facts devices we'll be able to reduce the power quality issues. Distribution resources (DR) causes voltage increase or decrease on the feeder depending on DR kind, control technique, its delivered power at feeder

parameters and loading. Interruption is critical when compared with voltage sag in latter it may become a number one power quality problem. DVR is connected between supply and critical load feeder. It provides complete security for distribution network.

The advancement in the semiconductor device technology has made it possible to realize most of the power electronics based devices/prototypes at commercial platform. The development of power electronic technology makes it possible to realize many kinds of Flexible Alternating Current Transmission Systems devices to obtain

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### Voltage Sag Compensation Using Dynamic Voltage Restorer

Dr.N.V.Subba Rao Professor, Department of EEE, Anu Bose Institute of Technology, Paloncha, India nvsubbarao@rediffmail.com

### ABSTRACT:

The increase use of modern sensitive and sophisticated loads connected to distribution system causes various problems to the system. The major problems are voltage sag and swell, there is need to compensate it .Today most of the distribution companies are using power semiconductor based devices for improving power quality. Among the various custom power devices, Dynamic voltage restorer is used for compensation in this paper, which is most popular and widely used method. Here, in phase compensation technique of DVR is used with battery energy storage system. The DVR's life time is improved by replacing battery with super capacitor. Super capacitor is most suitable short duration energy requirement. The control technique employed here is SRF controller. The overall work is carried out in MATLAB Simulink.

Keywords: DVR, voltage sag, voltage swell, In Phase compensation, Battery Energy storage, SRF controller.

### 1. INTRODUCTION:

The electric power industry comprises electricity generation, transmission, and distribution. The electricity then moves through wiring system of end user until it reaches the load During this quality of power may changes and disturbance or called power quality problem occur .Power quality involve voltage, frequency, waveform. Good power quality can be defined as steady supply voltage that stays within the prescribed range, steady ac frequency closed to rated value and smooth voltage curve waveform. Without proper power electrical device or load may malfunction, fail prematurely or not operate at all. There are many ways in which electric power can be of poor quality and many more causes of such poor quality power. The number of power quality issues including voltage sag, swell, flicker, harmonics, transients etc. has different causes.

The most of the common power disturbance that impact sensitive equipment is voltage sag .The main sources of sag are large increase in current

due to faults and abrupt increase in system impedance. Voltage sag are caused by reduction in the load with poor voltage regulation. Voltage sag means that decrease in normal voltage from 10% to 90% of its RMS value which last for a cycle less than one minute .Voltage swell, in contrast, can be defined as increase in RMS voltage above the nominal value which last for a cycle greater than one minute. Switching off of large load and energization of capacitor bank are considered as causes of voltage swell. In this scenario power quality is directly related to distribution system because of it is situated at the end power system and directly connected to customer. If any disturbance is occur in distribution system, a huge amount of losses may happen, therefore loss of productivity and competitiveness. Hence it is necessary to improve quality of power. In order to improve quality of power, there is number of custom power devices are available which protects the load from voltage sag, swell harmonics etc. DVR is a series connected device installed between source and load. DVR inject the voltage

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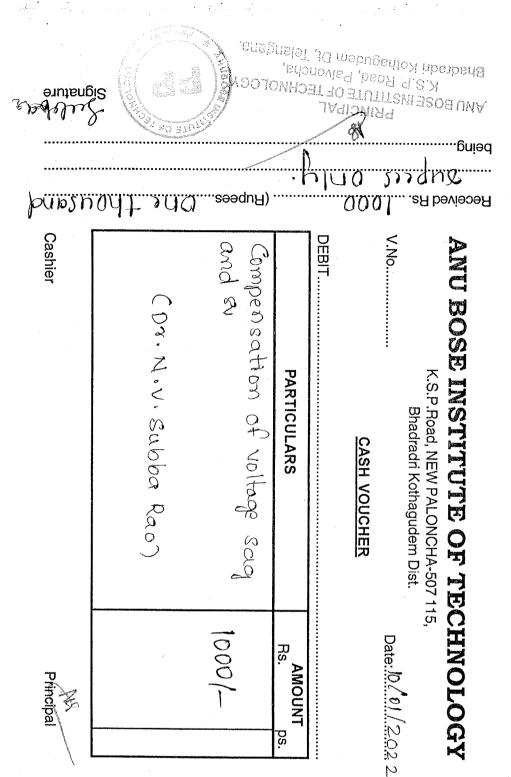
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### Voltage Sag Compensation Using Dynamic Voltage Restorer

