

**Swami Keshvanand Institute of Technology,
Management & Gramothan, Jaipur**



**A
Report
of
5th International Conference
on
“Advancements in Nano-electronics &
Communication Technologies”**



(ICANCT-2025)

Dates: May 16-17, 2025

Organized by
**Department of Electronics and Communication
Engineering**

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- Shri Jaipal Meel, Director SKIT

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- Dr. Chandra Mohan Singh Negi, Banasthali Vidyapith
- Dr. Ashish Choudhary, NIT Raipur
- Dr. Ashok Kumar Suhag, BML Munjal University

Organizing Committee:

- Dr. Rukhsar Zafar , ECE Department, SKIT
- Dr. Swati Arora,ECE Department, SKIT
- Dr. Kiran Rathi, ECE Department, SKIT
- Dr. Vikas Pathak, ECE Department, SKIT
- Dr. J.P.Vijay, ECE Department, SKIT
- Dr. Suman Sharma, ECE Department, SKIT
- Ms. Mamta Jain , ECE Department, SKIT
- Mr. Neeraj Jain,ECE Department, SKIT
- Mr. Lalit Lata, ECE Department, SKIT
- Ms. Rajni Idiwal, ECE Department, SKIT
- Mr. Abhinandan Jain ,ECE Department, SKIT
- Ms. Priyanka Sharma, ECE Department, SKIT

Subject: Regarding Budget approval for ICANCT – 2025 Conference

We are organizing an International conference as per following details:

Name of Conference: 5th International conference on “Advancements in Nano-electronics & Communication Technologies (ICANCT-2025)”

Mode of conduction: Hybrid

Conference Dates: 16 – 17 May, 2025

Expected Number of Participants: 35

Publication: Accepted papers will be published in conference proceedings of Springer
the Tentative Budget Plane for ICANCT – 2025 Conference as per following details: -

S. No.	Tentative Expenses	Amount (in Rs.)
1.	Refreshment & Lunch	12000/-
2.	Printing	2500/-
3.	Experts Honorarium & Travelling allowances,	20000/-
4.	Registration Kit	10000/-
5.	Publication Charges	35000/-
6.	Miscellaneous Charges	2500/-
Total Expenditure (Tentative)		82000/-
Expected Earnings from Participant Registration		35000/-
Fund required from Institute		47000/-

Hence kindly approve the above budget for successful conduction of the ICANCT – 2025 conference.

Convener: ICANCT – 2025

HOD – ECE Department

About Conference

International Conference on “**Advancement in Nano-electronics & Communication Technologies (ICANCT-2025)**” is a two-day conference that aims at presenting current researches being carried out in the areas of Communication, Nanoelectronics, Photonics, Wireless Communication, Mobile Communications, Internet of Things, Machine learning and Artificial Intelligence, Antenna and Wave Propagation and VLSI technology for scientists, researchers, academicians, industry experts, new aspirants as well as students of science and technology all around the World.

The scope of this conference encompasses the latest research outcomes in the form of theoretical models, environmental impact, security and defense technology, innovative designs, enhancements and improvements in existing frameworks, sustainable technological advancement, societal welfare, etc. Thus, the conference intends to bring together the best minds from around the world to cover literally all aspects of energy technology from a multi-disciplinary perspective.

Event Poster



ICANCT-2025

5th INTERNATIONAL CONFERENCE
ON
ADVANCEMENTS IN NANO-ELECTRONICS & COMMUNICATION TECHNOLOGIES

Organised by Department of Electronics & Communication Engineering
(May 16-17 , 2025)

SWAMI KESHVANAND INSTITUTE OF TECHNOLOGY MANAGEMENT & GRAMOTHAN , JAIPUR



ICANCT-2025

ABOUT ICANCT-2025

Two Day International conference on "Advancements in Nano-electronics & Communication Technologies (ICANCT-2025) is organized by Department of Electronics & Communication Engineering, Swami Keshvanand Institute of Technology, Management & Gramothan (SKIT M & G), Jaipur during 16th-17th May 2025. This conference aims at presenting current research being carried out in the areas of Communication, Nano electronics, Photonics, Wireless Communication, Mobile Communications, Internet of Things, Machine learning and Artificial Intelligence, Antenna and Wave Propagation and VLSI Technology. The scope of this conference encompasses latest research outcomes in the form of theoretical models, environmental impact, security and defense technology, innovative designs, enhancements and improvements in existing frameworks, sustainable technological advancement, societal welfare etc. Thus the conference intends to bring together the best minds from around the world to cover literally all aspects of energy technology from a multi- disciplinary perspective.

NOTE :



Final Accepted and Presented Papers will be published with Springer in their proceedings - Communications in Computer and Information Science Series (Final Approval Pending).

CONFERENCE CHAIR

GENERAL CHAIR

- Dr. Mukesh Arora, SKIT M&G Jaipur
- Dr. Praveen Kumar Jain, SKIT M&G Jaipur

PROGRAM CHAIR

- Dr. Monika Methur, SKIT M&G Jaipur
- Dr. Pallav Rawal, SKIT M&G Jaipur
- Dr. Tawfik Ismail, Cairo University, Egypt
- Dr. Pooja Sharma, University of Coimbra, Portugal
- Dr. Ghanshyam Singh, MNIT Jaipur
- Dr. Manish Tiwari, Manipal University Jaipur
- Dr. Sanyog Rawat, Central University Rajasthan, India

ORGANIZING SECRETARY

- Dr. Shubhi Jain, SKIT M&G Jaipur
- Mr. Harshal Nigam, SKIT M&G Jaipur
- Mr. Rahul Pandey, SKIT M&G Jaipur
- Ms. Gloria Joseph, SKIT M&G Jaipur

TRACK 1 (NANO ELECTRONICS)

- Low-dimensional materials & 2D materials.
- Surfaces, Interfaces and Thin films.
- Nanocomposites and Nanocatalysts.
- Molecular and Nanoelectronics.
- Nanosensors and Nanoactuators.
- Photonic & Plasmonic Nanomaterials.
- Metamaterials and Metasurfaces.
- Manipulation and Characterization of Materials at Nanoscale.
- Nanodevices: Fabrication, Characterization and Application.
- Emerging Memory Technologies for High-Performance Computing.
- Biomedical nano-electronics for Personalized Healthcare.

TRACK 2 (COMMUNICATION TECHNOLOGIES)

- AI-powered Communication Networks for Smart Cities.
- Energy-Efficient Communication Protocols for Wireless Sensor Networks (WSNs).
- Millimeter Wave (mmWave) Technologies for Ultrahigh Bandwidth Communication.
- Quantum-inspired Communication Techniques.
- Reliable and Secure Communication for Autonomous Vehicles.
- Cognitive Radio Networks for Dynamic Spectrum Access.
- Visible Light Communication (VLC) for Indoor Applications.
- Nanosatellite and smart communication -IoT.
- High Speed Communication using Machine learning.
- Mobile & wireless networks.



<https://icanct.skit.ac.in>



icanct2025@skit.ac.in

IMPORTANT DATES

START DATE OF PAPER SUBMISSION	25/12/2024
LAST DATE OF PAPER SUBMISSION	15/03/2025
ACCEPTANCE NOTIFICATION	31/03/2025
CAMERA READY PAPER SUBMISSION BEFORE	05/05/2025

TECHNICAL SPONSOR



IRISWORLD

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CONFERENCE FEE

CATEGORY	ONLINE	PHYSICAL
STUDENTS/RESEARCH SCHOLAR	₹ 5,500/-	₹ 6,500/-
ACADEMICIANS	₹ 6,500/-	₹ 7,500/-
INDUSTRY PARTICIPANTS	₹ 7,500/-	₹ 8,500/-
NON-AUTHORS PARTICIPANT	₹ 2,000/-	₹ 3,000/-
FOREIGN DELEGATES (ALL CATEGORIES)	\$80	\$90

ACKNOWLEDGMENT:- The Microsoft CMT service was used for managing the peer-reviewing process for this conference. This service was provided for free by Microsoft and they bore all expenses, including costs for Azure cloud services as well as for software development and support.

INSTRUCTIONS TO AUTHOR

- The authors are invited to submit Full papers of the Research/Review Papers. The papers will be peer-reviewed and only the accepted and registered papers will be considered for presentation during the conference and publication in the proceedings.
- Final Accepted and Presented Papers will be published with Springer in their proceedings Communications in Computer and Information Science Series (Final Approval Pending)
- All submissions need to be submitted through the CMT using the link:
<https://cmt3.research.microsoft.com/ICANCT2025/Submission/Index>
- NOTE : Acceptance of a full-length submission is strictly based on the reviewers' comments.
- At least one of the authors of an accepted paper needs to register for the conference and present the paper(s).

