2025-26

Babu Banarasi Das Institute of Technology & Management

AKTU College Code - 054

Department of ELECTRONICS & COMMUNICATION ENGINEERING

NBA NATIONAL BOARD OF ACCREDITATION

A NBA ACCREDITED DEPARTMENT

ECE NEWSLETTER

VOLUME I, DECEMBER-2025

(2025 - 2026)

BABU BANARASI DAS
Institute of Technology & Management, Lucknow
Department of Electronics & Communication Engineering

Newsletter
DEC, 2025
Volume I
2025-26

VISION OF INSTITUTE

"To become a leading institute of providing professionally competent and socially responsive technocrats with high moral values"

MISSION OF INSTITUTE

M1: To create an eco-system for the dissemination of technical knowledge, to achieve academic excellence.
M2: To develop technocrats with creative skills and leadership qualities, to solve local and global challenges.
M3: To impart human values and ethics in students, to make them socially and Eco-friendly responsible.

VISION OF DEPARTMENT

"To emerge as a globally recognized center of excellence in engineering education, fostering innovation, ethical values, entrepreneurial spirit and leadership qualities to create professionals who contribute meaningfully to society and industry"

MISSION OF DEPARTMENT

M1: To achieve global standards of excellence through continuous synchronization with the latest technologies and innovation.
M2: To adopt effective pedagogical methods that bridge theoretical concept with practical applications for deeper understanding.
M3: To inculcate professional ethics, self learning abilities, entrepreneurial skills and leadership qualities for holistic professional success.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO 1: Graduate of the program shall be adaptive to emerging technologies to pursue their career in hardware and software industry.

PEO 2: Graduate of the program shall have technical excellence to augment their proficiency towards higher education and progress in research.

PEO 3: Graduate of the program shall have professional and ethical attitude to uphold team work skills and multidisciplinary approach.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO 1: In depth theoretical & practical knowledge of modern engineering in electronic circuitry.

PSO 2: Design and analyze modern communication systems to meet the present and future needs of industry with cost effective solutions.

DIRECTOR'S MESSAGE-

Congratulations to the faculty, staff, and students on the release of the Volume 1, 2025-26 departmental Newsletter It is a point of immense pride to witness the ECE department's continued excellence across both academic and extra-curricular landscapes.

My sincere congratulations go to the editorial board and all contributors for this stellar publication.

I wish the team and our readers continued success in reaching even greater milestones."

Prof (Dr.) Anurag Tiwari
DIRECTOR
BBDITM

HOD'S MESSAGE-

As part of our commitment to continuous learning, the Department of Electronics and Communication Engineering is proud to present the Volume 1 of Newsletter for the session 2025-26. This edition serves as a testament to our ongoing efforts to enhance the expertise and provide significant value to all our stakeholders.

As an NBA Accredited Department, we take immense pride in our standards of excellence. To maintain this momentum, I encourage everyone to continue their hard work as we enter the upcoming semester with high expectations and renewed ambition.

With Best Wishes

Prof (Dr.) Shailendra Tahilyani
HOD (EC)
BBDITM

EDITOR'S MESSAGE-

Dear Readers,

The Department of Electronics and Communication Engineering remains dedicated to fostering holistic student development by balancing academics with a vibrant range of extracurricular activities.

This edition of our newsletter (Vol. 1, 2025-26) provides a comprehensive overview of the milestones and initiatives achieved by BBDITM's ECE department over the past semester. We have made every effort to capture the diverse achievements that continue to drive and strengthen our departmental vision.

Thanks & Regards

Mr. Pankaj Verma
Assistant Professor
ECE, BBDITM

➢ EVENT ORGANIZED @ ECE DEPARTMENT

1. Expert talk on "Career opportunities in VLSI Design and Embedded System"

Event Summary:-

Department of Electronics and Communication, BBDITM organized an expert talk in collaboration FORCE and IETE on **Career Opportunity in VLSI Design and Embedded System.**

This event was organized on 21st November 2025, with the motive to spread the message of importance of VLSI Design and Embedded Systems because they power the core intelligence of all modern electronic devices, from mobiles to automotive systems. These fields drive innovation, enabling faster, smarter, and energy-efficient technologies for the future. The event was organized under the guidance of our respected Head of Department, Prof. (Dr.) Shailendra Tahilyani. The resource person of the event was Mr. Vaibhav Mishra, Founder, PinE Training Academy**.** Students of the department of ECE had a very useful session on the topic "**Career Opportunity in VLSI Design and Embedded System**". Total 73 participants (students/faculty) were present in the event. Vote of thanks for the speaker's was given by Dr. Rupali Agarwal.