Dr.N.V.Subba Rao
Professor, Department of EEE, Anu Bose Institute of Technology, Paloncha, India
nvsubbarao@rediffmail.com

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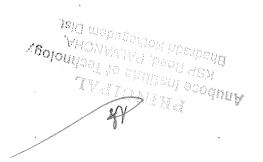
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	ii.	Travelling	Allowance	• • • • • • • • • • • • • • • • • • • •	
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3. F	Recomi	nendations	of the Principal:_	<u>R</u>	
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Date: 05/05/2023

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K.S.P.Road, NEW PALONCHA-507 115, Bhadradri Kothagudem Dist.

CASH VOUCHER

DEBIT AMOUNT Rs. 10001 sustainable "Innovation in India Accelerating cleam, green and M. Nagaraju **PARTICULARS** 

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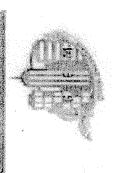
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V.No.

# Dr. D. Y. Patil Institute of Technology, Pimpri, Pune

ASSOCHAM GEM Green Building Council, New Delhi



"Accelerating Clean, Green and Sustainable Innovation in India" Faculty Development Program on

Certificate of Participation M. Nagaraju

This certificate is awarded to

## Anubose Institute of Technology

in recognition to attending the FDP on "Accelerating Clean, Green and Sustainable Innovation In India" organized by

Department of Electrical Engineering and Department of Instrumentation Engineering of Dr. D. Y. Patil Institute of

Technology, Pimpri, Pune in collaboration with ASSOCHAM GEM Green Building Council, New Delhi, during 7th

May 2023 to 14th June 2023

PRIMCIPAL

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Shadradri Kothagudem Dist

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Cell+91-9246907407

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	College	Counselling	
CODE	PP	BOSE	

	L		BOSE
1	Name		ancial Support Request Letter
		e of the faculty member	:V. Ashok
2.	Desig	nation	: Assistant professol
3.	Depar	rtment	: FEE
4.	Confe	erence/Publication/ Member	ship Fee/ Workshop /FDP Certificate
	Detail	ls: One week face —Colortoic vehic	ultry Development programme on. Le
		ion of the Program	: 11th to 16th may 2023 : Thulelal Institute of Technology
		cial support particulars (Rs.)	
	i.	Registration Charges	:
	ii.	Travelling Allowance	•••••••••••••••••••••••••••••••••••••••
	iii.	Membership Fee	
	iv.	Others	
Date			Signature of the faculty member
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		mendations of the IQAC:	Marts.
		mendations of the Principal:	
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Date: 10/05/2023

Anubose Institute of Technology KSP Road, PALVANCHA,

RINCIPAL Shadradri Kothagudem Dist. Anubose Institute of Technology

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K.S.P.Road, NEW PALONCHA-507 115, Bhadradri Kothagudem Dist.

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CASH VOUCHER

PARTICULARS	AMOUNT Rs. ps.	S.
One week faculty development	-10001	
program on electric vehicle		
V. Ashok		
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Cashier

Received Rs. 1000 (Rupees One Thousand supees only

PRINCIPAL

V.No.....

Anubase Institute of Technology KSP Road, PALVANCHA, Phadradri Kothagudem Dist.



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Anubose institute of Technology KSP Rosd, PALVANCHA, Bhadradki Kothagudem Dist.