Conference Schedule

Day 1: May 16, 2025 (Friday)

9:00 AM- 09:45 AM	<p><u>Inaugural Session (online)</u></p> <p><u>Chief Guest:</u> Prof. Preetam Kumar IIT Patna</p> <p><u>Guest of Honour:</u></p> <p>1. Dr. Debabrta Sikdar Associate Professor IIT Guwahati</p> <p>2. Dr. Jaume Anguera Electronics and Telecommunication Engineering, University Ramon Llull, Barcelona, Spain</p>
09:45 AM- 10:30 AM	<p><u>Invited Talk – 1</u> <u>(online)</u> Prof. Preetam Kumar, IIT Patna</p>
10:35 AM- 11:05 AM	<p><u>Invited Talk – 2</u> <u>(online)</u> Sai Krishna Gunda The Home Depot, LPL Financial, Mexico, USA Software Engineer</p>
11:05 AM – 11:30 AM	<p>Break</p>
11:30 AM – 2:00 PM	<p><u>Invited Talk – 3</u> <u>(offline)</u> Dr. Kamal Kishor Choure Assistant Professor SRM Institute of Science and Technology, Tamil Nadu</p> <p><u>Paper Presentation Session – 1 (offline)</u> <u>Session Chair:</u> Dr. Kamal Kishor Choure Assistant Professor SRM Institute of Science and Technology, Tamil Nadu</p>
2:15 PM – 2:45 PM	<p><u>Invited Talk – 4</u> <u>(online)</u> Dr. Debabrata Sikdar Associate Professor</p>

	IIT Guwahati
Day 2: May 17, 2025 (Saturday)	
09:00 AM – 09:45 AM	<u>Invited Talk – 5: (online)</u> Dr. Heena Rathore Texas State University, USA
10:00 AM – 10:45 AM	<u>Invited Talk – 6: (online)</u> Dr. Jaume Anguera Electronics and Telecommunication Engineering, University Ramon Llull, Barcelona, Spain
11:00 AM – 1:00 PM	<u>Paper Presentation Session – 2 (online)</u> Session Chair: Dr. Arun Kishor Johar, Assistant Professor, Department of Electronics and Communication Engineering, GLA University, Mathura, U.P
1:00 PM – 1:45 PM	Lunch Break
1:45 PM – 2:30 PM	<u>Invited Talk – 7 (Online)</u> Dr. Srinivasa Rao Nelamarri MNIT Jaipur
2:30 PM- 3:00 PM	<u>Valedictory Session</u>

Minute to minute program of Inauguration Ceremony

Date: 16 May, 2025

Timing: 9:00 AM Onwards

Timing	Activity
9:00 – 9:05 AM	Joining the session and introduction of Guest
9:05 – 9:10 AM	Welcome Address and about SKIT by Prof. S. L. Surana, Director (Academics), SKIT, Jaipur
9:10 – 9:15 AM	About the ICANCT – 2025 Conference Prof. Praveen Kumar Jain, Chair, Dy. HOD – ECE
9:15 – 9:20 AM	Address by Guest of Honour 1: Dr. Debabrata Sikdar Associate Professor IIT Guwahati
9:20 – 9:25 AM	Address by Guest of Honour 2: Dr. Jaume Anguera Electronics and Telecommunication Engineering, University Ramon Llull, Barcelona, Spain
9:25 – 9:30 AM	Word of Wisdom by Chief Guest: Prof. Preetam Kumar IIT Patna
9:30– 9:35 AM	Souvenir Presentation
9:35 – 9:45 AM	Vote of Thanks by Dr. Pallav Rawal Convenor, ICANCT – 2025



Swami Keshvanand Institute of Technology, Management & Gramothan

(An Autonomous Institute Affiliated to Rajasthan Technical University, Kota)
Accredited with 'A++' grade by NAAC



Department of Electronics and Communication Engineering

Presents

INTERNATIONAL CONFERENCE ON ADVANCEMENTS IN NANO-ELECTRONICS

&

COMMUNICATION TECHNOLOGIES (ICANCT-2025)

MAY 16-17, 2025

Keynote Speakers



Dr. Jaume Anguera
University Ramon Llull, Founder and
CTO at the technology company
Ignion (Barcelona, Spain)



Dr. Heena Rathore
Texas State University, USA



Dr. Preetam Kumar
IIT Patna



Dr. Srinivasa Rao Nelamarri
MNIT Jaipur



**SWAMI KESHVANAND INSTITUTE OF TECHNOLOGY
MANAGEMENT & GRAMOTHAN JAIPUR**

**DEPARTMENT OF ELECTRONICS & COMMUNICATION
PRESENTS**

**INTERNATIONAL CONFERENCE ON
ADVANCEMENT IN NANO-ELECTRONICS &
COMMUNICATION TECHNOLOGIES**

ICANCT-2025

MAY 16-17, 2025

INAUGURATION CEREMONY

CHIEF GUEST



Prof. Preetam Kumar
IIT Patna

GUEST OF HONOUR



Dr. Debabrata Sikdar
Associate Professor, IIT Guwahati



Dr. Jaume Anguera
Professor, University at Ramon Llull

Technical Report

Day-1 started with the inaugural ceremony Professor Pretam Kumar , IIT Patna, was the chief guest for inaugural ceremony along with our Guest of Honor Dr. Debabrata Sikdar Professor IIT Guwahati, Dr. Jaume Anguera E&T Engineering University Ramon Luill Barcelona, Spain In the Inauguration Ceremony Prof. S. L. Surana, Director (Academics), Prof. Monika Mathur, Dr Pallav Rawal , Prof. Mukesh Arora, Conference Chair, Head ECE & OFA, and Prof. P. K. Jain, Conference - Convener were also present.

In this conference total 95 papers were received, out of those total 35 papers were selected. On first day there were total three invited talks. First talk was given by. Professor Pretam Kumar IIT Patna, He discussed about importance of such conferences for students and researchers to understand current state of art technology he mentioned the rapid growth of data rates and the evolving definition of technology beyond size. Also he delivered a talk on “5G: Challenges and enabling technologies”.

Second session was started with the expert talk of Sai Krishna Gunda, Home Depot., financial Mexico USA SOFTWARE ENGINEER. He discussed about the AI & ML at the frontiers of nanoelectronics and communication technologies.

Next session was taken by Dr. Kamal Kishore choure assistant professor SRM institute science and technology Tamil Nadu. Her topic of expert talk was “Quantum computing and its applications”.

After the expert talks, Paper presentation session-1 was started. In this session, there was one session chair: 1. Dr. kamal Kishore choure, assistant professor SRM institute of science and technology tamil nadu. total 5 papers were presented during this session.

The last expert lecture of Day 1 was given by Dr. Debabrata Sikdar Associate Professor IIT GUWAHATI on topic “Nanophotonic Metamaterials utilizing Epsilon-Near-Zero-Effect for Free-space Optical Intensity & Polarization Modulation”.

DAY - 2 was started with 2 expert talks in online mode. 1st talk was delivered by Dr. Heena athore, Texas state university USA. Her topic of expert talk was Security and safety for autonomous vehicles using generative AI”. She discussed about How Hackers Can Heck Self Driving Cars, Av Communication.& in Second talk Dr Jaume Anguera, shared his topic on antenna booster tech for wireless communication and also emphasized the importance of industry academia collaboration He quoted Dr APJ Abdul kalam inspiring participants to face challenges and discover their inner strength.

In day – 2, we were having sessions of papers presentation.

Paper presentation session – 2, was chaired by Dr. Arun kumar Kishore johar Assoc. Professor, Deptt. of electronics and communication engineering GLA University Mathura UP In this session total 7 papers were presented. Then after lunch of Day – 2, we had an online expert talks.

1st Invited talk was given by Dr.Srinivas Rao Nelamarri MNIT JAIPUR ,. His topic of expert talk was “Ion beam modification of structural and optical properties of semiconductor and oxide materials for optoelectronic applications” The conference ended with valedictory session wherein Dr.Srinivas Rao continued as guest of honor.

Session-wise details
Paper Presentation Session-1 (offline)
(11:30 AM -2:00 PM) , May 16, 2025

S.N	Name of Author's	Paper Title	Paper ID	Institute/Organization Name	Mode of Presentation (Online/ Offline)
1	Birendra Kumar Pandey	Design and Analysis of a Dual-Band MIMO Antenna for 5G Applications at 26.3 GHz and 39.3 GHz	93	SKIT	Offline
2	Vipin Choudhary	From Spatial Filters to Smart Surfaces: The Transformative Journey of Frequency Selective Surfaces	34	Department of Physics, University of Rajasthan Jaipur	Offline
3	Syed Harish, I.B. Sharma and K. K. choure	Smart Harvest: Deep Reinforcement Learning for Crop Yield Prediction	95	SRMIST, SRM UNIVERSITY, KATTANKULLATUR	Offline
4	Ravi Sangwa	Design of a miniaturized Fractal Ground Antenna on 3D Printed TPU Substrate for UAVs application	46	NITTTR Chandigarh	Offline
5	Naresh Kumar Meena	An Analysis of 3D printed substrate on PIFA for Wi-Fi/Bluetooth, 4G LTE (S band) Application	63	National Institute of Technical Teachers Training and Research, Chandigarh	Offline

Paper Presentation Session-2 (online)

(11:00 AM -1:00 PM), May 17, 2025

S.N	Name of Author's	Paper Title	Paper ID	Institute/Organization Name	Mode of Presentation (Online/ Offline)
1	Sonia Joshi	Element Design Using Metamaterial Inspired Fractal Square Patches Metal and Complementary	69	Sardar Patel Institute of Technology	Online
2	Satyendra Kumar	Study of an Efficient and Flexible Thin Film Solar Cell	85	St. Wilfred's PG College, Jaipur	Online
3	Saraswathi V	DYNAMIC TRAFFIC SIGNAL REGULATION LEVERAGING MICRO GENETIC ALGORITHMS AND FUZZY LOGIC	60	S.A. ENGINEERING COLLEGE	Online
4	G Ashwini	ICD-U-Net: A Novel Approach for Medical Image Segmentation	72	SRI VENKATESWARA UNIVERSITY COLLEGE OF ENGINEERING, TIRUPATI	Online
5	Nainika Agrawal	Analysis of Cu ₂ ZnSn as Promising Photovoltaic Absorber	88	SKIT	Online
6	Subhiksha S	Design and Analysis of Microstrip patch antenna for wireless application at multi band	61	Dr. Mahalingam College of Engineering and Technology, Pollachi	Online
7	Syed Harish, I.B. Sharma and K. K. choure	Smart Harvest: Deep Reinforcement Learning for Crop Yield Prediction	95	SRMIST, SRM UNIVERSITY, KATTANKULLATUR	Online

Certificates





International Conference on
Advancement in Nano Electronics & Communication Technologies
(May 16-17, 2025)



ICANCT - 2025

CERTIFICATE OF APPRECIATION

This is to certify that Dr. Heena Rathore of Texas State University, USA has been recognized and honored for their invaluable contribution as a **Keynote Speaker** on topic "Security and safety for autonomous vehicles using generative AI" in the International Conference on "Advancement in Nano Electronics & Communication Technologies (**ICANCT-2025**)" held during **May 16-17, 2025**.