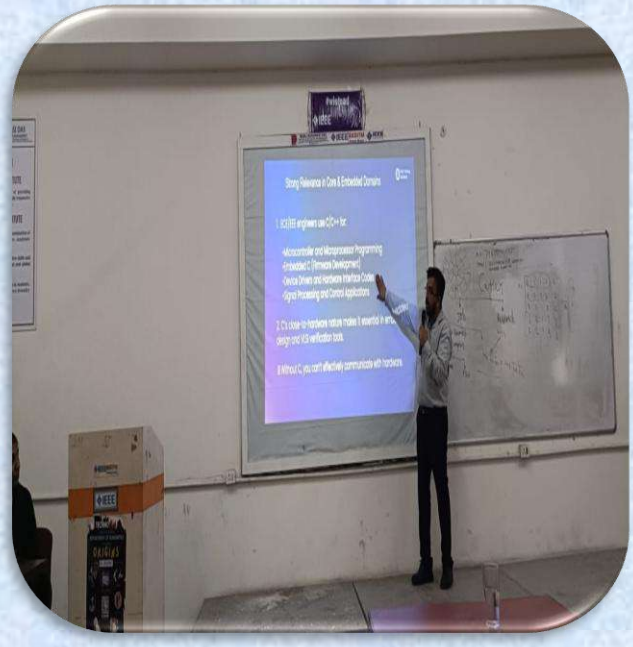
Objective of the event: -

The objective of organizing this event is to make awareness in the students regarding the ongoing semiconductor developments and opportunities for students in VLSI and Semiconductor sector.

Benefits in terms of Learning/ Skill/ Knowledge Obtained: -

The basic learning from the event was that students learnt how to prepare for the embedded systems and secure the jobs in semiconductor domain.

Glimpses of Event:



2. Startup Competition

Event Summary:-

The Startup competition took place on August 29, 2025, organized under the guidance of respected Head of Department Prof. (Dr.) Shailendra Tahilyani sir with a message that the future of entrepreneurs is bright.

The Startup competition successfully created an inspiring atmosphere for innovation and collaboration. With engaging presentations, insights, and interactive discussions, the event showcased the dynamic startup ecosystem.

Objective of the event: -

To promote and cultivate entrepreneurship mindsetamong students.

Benefits in terms of Learning/ Skill/ Knowledge Obtained: -

The basic learning of the event was the development of budding Startups and increased knowledge and skills among students.

Glimpses of Event:

Student Participants on event Startup Competition

3. Faculty Development Program on topic Advanced Computing and Sustainable Technologies –

BABU BANARSI DAS
NATIONAL INSTITUTE OF TECHNOLOGY & MANAGEMENT
(Recognized by AICTE, Govt. of India, affiliated to Dr. A.P.J. Abdul Kalam Technical University, Lucknow) AKTU College Code - 054

Online Faculty Development Program on

Advanced Computing and Sustainable Technologies

08th – 12th December, 2025

FORCE

Organized by
Department of Electronics and Communication Engineering,
Babu Banarasi Das Institute of Technology and Management, Lucknow, Uttar Pradesh- 226028

Objective

This Faculty Development Program (FDP) is designed to enhance the technical and professional competency of faculty members in the fields of Electronics and Communication Engineering.

The program aims to empower educators with advanced knowledge and skills that are essential for driving innovation and excellence in both teaching and research. this FDP aims to bridge the gap between academic theory and practical industry applications, fostering a dynamic learning environment that benefits both educators and students alike.

Program Objectives

Update Knowledge: Equip faculty with current trends and advancements in Electronics and Communication Engineering.
Skill Enhancement: Improve teaching methodologies and integrate new technologies in the curriculum.
Research Insights: Provide insights into ongoing research and potential areas of study.
Industry Practices: Bridge the gap between academic concepts and industry practices.

Outcomes

Enhanced Teaching Skills: Faculty members will be better equipped to teach the latest advancements.
Research Collaboration: Opportunities for collaborative research projects.
Curriculum Development: Updated course content to reflect current industry standards.
Networking: Build a network of professionals and researchers in the field.