## Jhulelal Institute Of Technology







Department of Electrical Engineering

# CERTIFICATE OF PARTICIPATION

This certificate is presented to

V. Ashok

for attending One Week Faculty Development Programme on "Electric Vehicle" organised by Department of Electrical Engineering, Jhulelal Institute of Technology, Nagpur-441111 in association with CADD Center Training Services and Vishvakariya Automotive Pvt. Ltd. Nagpur, held on

11th - 16th May 2023

Prof. Rohan M. Ingle

KSP Road, PALVANCBentificate Anulesse Institute of Technology Bhadradri Kothagudem Dist. PRINCIPAL

PAL Disconding N. Bawane

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Cell:+91-9246907407

College Counselling CODE PP BOSE

		$\underline{\mathbf{F}}$	<u>inancial</u>	Support Request Letter	
1.	Name	e of the faculty member		T. Rambaby	•••••
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3.	Depa	rtment		S.J.H.	
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6.	Assoc	ciating professional body		Dr. DoypallIns	Hute of Technology
7.	Finan	cial support particulars (R	Cs.)	:	
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	ii.	Travelling Allowance		:	•••••
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Date: 05/05 /2023

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and bose institute of technology

K.S.P.Road, NEW PALONCHA-507 115, Bhadradri Kothagudem Dist.

CASH VOUCHER

DEBIT..... **AMOUNT** 10001 Rs. Accelerating clean, green and sustainability innovation in T. Rambabu **PARTICULARS** 

Cashier

1000 (Rupees One Thousand Received Rs.... PRINCIPAL ubose Institute of Technology being.....



Kambe Signature

Principal

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# Dr. D. Y. Patil Institute of Technology, Pimpri, Pune



ASSOCHAM GEM Green Building Council, New Delhi



"Accelerating Clean, Green and Sustainable Innovation in India"

### Certificate of Participation

T. Rambabu

This certificate is awarded to

### Anubose Institute of Technology

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Department of Electrical Engineering and Department of Instrumentation Engineering of Dr. D. Y. Patil Institute of

Technology, Pimpri, Pune in collaboration with ASSOCHAM GEM Green Building Council, New Delhi, during 7th

May 2023 to 14th June 2023

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Accountant:

Date:

10/05/2022

### ANUBOSE INSTITUTE OF TECHNOLOGY

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Counselling

College

CODE	PP	BOSE
	ancial Support R	equest Letter
1. Name of the faculty member		Maybelli
2. Designation		rb. professor
3. Department	:E.E.	E
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5. Duration of the Program	u.ts .	to 16th may , 2023
6. Associating professional body	J. head	to 16th may 2023
7. Financial support particulars (Rs.)		
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iii. Membership Fee	:	
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Date:	Signatur	the faculty member
1. Recommendations of the HoD:	· • • •	or the incurry michigan
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Bhadradri Kothagudem Dist TIPAL. Anubose institute of Technology KSP Road, PALVANCHA, Bhadroda Komagudem Dist.

Anubose Institute of Technology

KSR Road, PALVANCHA,

K.S.P.Road, NEW PALONCHA-507 115, Bhadradri Kothagudem Dist.

CASH VOUCHER

DEBIT AMOUNT Rs. 1000 one week faculty development program on electric vehicle SK. Mybelli **PARTICULARS** 

Cashier

Principal

(Rupees. A.M. Received Rs. ..1000... supers only

PRINCIPAL

Anubose Institute of Technology

KSP Road, PALVANCHA,

Bhadradri Kothagudem Dist.

Signature



## Jhulelal Institute Of Technology







Department of Electrical Engineering

# CERTIFICATE OF PARTICIPATION

This certificate is presented to

Sr. Mybell

for attending One Week Faculty Development Programme on "Electric Vehicle" organised by Department of Electrical Engineering, Jhulelal Institute of Technology, Nagpur-441111 in association with CADD Center Training Services and Vishvakariya Automotive Pvt. Ltd. Nagpur, held on 11th - 16th May 2023

Prof. Rohan M. Ingle

KSP Road, PALVANCHA, Bhadradri Kothagudem Bigitincate ID Anubose institute of Technology

PRINCIPAL

Dr. Narendra N. Bawane

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Cell:+91-9246907407

	College	Counselling
CODE	PP	BOSE

1	Name	Fina of the faculty member	ancial Support Request Letter :
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2.	Desig	nation	: Assistant professor.
3.	Depar	tment	CIVIL
4.	4. Conference/Publication/ Membership Fee/ Workshop /FDP Certificate		
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		ion of the Program	:25.107/2023. to 31/27/2023 :
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2. R	Lecomr	mendations of the IQAC:	Noul C
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Date: 33/07/2023 Anubose institute of Technology KSP Road, PALVANCIAS, PALVANC



K.S.P.Road, NEW PALONCHA-507 115, Bhadradri Kothagudem Dist.