Prof. Mukesh Arora
(Conference Chair)

Prof. Monika Mathur
(Convener)

Dr. Pallav Rawal
(Convener)

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International Conference on
Advancement in Nano Electronics & Communication Technologies
(May 16-17, 2025)



ICANCT - 2025

CERTIFICATE OF APPRECIATION

This is to certify that Dr. Debabrata Sikdar of IIT Guwahati has been recognized and honored for their invaluable contribution as a **Keynote Speaker** on topic "Nanophotonic Metamaterials utilizing Epsilon-Near-Zero-Effect for Free-space Optical Intensity & Polarization Modulation" in the International Conference on "Advancement in Nano Electronics & Communication Technologies (**ICANCT-2025**)" held during **May 16-17, 2025**.

Prof. Mukesh Arora
(Conference Chair)

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Dr. Pallav Rawal
(Convener)

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International Conference on
Advancement in Nano Electronics & Communication Technologies
(May 16-17, 2025)



ICANCT - 2025

CERTIFICATE OF APPRECIATION

This is to certify that Dr. Jaume Anguera of University Ramon Llull, Barcelona, Spain has been recognized and honored for their invaluable contribution as a **Keynote Speaker** on topic "Antenna booster technology for wireless communications" in the International Conference on "Advancement in Nano Electronics & Communication Technologies (ICANCT-2025)" held during **May 16-17, 2025**.

Prof. Mukesh Arora
(Conference Chair)

Prof. Monika Mathur
(Convener)

Dr. Pallav Rawal
(Convener)

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International Conference on
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CERTIFICATE OF APPRECIATION

This is to certify that Prof. Preetam Kumar of IIT Patna has been recognized and honored for their invaluable contribution as a **Keynote Speaker** on topic "5G: Challenges and enabling technologies" in the International Conference on "Advancement in Nano Electronics & Communication Technologies (ICANCT-2025)" held during **May 16-17, 2025**.

Prof. Mukesh Arora
(Conference Chair)

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International Conference on
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CERTIFICATE OF APPRECIATION

This is to certify that **Dr. Kamal Kishor Choure** of SRM Institute of Science and Technology, Tamil Nadu has been recognized and honored for their invaluable contribution as a **Session Chair** in the International Conference on "Advancement in Nano Electronics & Communication Technologies (ICANCT-2025)" held during **May 16-17, 2025**.

Prof. Mukesh Arora
(Conference Chair)

Prof. Monika Mathur
(Convener)

Dr. Pallav Rawal
(Convener)

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International Conference on
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CERTIFICATE OF APPRECIATION

This is to certify that **Sai Krishna Gunda** of The Home Depot, LPL Financial, Mexico, USA has been recognized and honored for their invaluable contribution as a **Keynote Speaker** on topic "AI & ML at the frontiers of nanoelectronics and communication technologies" in the International Conference on "Advancement in Nano Electronics & Communication Technologies (ICANCT-2025)" held during **May 16-17, 2025**.

Prof. Mukesh Arora
(Conference Chair)

Prof. Monika Mathur
(Convener)

Dr. Pallav Rawal
(Convener)

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CERTIFICATE OF APPRECIATION

This is to certify that Dr. Arun Kishor Johar of GLA University, Mathura has been recognized and honored for their invaluable contribution as a **Session Chair** in the International Conference on "Advancement in Nano Electronics & Communication Technologies (ICANCT-2025)" held during **May 16-17, 2025**.

Prof. Mukesh Arora
(Conference Chair)

Prof. Monika Mathur
(Convener)

Dr. Pallav Rawal
(Convener)

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International Conference on
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ICANCT - 2025

CERTIFICATE OF APPRECIATION

This is to certify that Dr. Srinivasa Rao Nelamarri of MNIT Jaipur has been recognized and honored for their invaluable contribution as a **Keynote Speaker** on topic " Ion beam modification of structural and optical properties of semiconductor and oxide materials for optoelectronic applications " in the International Conference on "Advancement in Nano Electronics & Communication Technologies (ICANCT-2025)" held during **May 16-17, 2025**.

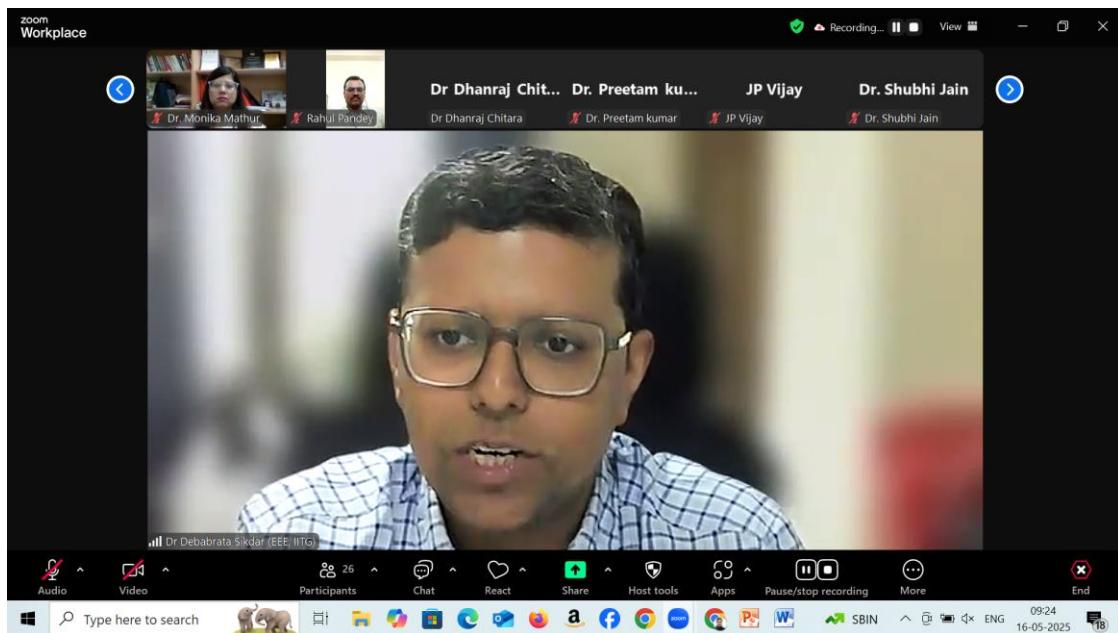
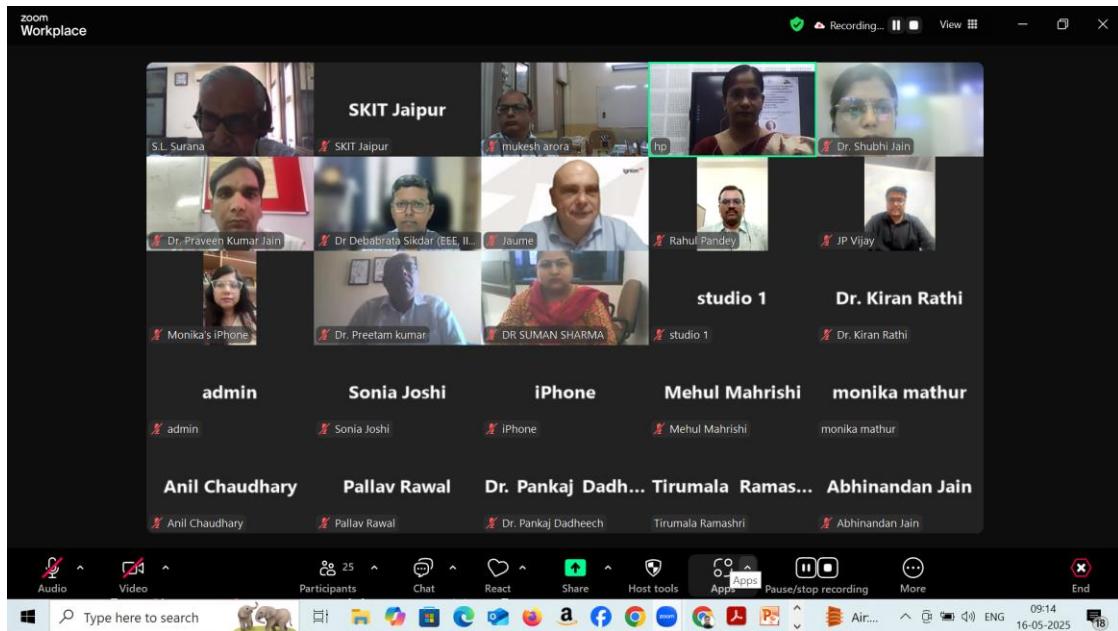
Prof. Mukesh Arora
(Conference Chair)