About the Institute

BABU BANARASI DAS INSTITUTE OF TECHNOLOGY AND MANAGEMENT (Formerly Known as Babu Banarasi Das National Institute of Technology and Management - BBDNITM) (Recognized by AICTE, Govt. of India, affiliated to Dr. A.P.J. Abdul Kalam Technical University, Lucknow) AKTU college code - 054, is committed to provide the excellence in teaching, learning and research and develop the cream of the crop in all the field of education. BBDITM is one of the India's premier technology and management college.
BBDITM has driven new ways of thinking since 1998 – the founding year of college. The college attracts students from all around the world due to its excellent facilities. BBDITM established and run by the group having exceptional experience and performance excellence of more than 20 years.

About the Department

The Department of Electronics and Communication Engineering was established in the year 1998 in Babu Banarasi Das National Institute of Technology and Management, Lucknow campus. The department has well equipped Labs as Communication lab, Microprocessor Lab, Electronics circuit Lab, Digital/Analog circuits lab, The department has highly educated Faculty members having a vast experience in their field. The department has a well-balanced workforce having experience in academics and in industries. Students are given education as well as training exposure in order to get placed in highly reputed industries. Symbiosis between placement cell and the Department help the students to achieve the best of the jobs of their careers. Proper industrial interaction is given to the students by organizing National level workshops in the Campus.

Vision of the Department

"To emerge as a globally recognized center of excellence in engineering education, fostering innovation, ethical values, entrepreneurial spirit and leadership qualities to create professionals who contribute meaningfully to society and industry."

Mission of the Department

M1: To achieve global standards of excellence through continuous synchronization with the latest technologies and innovation.

M2: To adopt effective pedagogical methods that bridge theoretical concept with practical applications for deeper understanding.

M3: To inculcate professional ethics, self-learning abilities, entrepreneurial skills and leadership qualities for holistic professional success.

Chief Patron
Mrs. Alka Das, Chairperson, BBDEG
Mr. Viraj Sagar Das, President, BBDEG
Ms. Sonakshi Das, Vice-President, BBDEG
Prof. J. P. Pandey, Vice Chancellor, AKTU, Lucknow

Patrons
Mr. R. K. Agarwal, Chief Executive Director, BBDEG
Prof. (Dr.) Anurag Tiwari, Asst. Director, BBDITM

Convenor
Prof. (Dr.) Shailendra Tahilyani, HOD, ECE

Coordinator
Dr. Rupali Agarwal, Associate Professor, ECE, BBDITM

Co-coordinator
Mr. Rajeev Singh, ECE
Ms. Keerti Mishra, ECE
Mr. Diwakar Singh, ECE

Organizing Committee
Mr. Amit Kr. Singh, ECE
Mr. Navneet Kumar Pandey, ECE
Mr. Ravi Shankar ECE
Dr. Abhimanyu Kr. Yadav ECE
Mr. Pankaj Varma, ECE
Mr. Kishan Kumar, ECE

Contact: Mr. Rajeev Singh (7376309696)
Mr. Diwakar Singh (8953194144)
Email-ID: rajeevsingh1aug@bbdnitm.ac.in
ddiwakarsinghh@bbdnitm.ac.in

Registration Fees: - No Registration Fee
Registration Link: - https://forms.gle/hKciP9wDwdw6vNtX7

Event Objective:-

This Faculty Development Program (FDP) is designed to enhance the technical and professional competency of faculty members in the fields of Electronics and Communication Engineering.

The program aims to empower educators with advanced knowledge and skills that are essential for driving innovation and excellence in both teaching and research. This FDP aims to bridge the gap between academic theory and practical industry applications, fostering a dynamic learning environment that benefits both educators and students alike.

Program Objectives -

- **Update Knowledge:** Equip faculty with current trends and advancements in Electronics and Communication Engineering.
- **Skill Enhancement:** Improve teaching methodologies and integrate new technologies in the curriculum.
- **Research Insights:** Provide insights into ongoing research and potential areas of study.
- **Industry Practices:** Bridge the gap between academic concepts and industry practices.