CASH VOUCHER

V.No.

DEBIT AMOUNT through Ict mode on modelling, omalysis & design of stauctures Short-term training program using latest version of STAAD G. Madhulatha **PARTICULARS** 

Cashier

Received Rs. 1000 (Rupees One Thousand

of Technology

Road, PALVANCHA,

Signature



G. Madhulatha Awarded to

for having successfully completed the

Short Term Training Programme through ICT Mode on

Structures using latest version of STAAD Modelling, Analysis and Design of

organised by this institute

from 25/07/2023 to 31/07/2023 [duration: 1 Week]



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Cell:+91-9246907407

	College	
CODE	9	Counselling
CODE	PP	BOSE
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1. Name of the faculty member	icial Support Request Letter
2. Designation	:
3. Department	· FEF
4. Conference/Publication/ Membersh	
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<ul><li>5. Duration of the Program</li><li>6. Associating professional body</li></ul>	:115165 may 2023
7. Financial support particulars (Rs.)	:
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ii. Travelling Allowance	
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iv. Others	:
Date:	Signature of the faculty member
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2. Recommendations of the IQAC:	
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Date: 69/05/2023 KSP Road, PALVANOHA, PRINCIPAL KSP Road, PALVANOHA, PRINCIPAL Bhadradri-Kothagudem Alfilbose Institute of Technology KSP Road, PALVANCHA.

Shadradri Kothagudem Dist.



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ANU BOSE INSTITUTE OF TECHNOLOGY

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K.S.P.Road, NEW PALONCHA-507 115, Bhadradri Kothagudem Dist.

Date: 04.106.12023

CASH VOUCHER

DEBIT AMOUNT ) ooo ( Ŗ, One week faculty development program on electric vehicle MD. Glousiga Begum **PARTICULARS** 

Cashier

Principal

Received Rs. 1000 (Rupees One being PRINCIPAL

Anubose Institute of Technology

KSP Road, PALVANCHA, Shadradri Kothagudem Dist Signature



## Jhulelal Institute Of Technology







Department of Electrical Engineering

# CERTIFICATE OF PARTICIPATION

This certificate is presented to

MD. Grousiya Begum

for attending One Week Faculty Development Programme on "Electric Vehicle" organised by Department of Electrical Engineering, Jhulelal Institute of Technology, Nagpur-441111 in association with CADD Center Training Services and Vishvakariya Automotive Pvt. Ltd. Nagpur, held on

11th - 16th May 2023

Prof. Rohan M. Ingle.



Div Narendra N. Bawane 3000



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Cell:+91-9246907407

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College Counselling PP BOSE

Financia Enancia	al Support Request Letter
2. Designation :	Assistant professor
3. Department :	EE E
4. Conference/Publication/ Membership	Fee/ Workshop /FDP Certificate
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10/05/2023 Anubose institute of Technology

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K.S.P.Road, NEW PALONCHA-507 115, Bhadradri Kothagudem Dist.

CASH VOUCHER

DEBIT AMOUNT Rs. 10001 One week faculty development program on electric vehicle R. Sekhan baby **PARTICULARS** 

Received Rs. 1000 (Rupees One Thousand supers only being.....

PRINCIPAL
Anubose Institute of Technology
KSP Road, PALVANCHA, Rhadradri Kothagudem Dist.