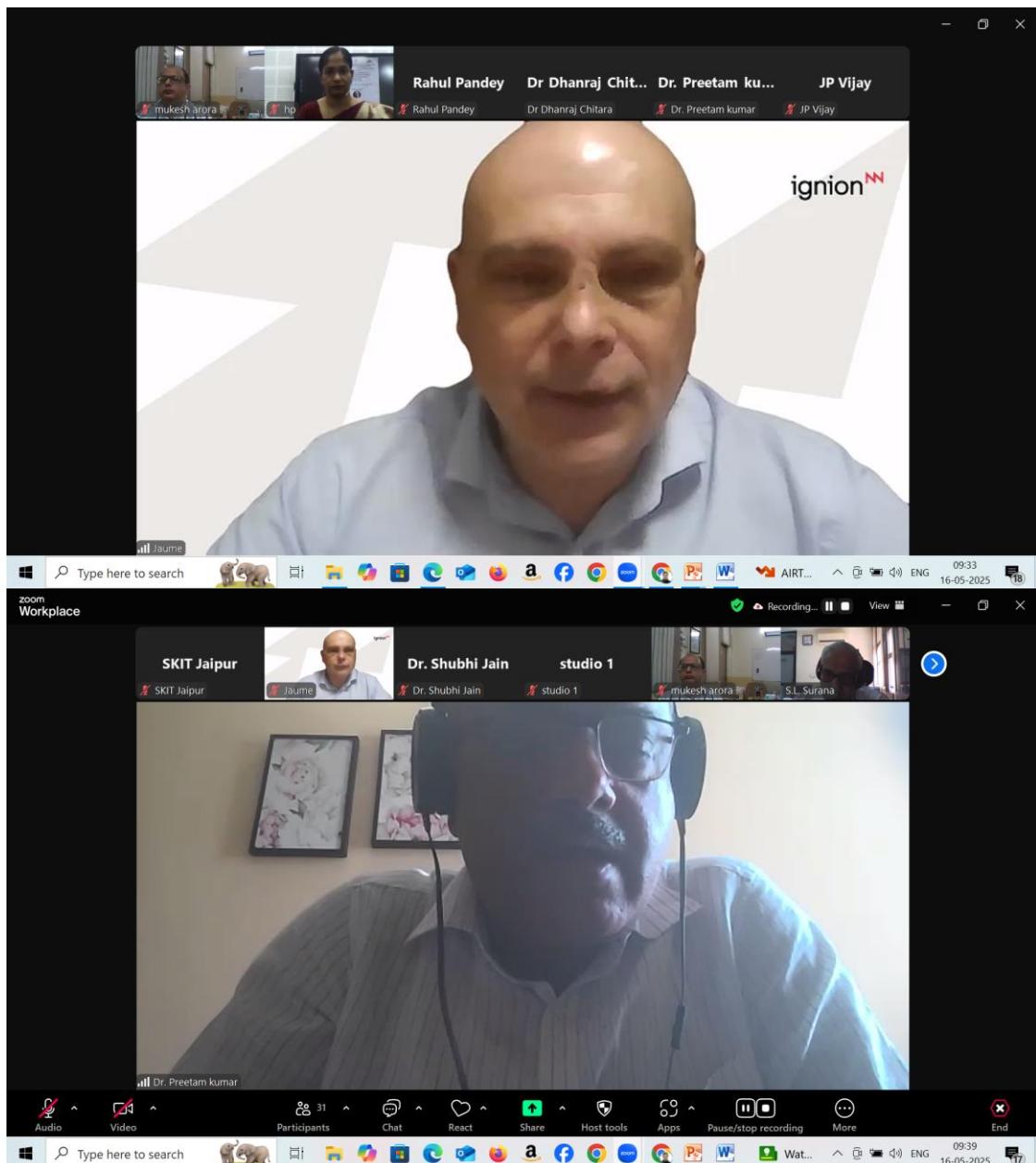
Prof. Monika Mathur
(Convener)

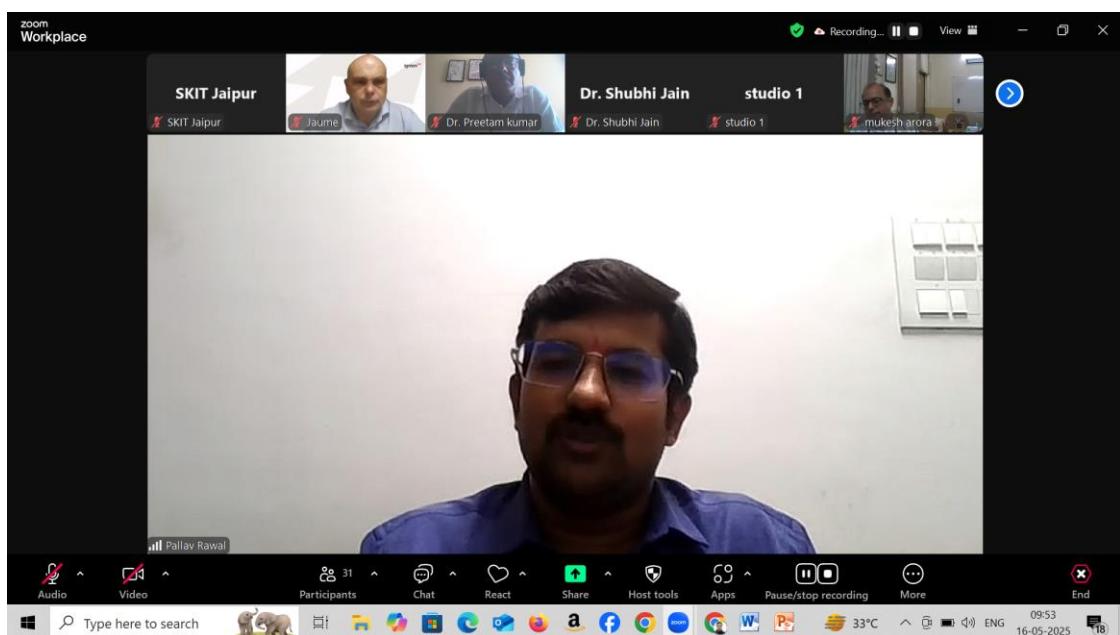
Dr. Pallav Rawal
(Convener)

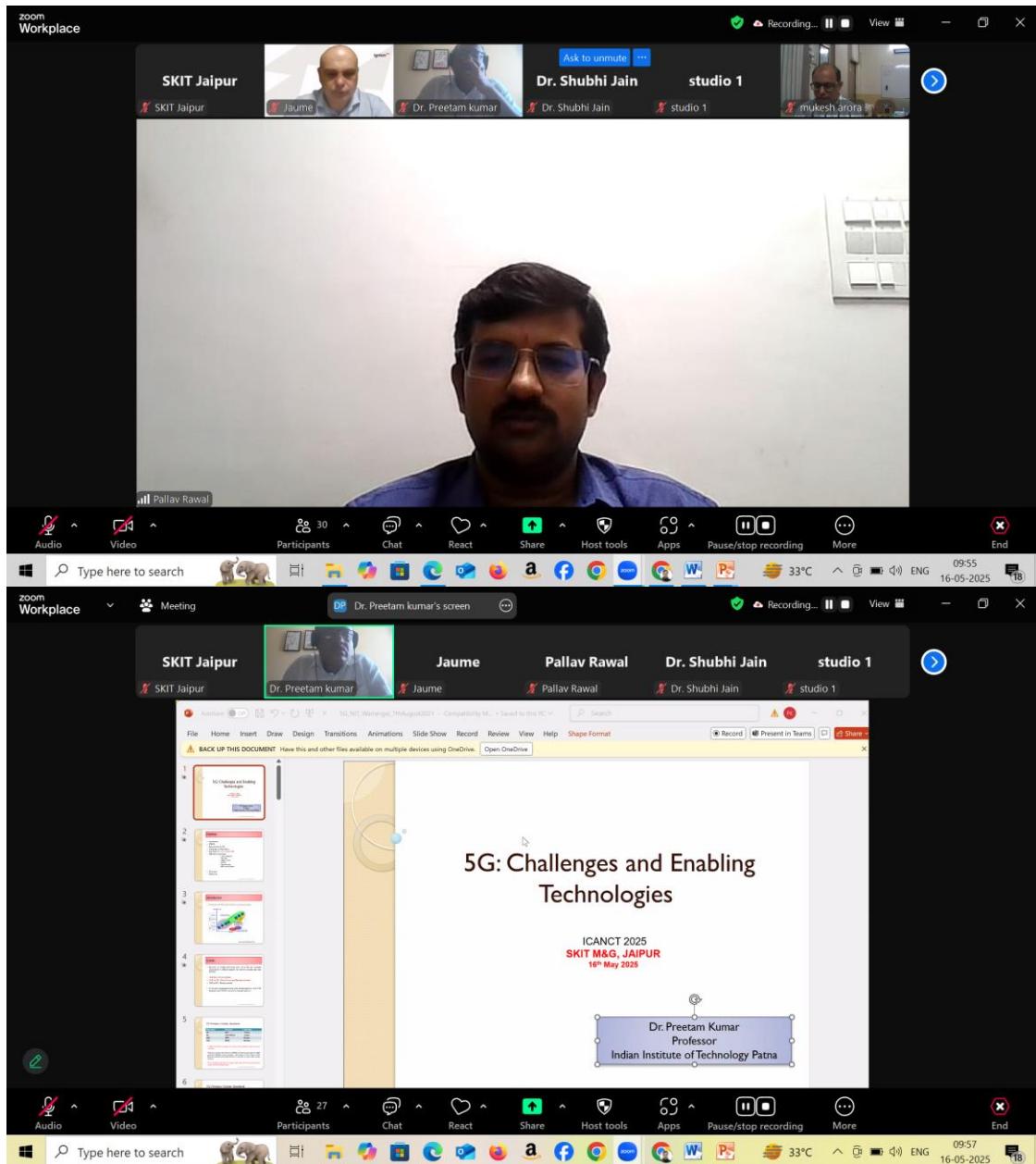
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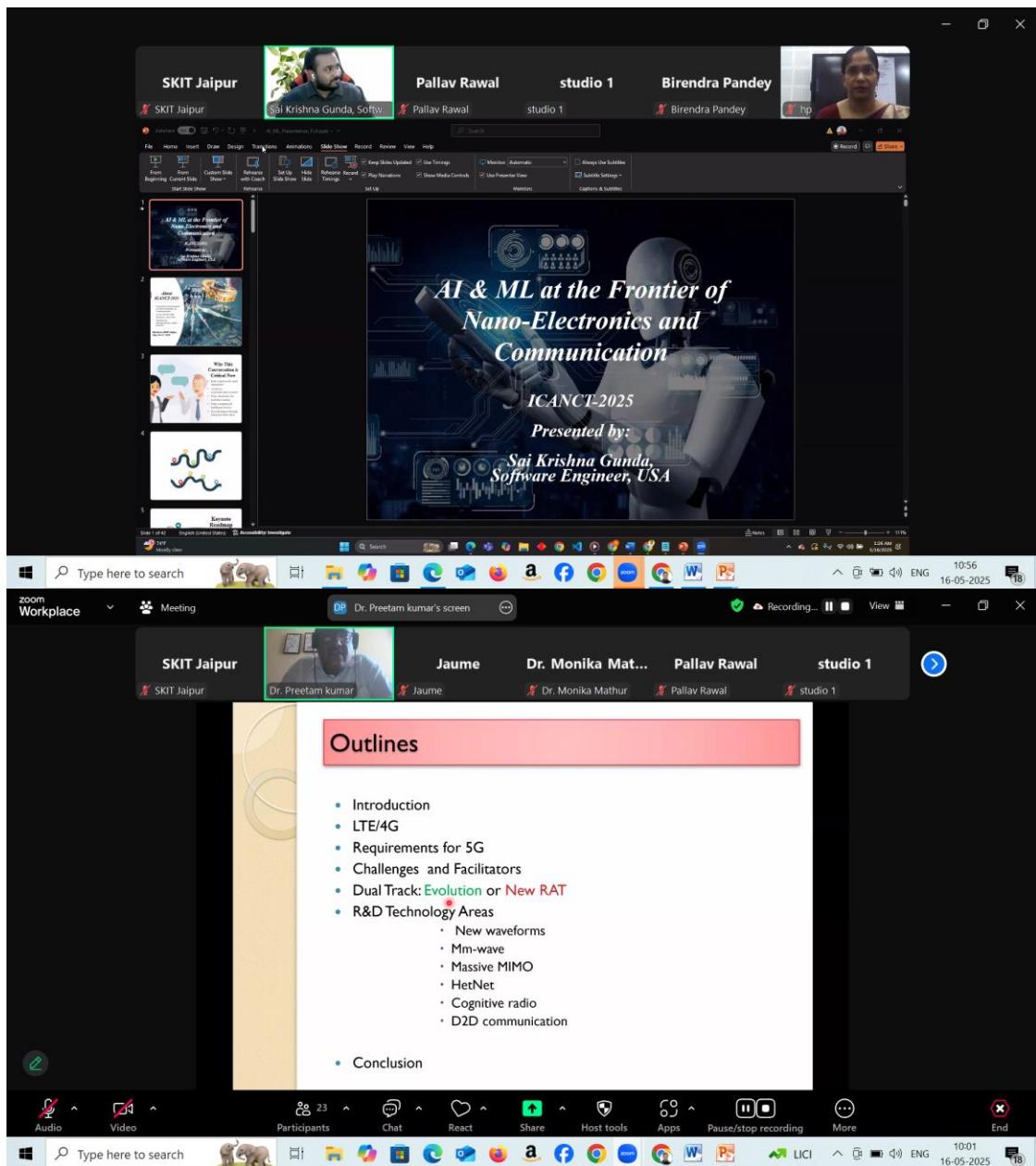
Photographs of the event