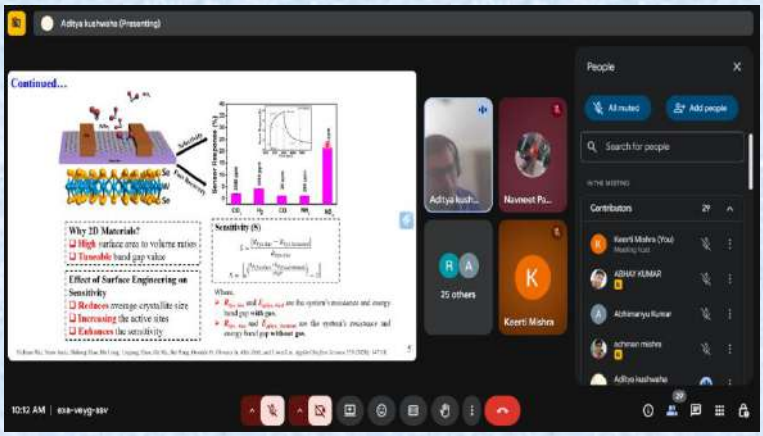
Outcomes -

- **Enhanced Teaching Skills:** Faculty members will be better equipped to teach the latest advancements.
- **Research Collaboration:** Opportunities for collaborative research projects.
- **Curriculum Development:** Updated course content to reflect current industry standards.
- **Networking:** Build a network of professionals and researchers in the field.

Schedule of 5 Day Online Faculty Development Program

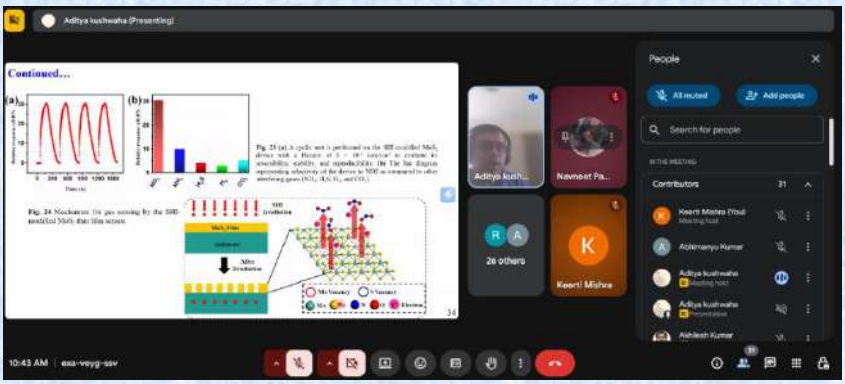
Schedule of FDP on Adaptive Computing and Sustainable Technologies				
Day	**Topics**	**Time**	**Date**	**Speakers**
Day 1	1. Inauguration & Introduction	10:00 -11:00 AM	08/12/2025	1. Inauguration(Director, BBDITM) 2. Introduction and Welcome of Speakers (Convenor of FDP)
	2. Sources and Types of Time Delays in Real-Time Systems	11:00 – 12:00 AM	08/12/2025	Dr. Vipin Chadra Pal, Assistant Professor, NIT, Silchar.
	3. Impact of Time Delays and Techniques for Mitigation	2:00 – 4:00 PM	08/12/2025	Dr. Vipin Chadra Pal, Assistant Professor, NIT, Silchar.
Day 2	1. AI-Driven Threat Detection and Analysis	10:00 -12:00 AM	09/12/2025	Dr. Vibha Sinha, Associate Professor, KCC institute of Technology and Management, Greater Noida.
	2. AI-Enabled Defense Mechanisms and Automated Response	2:00-4:00 PM	09/12/2025	Dr. Vibha Sinha, Associate Professor, KCC institute of Technology and Management, Greater Noida.
Day 3	1. Mixed-Dimensional Material Architectures for High-Performance Photodetection	10:00 -12:00 AM	10/12/2025	Mr. Aditya Kushwaha, Research Scholar, Netaji Subhas University of Technology, New Delhi, India
	2. Mixed-Dimensional Hybrid Systems for Advanced Gas Sensing	2:00-4:00 PM	10/12/2025	Mr. Aditya Kushwaha, Research Scholar, Netaji Subhas University of Technology, New Delhi, India
Day 4	1. Linux Operating System Architecture	10:00 -12:00 AM	11/12/2025	Mr. Anand Mohan Tiwari, Principal Software Engineer, Dell Technology, Bangalore
	2. Linux Kernel and Device Driver Development	2:00-4:00 PM	11/12/2025	Mr. Anand Mohan Tiwari, Principal Software Engineer, Dell Technology, Bangalore
Day 5	1. Modern ICT Tools for Effective Teaching	10:00 -12:00 AM	12/12/2025	Dr. Shailendra Kumar, Associate Professor, Integral University, Lucknow.
	2. Implementing Student-Centric Pedagogy through ICT	2:00-3:30 PM	12/12/2025	Dr. Shailendra Kumar, Associate Professor, Integral University, Lucknow.
	3. Valedictory Session and Certification	3:30 – 4:00 PM	12/12/2025	Director (BBDITM)