Principal

Cashier

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## Jhulelal Institute Of Technology



Approved by AUCIE Recognized by DIE and Amated to KTM Neighin University
Department of Electrical Engineering

# CERTIFICATE OF PARTICIPATION

This certificate is presented to

R. Sethar Babu

for attending One Week Faculty Development Programme on "Electric Vehicle" organised by association with CADD Center Training Services and Vishvakariya Automotive Pvt. Ltd. Nagpur, held on Department of Electrical Engineering, Jhulelal Institute of Technology, Nagpur-441111 in 11th - 16th May 2023

tn – 16tn May 2023

Sel as

Prof. Rohan M. Ingle



Dr. Narendra N. Bawane

(Approved by AICTE, New Delhi and Affiliated to JNTUH, Hyderabad) (Recognized by UGC under section 2(f) of the UGC Act, 1956) (An ISO 9001:2015 Certified Institution) Estd: 2008)

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	College	Counselling	
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		<u>Fir</u>	nancial	Support Request Letter
1.	Name	of the faculty member		Support Request Letter L. venkata Masusini Ma. prabath
2.	Desig	nation	:	.Assistant professos
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ELNCTPA Anubose Institute of Technology Date: 24/04/2023 Anubose Institute of Technology Road, PALVANCHA, KSP Road, PALVANCHA hadradri Kothagudem Dist

Bhadradri Kothagudem Dist



Principal

## ANU BOSE INSTITUTE OF TECHNOLOGY

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K.S.P.Road, NEW PALONCHA-507 115, Bhadradri Kothagudem Dist.

CASH VOUCHER

**AMOUNT** 

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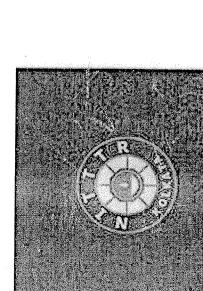
DEBIT..... N. Venkata Nazasimha Prabhath through ICT mode on modelling, analysis & clesign of structures using latest version of STAAD short term training program **PARTICULARS** Cashier

Received Rs. 1000 (Rupees One Thousand being.....

PRÍNCIPAL Anubase Institute of Technology KSP Read, PALVANCHA, Shadradri Kothagudem Dist

V.No....

Signature



Programme Coordinator (s)

Gertificate

Awarded to

N. Ventata Nasasimha Prabath

for having successfully completed the

Short Term Training Programme through ICT Mode on

Structures using latest version of STAAD Modelling, Analysis and Design of

organised by this institute

from 25/07/2023 to 31/07/2023 [duration: 1 Week]

Academic Coordinator

Service Management

Anubese Institute of Technology KSP Road, PALVANCHA,

Shadradni Kothagudem Dist.



CODE

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Counselling

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Cell:+91-9246907407

College

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1 Name	Final	icial Support Request Letter: :B. Lamman Naik
1. Name		
2. Design	nation	:A. Histant protessor.
3. Depar	tment	· Lee
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Accountant:

24/07/2023 Anubose Institution

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K.S.P.Road, NEW PALONCHA-507 115, Bhadradri Kothagudem Dist.

Date:18/67/2023

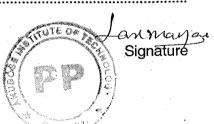
CASH VOUCHER

Short term training program through ICO 1short term training program tool Indee on modelling, and design of structures using latest version of Structures

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ANU BOSE INSTITUTE OF TECHNOL... K.S.P. Road, Palvoncha, Bhadradri Kothagudem Dt, Telangana.

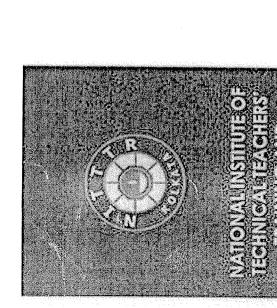
V.No.....