SKIT Jaipur Dr. Monika Mat... Pallav Rawal studio 1 Jaume

SKIT Jaipur Dr. Preetam Kumar Dr. Monika Mathur Pallav Rawal studio 1 Jaume

5th Generation: Challenges

- 1-10 Gbps data rate in real network
- 1 ms round trip latency**
- High bandwidth in unit area
- Enormous number of connected devices
- Almost 100% coverage for 'anytime, anywhere' connectivity
- Reduction in energy usage by almost 90%
- Low power consumption

10000x more traffic
10-100x more devices
1 millisecond latency
10 years battery for M2M
M2M Ultra low cost
10 Gbps data rates
100 Mbps Low-end data rates
Ultra reliability

Capacity
Latency
Energy consumption
Cost
User data rates
Coverage

Indian Institute of Technology Patna 15

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SKIT Jaipur Pallav Rawal studio 1 hp sai

SKIT Jaipur Sai Krishna Gunda, Softw... Pallav Rawal studio 1 hp sai

Keynote Roadmap

1. Redefining Next-Gen Computing
2. AI & ML Foundations
3. Integration with Nano & Communication
4. Trends & Challenges
5. Ethical & Societal Impact
6. Future Directions

defines next Gen computing today. Then we will touch on the fundamentals of AI, ML, and then we will touch

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Dr. Debabrata Sikdar (EEE, IITG)'s Dr. Shubhi Jain Dr. Kiran Rathi Dr. Shubhi Jain Pallav Rawal

Nanophotonic Metamaterials utilizing Epsilon-Near-Zero Effect for Free-space Optical Intensity & Polarization Modulation

SKIT Jaipur Institute of Technology & Management

Dr. Debabrata Sikdar
Associate Professor
Department of Electronics and Electrical Engineering

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Dr. Debabrata Sikdar (EEE, IITG)'s Birendra Pandey Dr. Shubhi Jain Dr. Kiran Rathi Pallav Rawal

CONTENTS

Harnessing ENZ Effect in Nanophotonic Metamaterials via

Introduction Scheme I Scheme II Scheme III

- Why Metamaterial based Optical Modulators?
- Introducing ENZ Effect & Materials
- Dual-band Electro-Optic Intensity Modulation
- Polarization-insensitive Electro-Optic Intensity Modulation
- Metamaterial based Electro-Optic Polarization Modulation

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Antenna Booster Technology for Wireless Communications

Dr. Jaume Anguera, IEEE Fellow
IEEE Distinguished Lecturer Antennas and Propagation
Founder and CTO at Ignion
Professor at Universitat Ramon Llull
Barcelona, Spain
Jaume.anguera@ignion.io, jaume.anguera@salle.ur.edu

5th International Conference on Advancement in Nano Electronics & Communication Technologies - 2025

ICANCT-2025

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Jaume

SKIT Jaipur Dr. Shubhi Jain Dr. Vikas Pathak ashwini PREMA RAM

Geometry approach: self-resonant antennas



A customized antenna is required for each device: not efficient in terms of time and resources

*Antenna pictures kept to real proportions. Typical size is 39mm x 18mm x 5mm ~ 3500 mm³

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10:09 17-05-2025

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Design the matching network

- The antenna booster has a non-resonant impedance which can be easily matched with a matching network

Antenna booster is 12 mm x 3 mm x 2.4 mm(h). -3/30 at 900MHz

Ground plane is 120 mm x 60 mm printed on a FR4 substrate (1mm thick, $\epsilon_r=4.15$, $\tan\delta=0.014$)

With matching network Without matching network

S-Parameters [Magnitude in dB]

Without matching network: $Z_L=4.3\text{nH}$, $Z_0=0.9\text{fF}$

With matching network: $Z_0=18\text{nH}$

Frequency / GHz

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SKIT Jaipur Dr. Shubhi Jain Dr. Arun Kishor Johar Satyendra Kumar Nainika Agrawal Sonia Joshi

Result Analysis – Comparison of Energy Band

Energy Band Diagram

Energy Band Diagram

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SKIT Jaipur Dr. Shubhi Jain Dr. Arun Kishor Johar subhi Nainika Agrawal Sonia Joshi

Design and Analysis of Microstrip Patch Antenna for Multiband Wireless Applications

This project, led by S. Subhiksha and team under Mrs. K. C. Raja Rajeshwari, focuses on microstrip patch antennas in multiband wireless systems.

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Abstract Title Ion beam irradiation induced modification in structural and optical properties of semiconductor and oxide materials for optoelectronic applications

Srinivasa Rao Nelamarri Associate Professor

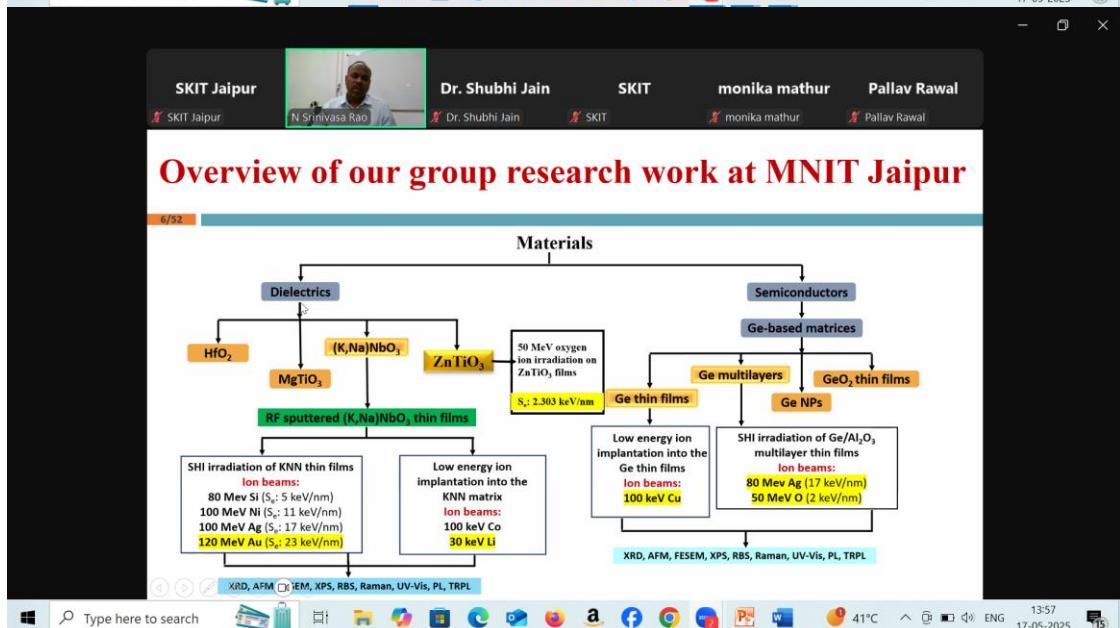
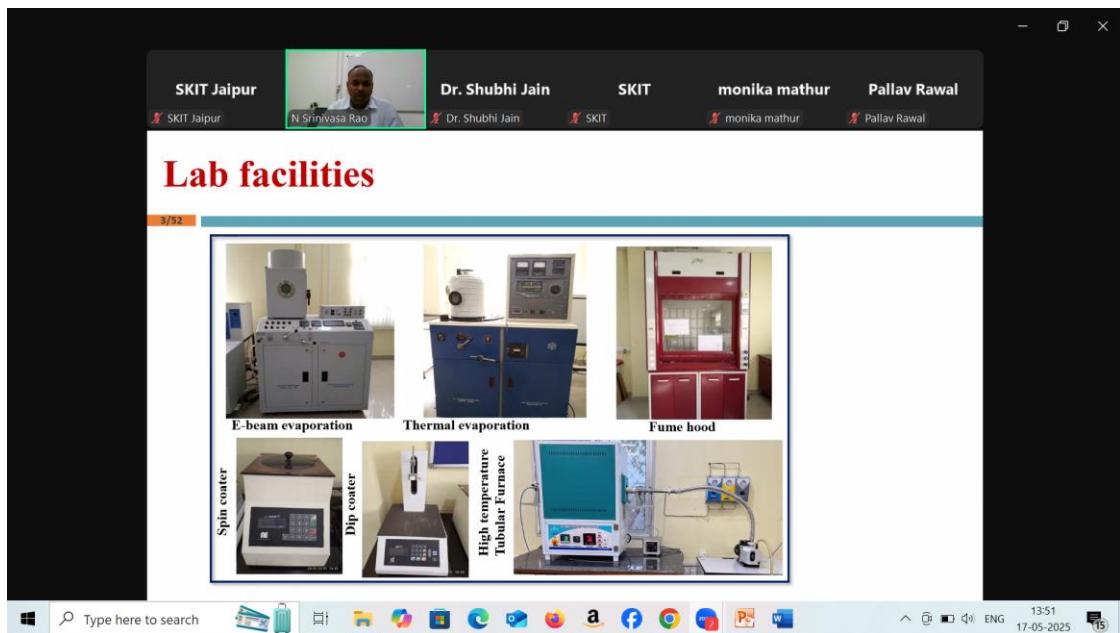
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9/52