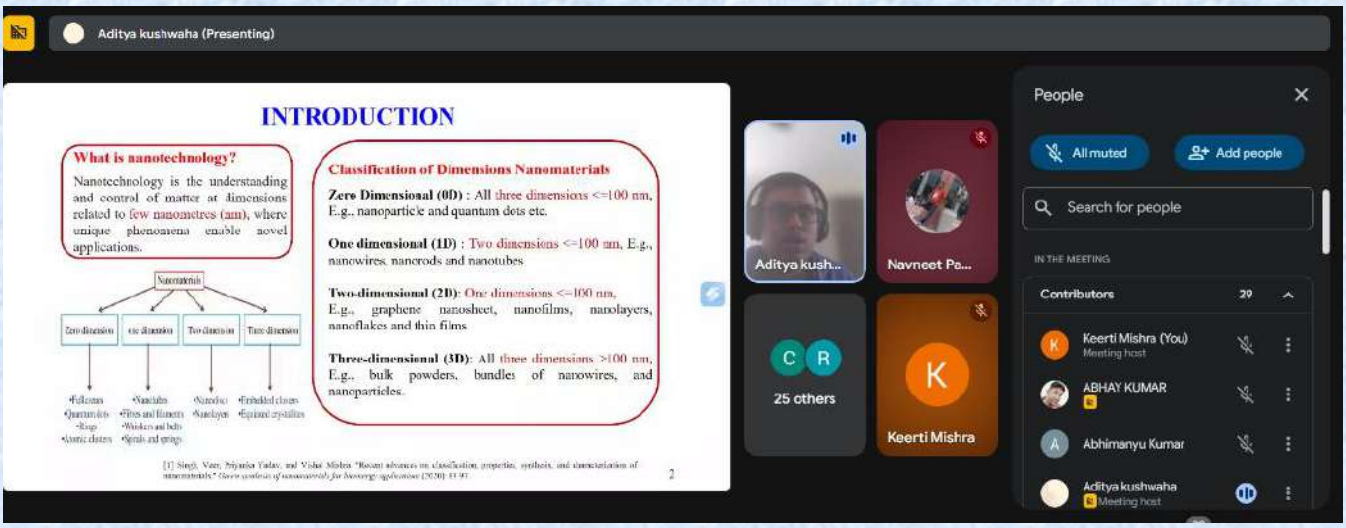
Glimpses of Event:


Aditya kushwaha (Presenting)
Continued...
Why 2D Materials?
High surface area to volume ratios
Tuneable band gap value
Effect of Surface Engineering on Sensitivity
Reduces average crystallite size
Increasing the active sites
Enhances the sensitivity
People
All muted
Add people
Search for people
Contributors
Keerti Mishra (You)
ABHAY KUMAR
Abhimanyu Kumar
Aditya kushwaha
25 others
Keerti Mishra


Unlock Your (Students) Superpower


Challenges & Solutions
Digital Divide
Faculty Training
Data Privacy


Aditya kushwaha (Presenting)
Continued...
People
All muted
Add people
Search for people
Contributors
Keerti Mishra (You)
Abhimanyu Kumar
Aditya kushwaha
Abhilash Kumar
26 others
Keerti Mishra