Cashier

Principal

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B. Laxman Naik Sertificate Awarded to

for having successfully completed the

Short Term Training Programme through ICT Mode on

Structures using latest version of STAAD Modelling, Analysis and Design of

organised by this institute

from 25/07/2023 to 31/07/2023 [duration: 1 Week]



A PATHICA AL MOIOGO

Programme Coordinator (s)

Academic Coordinator

ANU BOSE INSTITUTE OF TECHNOLOGY Bhadradri Kothagudem Dt, Telangana. A K.S.P. Road, Palvoncha,



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# Dr. D. Y. Patil Institute of Technology, Pimpri, Pune



ASSOCHAM GEM Green Building Council, New Delhi



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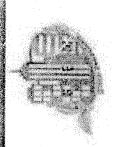
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	Financ	ial Support Request I	Letter
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Crosstalk analysis of dielectric inserted side contact multilayer graphene nanoribbon interconnects for ternary logic system using unconditionally stable FDTD model



Gurijala Deepthi , Madhavi Tatineni

Department of Electronics and Communication Engineering, GITAM Deemed to be University, Visakhapatnam, 530045, India

## ABSTRACT

In the present work, for examining the performance of dielectric inserted side contact multilayer graphene nano ribbon (DSMLGNR), a novel Unconditionally Stable Finite-Difference Time-Domain (USFDTD) technique is proposed. This technique overcomes the constraint of courant stability condition prevailing in FDTD technique. The proposed mathematical model is highly time efficient and accurately analyzes the crosstalk effects induced among the coupled interconnect lines. The robustness of the USFDTD technique is verified by determining various performance metrics and justifying it with FDTD technique and HSPICE simulations. The obtained results are in accordance with HSPICE and the average percentage error is less than 1%. For performing the transient analysis, USFDTD model consumes 25% lesser time compared to FDTD technique. Furthermore, accuracy of the proposed model is validated by using Feature Selective Validation (FSV) tool.

## 1. Introduction

The continuous scaling of technology has the advantage of reduced interconnect length by optimizing the density of components on the chip, however liability of confining the amount of information that has to be transmitted is very less. Over recent years' researchers have implemented binary logic for the design of digital circuitry where it is associated with two logic levels [1]. But by using the binary logic more space is occupied on the chip, only less amount of information can be transmitted and also intricacy arises in wire routing [2,3]. Therefore, at high-speed applications, interconnects not only have the impact of crosstalk effect but also faces problem in attaining high throughput. Hence, research is directed towards the ternary logic where plenty of data can be sent through a wire thereby reducing the number of interconnections and complexity among the ICs. Despite the performance of the ternary logic systems is effected by the significant reduction in the noise margin and the switching threshold voltage when compared to binary logic in counterpart [3]. Due to this the impact of crosstalk effects turned out to be more on ternary logic systems. An extensive research has been performed on ternary based logic interconnects [4-10].

As the chip size is decreasing, probability of failure in IC is also increasing to a greater extent. Electromigration is an insidious form of failure in ICs, which is emerging as a leading problem and need to be optimized in parallel with current density and timing. This can be accomplished by implementing various shielding techniques and by

carrying out the mathematical modelling. Shielding technique is the most effective and common technique to reduce crosstalk noise as well as delay uncertainty to keep the signal integrity efficiently. In Ref. [11], competency of passive shielding has been studied in bringing down the crosstalk effects among CNTFET based ternary circuits. Further the research has been focused towards the implementation of active shielding over ternary based MWCNT interconnect bundle to nullify the crosstalk induced failures [12,10]. In Ref. [14] a comparative analysis has been done by implementing both active and passive shielding techniques in mitigating crosstalk effects among MWCNT and MLGNR interconnects. Subsequently the work has been extended towards DS-MLGNR and Di-VGNR interconnects. And the performance of these interconnects are analyzed by implementing active shielding technique for ternary logic system [15,16]. Hence, it is observed that by incorporating active shielding technique, crosstalk effects can be mitigated to a greater extent compared to passive shielding.

In hunt of finding an alternate solution to silicon technology has propelled a great deal of research into non silicon materials. Among all the devices carbon nanotubes (CNTs) and graphene nanoribbons (GNRs) appear destined to open up a host of new revolution in nanometer industry. These exhibits greater mechanical strength, possess unique electrical properties and are efficient conductors of heat. The intrinsic properties of these materials becomes useful in solving the problems that are plaguing the metallic interconnects and proves to be an appropriate interconnect material for nano electronic devices [17-20]. However,

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