120 MeV Au ion irradiation of KNN thin films

KNN thin films were deposited on Si & quartz substrates using RF magnetron sputtering technique at the following deposition parameters:

- Base pressure: $\sim 5 \times 10^{-6}$ mbar
- Ar flow: 20 sccm
- Deposition pressure: $\sim 1.95 \times 10^{-2}$ mbar
- Target to substrate distance: ~ 7 cm
- Power density: 4.19 W/cm^2
- Substrate temperature: 200°C

Subsequently, films were annealed at 700°C in air ambience for 1 hr.

Eventually, films were irradiated using **120 MeV Au** ion beam at various ion fluences i.e. 5×10^{11} , 1×10^{12} , 5×10^{12} , 1×10^{13} ions/cm 2 .

Pristine and irradiated films were characterized using XRD, UV-Vis spectroscopy, XPS, FESEM, PL and time-resolved PL spectroscopy.

Figure. SRIM simulation for electronic energy loss (S_e) and nuclear energy loss (S_n) of 120 MeV Au ions into KNN matrix.

$S_e = 2.3 \text{ keV}/\text{\AA}$

Radha Shyam, D. Neeti, K. Shekhawat, F. Singh, S. Ohta, G.R. Umapathy, P. Vashishtha, G. Gupta, S.

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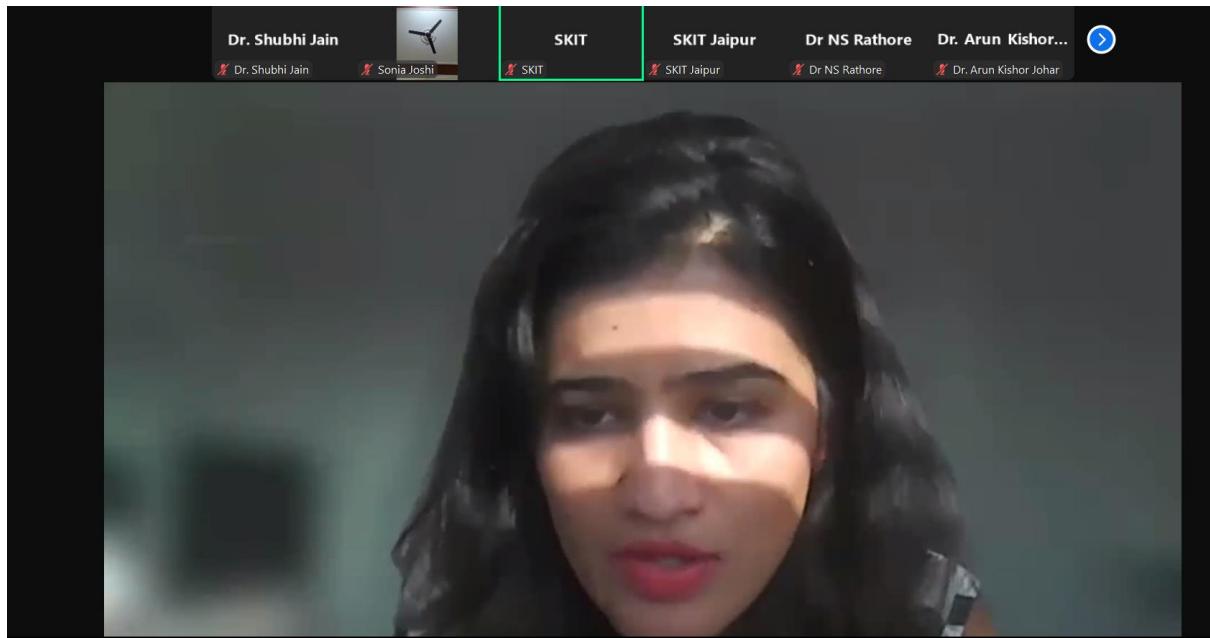
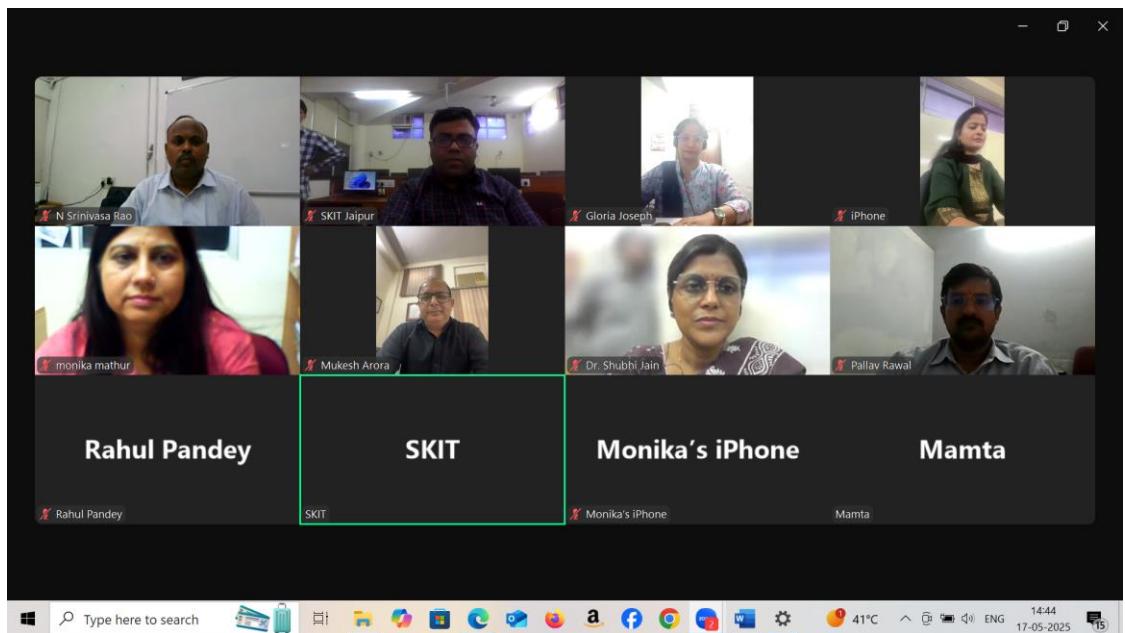
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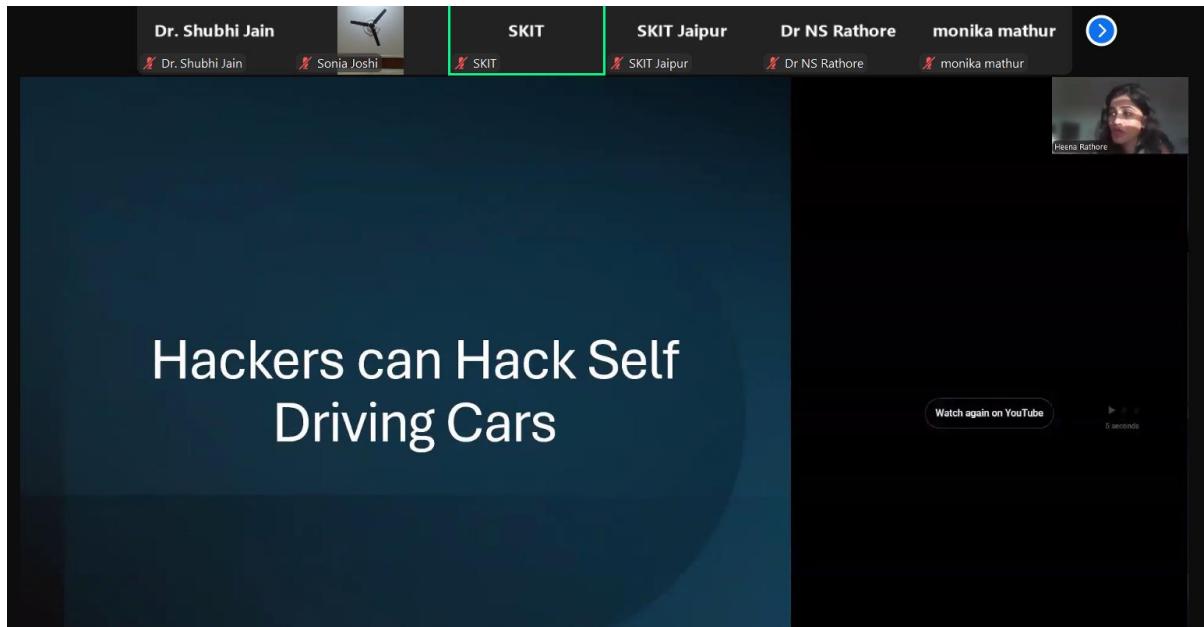
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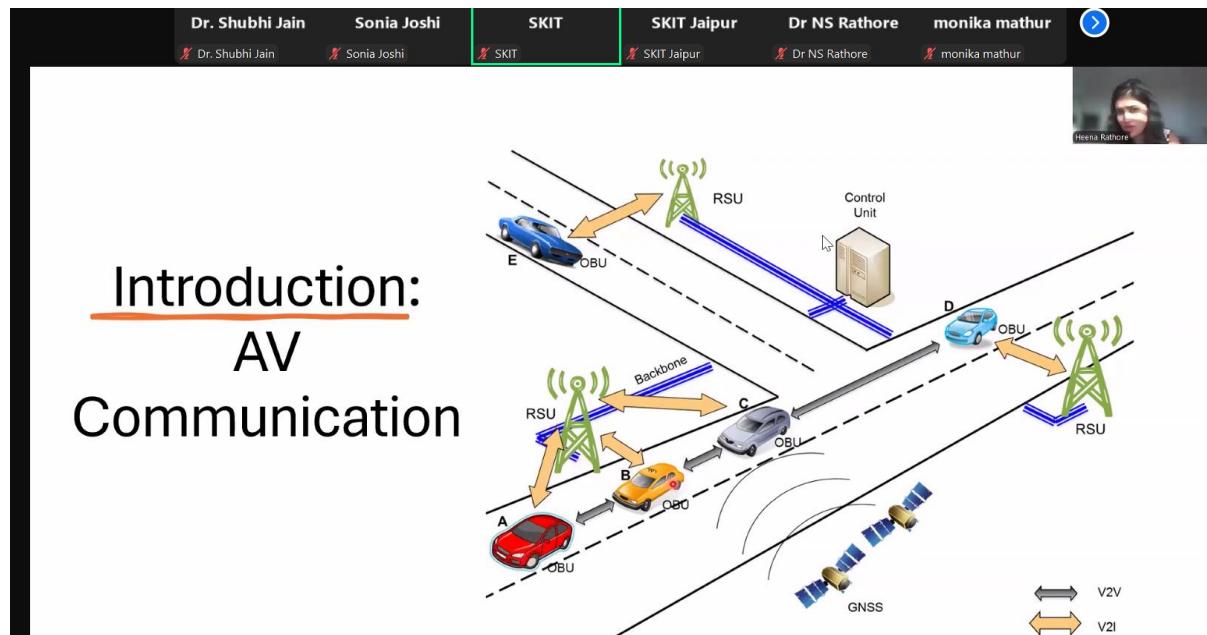


**Generative AI-
A quick primer**

- Models that create new data (text, images, code, even sensor patterns) by learning data distributions and creating new examples
- Used for:
 - Text synthesis (GPT)
 - Image generation (DALL-E, diffusion models)
 - Synthetic sensor and network traffic
- Key value: **generation, simulation, and prediction**

Use Cases of Generative AI for Automotive

 Generative AI-Powered Chatbot	 Efficient Roadside Assistance	 In-Car Virtual and Voice Assistants	 Predictive Maintenance
 Car Design and Prototyping	 Manufacturing Process Enhancement	 Supply Chain Optimization	 Virtual Testing and Simulation



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Performance Analysis

Accuracy												
Model	Fault	Mistral						LLAMA			GEMMA	
		Zero		CoT		Zero		CoT		Zero	CoT	
		Base	Fine Tuned	Base	Fine Tuned	Base	Fine Tuned	Base	Fine Tuned	Base	Base	
RF	Trend	0.96	0.96	0.96	0.96	56.71	57.43	59.3	62.95	64.1	64.86	
	Stuck-at	0.99	0.99	0.99	0.99	39	63.79	43	30	73	41.63	
	Drift	0.89	0.89	0.89	0.94	63.67	78.41	22.34	52.67	76.93	73.1	
	Hard-over	0.99	0.99	0.99	0.99	52.86	75.14	38.4	0.32	69.72	45.11	
XGBoost	Trend	0.98	0.99	0.98	0.98	56.71	57.43	59.3	62.95	64.1	64.86	
	Stuck-at	0.99	0.99	0.99	0.99	39	63.79	43	30	73	41.63	
	Drift	0.87	0.87	0.87	0.93	63.67	78.41	22.34	52.67	76.93	73.1	
	Hard-over	0.99	0.99	0.99	0.99	52.86	75.14	38.4	0.32	69.72	45.11	
Stacking	Trend	0.99	0.99	0.99	0.99	56.71	57.43	59.3	62.95	64.1	64.86	
	Stuck-at	0.975	0.975	0.975	0.975	39	63.79	43	30	73	41.63	
	Drift	0.94	0.94	0.94	0.94	63.67	78.41	22.34	52.67	76.93	73.1	
	Hard-over	0.99	0.99	0.99	0.99	52.86	75.14	38.4	0.32	69.72	45.11	

LLM Model	Fault Name	F1-score			COT			
		Base Model	Fine Tuned	Embedding	Zero		COT	
					Base Model	Fine Tuned	Embedding	Base Model
Mistral	Drift	0.38	0.35	0.647	0.5	0.4	0.642	
	Hard-over	0.21	0.1	0.62	0.25	0.32	0.69	
	Stuck-at	0.0093	0.09	0.17	0.074	0.1	0.07	
LLAMA	Trend	0.07	0.13	0.28	0.13	0.09	0.23	
	Drift	0.4	0.49	0.77	0.22	0.58	0.72	
	Hard-over	0.2	0.3	0.66	0.1	0.34	0.62	
Stacking	Stuck-at	0.1	0.15	0.19	0.13	0.16	0.22	
	Trend	0.11	0.09	0.36	0.18	0.08	0.36	

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Moral Machine - Human Perspectives on Machine Ethics



Share

Heena Rathore

Autonomous systems, particularly those designed for safety-critical applications like AVs, require human-like reasoning capabilities [1].

LLMs have the potential to assist in this by modeling diverse human moral responses [2]. There is emerging research on leveraging LLMs to support or simulate the decision-making process in autonomous systems, including AVs [3].

LLMs can be used to enhance decision-making algorithms by simulating different moral frameworks (utilitarianism, deontological ethics, etc.) thus providing insights into the ethical preferences of different user groups, such as age and gender.

[1] L. Li, K. Ota, and M. Dong, "Humanlike driving: Empirical decision-making system for autonomous vehicles", IEEE Transactions on Vehicular Technology, vol. 67, no. 8, pp.6814-6823, 2018
[2] N. Scherrer et al, "Evaluating the moral beliefs encoded in llms", Advances in Neural Information Processing Systems, 36, 2024

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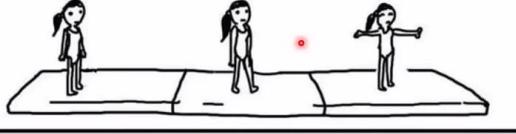
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UTILITARIANISM MENTAL GYMNASTICS

Utilitarian vs Deontological

This action causes the most good so it's right.



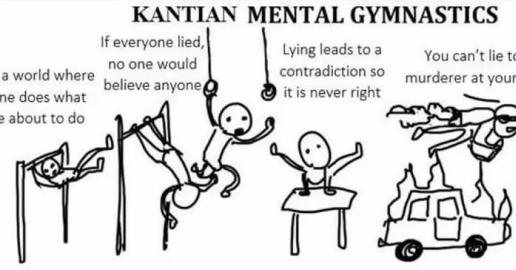
KANTIAN MENTAL GYMNASTICS

Imagine a world where everyone does what you are about to do

If everyone lied, no one would believe anyone

Lying leads to a contradiction so it is never right

You can't lie to a murderer at your door



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Antenna Boosters in the market

Already introduced in the market the following products and applications:

fleet management, smart tracking, smart metering, headsets, smart home, smart cities, alarms, IoT/Mobile modules, medical devices, IoT sensors

- Thingy:91 by Nordic Semiconductor and Monarch 2 by Sequans
- TRIO mXTEND™ by NN
- Global Cellular IoT with embedded antenna
- Mobile + GPS in a single antenna component
- mangOH® Yellow by Sierra Wireless and P32 series module by Cavli Wireless
- RUN mXTEND™ by NN
- Global Cellular IoT, small package (<CR80), embedded antenna
- Generic Node by The Things Industries
- ONE mXTEND™ by NN
- Global LoRA sensor, small package (<CR80), embedded antenna

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Same antenna booster for **any frequency band**

Device by RioSH Technologies

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Triple radio with the same component: OMNIA



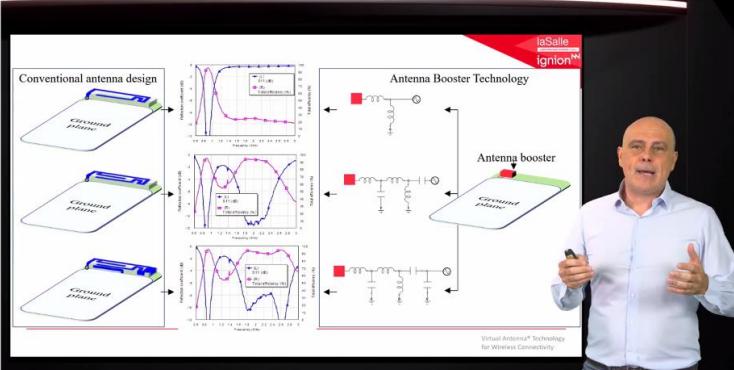
- **Cellular**
- **Global Satellite Connectivity**
- **Bluetooth**
- Results of measurements on an evaluation board demonstrate that the average efficiency of an OMNIA mXTEND device is greater than 55% from 790 MHz to 960 MHz (cellular), over 75% in the 1,561 MHz – 1,606 MHz range (GNSS), and greater than 65% between 2,400 MHz and 2,500 MHz (Wi-Fi/BLE)

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Media Coverage



स्वामी केशवानंद इस्टिट्यूट ऑफ टेक्नोलॉजी, मैनेजमेंट एं ग्रामोत्थान, जयपुर में अंतरराष्ट्रीय सम्मेलन 'एडवांसमेंट इन नैनो इलेक्ट्रॉनिक्स एं कम्युनिकेशन टेक्नोलॉजी-2025' का आयोजन

(आयुष-अनिमा नेटवर्क) जयपुर (श्रीराम इंडिया)। स्थानीय कैरेक्टरान्ड्स ट्रायलर्स और देवोनेटर्स, मिनीमेट एंड प्रोमोटर्स, जयपुर के एक विश्वविद्यालय एवं कृत्यनुकृतिक शिक्षण एवं विनियोग विभाग द्वारा दो विविध अंतर्राष्ट्रीय सम्मेलन 'एडवॉकेट इन' ने नौ इलूक्यनियम एंड कम्युनिकेशन ट्रेनिंग्स 2025' का लाउचिंग माध्यम में आयोगीय रूप से विधायिका विज्ञापन देवा-विदेश से प्राप्तकर्ता, शोधकर्ता एवं विद्यार्थी ने भाग लिया। अद्यतन सत्र का शुभाभास संस्करण के अकादमिक विवेदक प्रो.एसएल सुराणा के स्वाक्षर संस्करण से हुआ, जिसमें उल्लेख नहीं देवोनेटर्स एवं व्यावसायिक कृत्यनुकृतिक ट्रेनिंग्स के आपास में संबंध पर प्रकाश डालते हुए इन आयोगों और व्यावसायिक कृतियों का आधार बताया। कारोबास के अध्यक्ष प्रो.प्रीतीना जैन जैन ने



सम्मेलन की जानकारी साझा करेंगे। इस बताया कि यह ANCT का प्रोफेसर श्रीवत्सा की पर्सनल कांफ्रेंस है। जिसमें इस बार 90 से अधिक शास्त्रीय पत्रों में से कांफ्रेंस किया जाएगा। उत्तेन्ने यह भी बताया कि भारत कैसे समीक्षक डंडकर मिशन (ISM) के माध्यम से वैश्वीकरणिक चर्च पर एक अग्रणी भूमिका निभाना की ओर अग्रसर है। काव्यक्रम के मुख्य अधिविष्य प्रो.प्रोतीव कुमार प्रोफेसर, IIIT पटना ने बताया कि

ऐसे सम्प्रलय छात्रों और योगदानीतें के लिए कट्टर स्टर्ट-अप्स-इ-एट टेक्नोलॉजीज मध्यम से का एक सशक्त माध्यम है। उन्होंने जागरूकी का रुप पाच मिनट में डाटा रेट 10 गुना बढ़ा रखा और तकनीकी अवधि के बढ़ते अवकाश नहीं, बल्कि स्टार्ट-अप से पर्याप्त रूप से रही है। विशेषज्ञता के रूप में उत्पादन और देववत सिक्कदर, एसोसिएट प्रोफेशनर, 111 गुणवत्ता ने अपने संस्थानों की ओर जिज्ञासा की तरफ आया। यह एक अद्वितीय सम्प्रलय है। नैनो-इलेक्ट्रोनिक्स के माध्यम से डिजिटल और भी छोटे, जटिल और कमज़ूर कृश्ण हो रहे हैं। उन्होंने 5G, 6G और उससे जुड़ी कोई तकनीकी से सम्बन्धित योगदान भी नहीं चार्चा की तथा इंटरडिसिपिनरी कोलेबोरेशन को महत्व को दिलाया।

स्पेन के बून्दबस्टरी रेसन ल्यूल, वारिसिनोंना से विशिष्ट अतिथि डॉ. जामेन एवं एरोपा एक अप्रभावी ट्रायार्सोर्मेशन ऑफ टेक्नोलॉजीज का दिया। नैनो-इलेक्ट्रोनिक्स के माध्यम से डिजिटल और भी छोटे, जटिल, जटिल और कमज़ूर कृश्ण हो रहे हैं। उन्होंने 5G, 6G और उससे जुड़ी कोई तकनीकी से सम्बन्धित योगदान भी नहीं चार्चा की तथा इंटरडिसिपिनरी कोलेबोरेशन को महत्व को दिलाया।

साझा करते हुए इंडस्ट्री एकेडमिया कलालंबरियों के महार प्र प्रकाश द्वारा। उसके ने पुरुष राष्ट्रीय पार्टी एवं अद्वृत कलाम को उद्दीप करते हुए प्रतिभागियों को बताया। यहाँ से जीवन की कठिनायाँ अपको नष्ट करने के लिए निम्न होती बल्कि वह कहा गया है कि आपके प्रति उत्तर द्वारा सामाजिक को अद्वृत बनाया जाए। सामाजिक सत्र के अंत में सम्मेलन के संयोजक में डॉ. पल्लव रावलन ने सभी अतिथियों, वकास कार्यालय एवं प्रतिभागियों को आभार प्रकट करते हुए कहा कि व्यास कार्यकर्त्ता के बालवन्त द्वारा सभी समय निकालते सम्मेलन को सफल करनाया। अयोध्या नामांतर के अव्यायोगी प्रयोगों पर अंग्रेज और प्रो-प्रवृत्ति कमार जैन रहे। संयोजक डॉ. मणिकर्ण माधुर, डॉ. पल्लव रावलन तथा सम्पर्कवाल, डॉ. शुभा जैन, हर्वन्त नियम, राहुल पांडे तथा मिस लॉर्डीज़ जैसे कहे गए हैं।

एसकेआईटी मैनेजमेंट एंड ग्रामोत्थान में अंतरराष्ट्रीय सम्मेलन आयोजित

एडवांसमेंट इन नैनो इलेक्ट्रॉनिक्स एंड कम्युनिकेशन टेक्नोलॉजी का आयोजन

■ आस-पास व्युरो

जयपुर। स्वामी के शवानन्द इंस्टिट्यूट ऑफ टेक्नोलॉजी, मैनजमेंट एंड प्रामाण्यान, जयपुर के इलेक्ट्रॉनिक्स एंवं कम्प्युनिकेशन इंजीनियरिंग विभाग द्वारा दो दिवसीय अंतरराष्ट्रीय सम्मेलन 'एडवांसमेंट इन नैनो इलेक्ट्रॉनिक्स एंड कम्प्युनिकेशन टेक्नोलॉजी 2025' का हाइब्रिड माध्यम में आयोजन किया गया। जिसमें देश-विदेश से प्रोफेसरों, शोधकर्ताओं एंवं विद्यार्थियों ने भाग लिया। उद्घाटन सत्र का शुभारंभ संस्थान के अकादमिक निदेशक प्रो. एम. एल. सुरुणा के स्वागत संबोधन से हुआ। उन्होंने नैनोटेक्नोलॉजी और वायरलेस कम्प्युनिकेशन टेक्नोलॉजी के आपसी संबंधों पर प्रकाश डालते हुए इसे आगामी औद्योगिक क्रांति का आधार बताया।

कार्फेंस के अध्यक्ष प्रो. प्रवीण कुमार जैन ने सम्मेलन की जानकारी साझा करते हुए बताया कि यह एनसीटी कार्फेंस श्रंखला की पांचवीं



कांकेंस है, जिसमें इस बार 90 से अधिक शोध पत्रों में से 35 के चयनित किया गया। उहाँने यह भी बताया कि भारत कैसे सेमीकंडक्टर मिशन (आई एस एम) के माध्यम से वैश्विक मंच पर एक अग्रणी भूमिका निभाने की ओर अग्रसर है कार्यक्रम के मुख्य अतिथियों प्रीतम कुमार, प्रोफेसर, आईआईटी पटना ने बताया कि ऐसे सम्मेलन छात्रों और शोधकर्ताओं के लिए करत स्टेट ऑफ-द-आर्ट टेक्नोलॉजी समझें का एक सशक्त माध्यम है। उहाँने बताया कि हर पाँच वर्षों में डाटा रेट 10 गुना बढ़ रहा है और तकनीक अब केवल आकाश नहीं, बल्कि स्टार्टेनेस से परिभासित हो रही है।

उपस्थित डॉ. देवब्रत सिकदर, एसोसिएट प्रोफेसर, आई आई टी गुवाहाटी ने अपने संबोधन में कहा कि आज का युग टांसफॉर्मेशन ऑफ टे क्लोलॉज का है। नैनो-इलेक्ट्रॉनिक्स के माध्यम से डिवाइसेज़ और भी छोटे, तेज़ और कर्ज़ा कुशल हो रहे हैं। उन्होंने 5जी, 6जी और उससे आगे की तकनीकों के संभावित योगदान पर भी चर्चा की तथा इंटरडिसिप्लिनरी कोलैबोरेशन की महत्वांकों रेखांकित किया।

स्पेन के यूनिवर्सिटी रेमन ल्युल, वासिलियोना से विशिष्ट अतिथि डॉ. जाडेम एंगुएरा ने अपने अनुभव साझा करते हुए इंडस्ट्री-एक डिमिया कोलैबोरेशन के महत्व पर प्रकाश डाला। उन्होंने पर्व गणपति द्वे पीपी

जे. अद्युल कलाम को उद्घाट करते हुए प्रतिभागियों को प्रेरित किया। जीवन की कठिनाइयाँ आपको नष्ट करने के लिए नहीं होतीं, बल्कि यह जीवन के लिए होती हैं कि आपको भीतर उन्हें सामना करने की अद्युत शक्ता है। उद्घाटन सत्र के अंत में सम्मेलन के संयोजक में डॉ. पल्लव गावल ने सभी अतिथियों, वकाओं और प्रतिभागियों का आभार प्रकट करते हुए कहा कि व्यस्त कार्यक्रमों के बावजूद सबने समय निकाल कर सम्मेलन को सफल बनाया। आयोजन समिति के अध्यक्ष प्रो मुकेश अरोड़ा और प्रो प्रवीण कुमार जैन रहे। संयोजक डॉ. मोनिका माथूर, डॉ. पल्लव गावल तथा सम्बयक डॉ. शुभी जैन, हर्षल निगम, राहुल पांडे, तथा सिम्पल ग्लोबरिअ जोसेफ रहे।