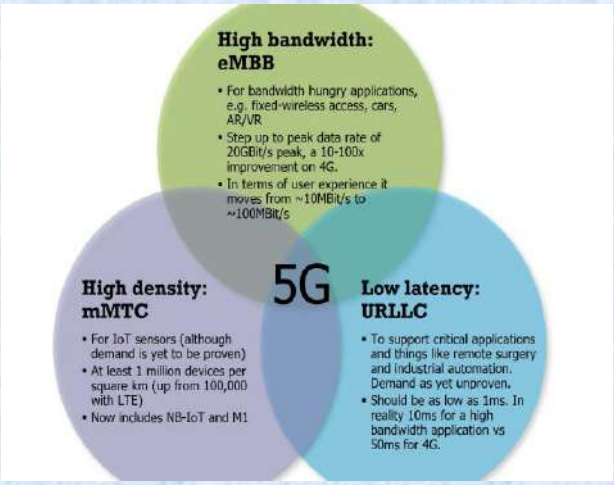

Aditya kushwaha (Presenting)
INTRODUCTION
What is nanotechnology?
Nanotechnology is the understanding and control of matter at dimensions related to few nanometres (nm), where unique phenomena enable novel applications.
Classification of Dimensions Nanomaterials
Zero Dimensional (0D) : All three dimensions <=100 nm, E.g., nanoparticle and quantum dots etc.
One dimensional (1D) : Two dimensions <=100 nm, E.g., nanowires, nanorods and nanotubes
Two-dimensional (2D): One dimensions <=100 nm, E.g., graphene nanosheet, nanofilms, nanolayers, nanoflakes and thin films
Three-dimensional (3D): All three dimensions >100 nm, E.g., bulk powders, bundles of nanowires, and nanoparticles.
Nanomaterials
Zero dimension
One dimension
Two dimension
Three dimension
People
All muted
Add people
Search for people
Contributors
Keerti Mishra (You)
ABHAY KUMAR
Abhimanyu Kumar
Aditya kushwaha
25 others
Keerti Mishra

➢ FACULTY CORNER :

❖ 5G Internet of Things

There have been a lot of superlatives thrown around about 5G, up to and including it being the most important invention since electricity. While that is almost certainly not true, it is one of the hottest technology topics today. 5G offers a number of significant improvements compared to previous mobile generations. Those involved with the Internet of Things (IoT) have been intrigued to understand what capabilities might be used for connecting things other than phones, tablets and PCs.

5G is the Fifth Generation of the technology standards for cellular communications. The capabilities required for 5G have been defined by the International Telecommunications Union. The standards have since been developed by the Third Generation Partnership Project (3GPP), which is a consortium of the major global standards development organizations. Its name stems from its creation to develop the 3G standard in the late 1990s and it has stuck ever since. All subsequent cellular technology evolutions from 4G (i.e. LTE) onwards, have been standardized by 3GPP.



Features of 5G relevant for IoT

5G has significant changes to architecture and capabilities relative to 4G. With regard to 5G NR and the access network, there are three major capabilities delivered by 5G that will be of interest for IoT:

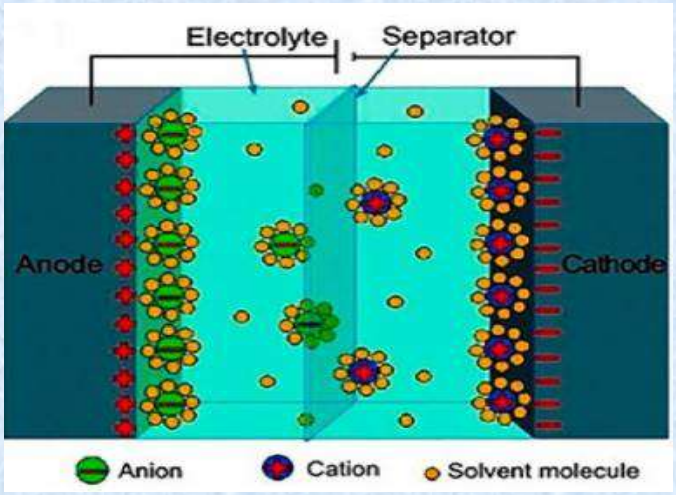
- **Increased bandwidth** – The enhanced Mobile Broadband (eMBB) capability provides theoretical speeds of up to 10Gbit/s.
- **Support for massive IoT deployments** – the massive Machine-Type Communications (mMTC) features provide for supporting many more devices per cell, with additional features for supporting Low Power Wide Area (LPWA) deployments, for instance much longer battery life.
- **Lower latency and reliability across all applications** – The capabilities referred to as Ultra Reliable Low Latency Communications (URLLC) reduce the time it takes messages to travel over the network, and increases the reliability of delivery.

Mr. Diwakar Singh
Assistant Professor
Electronics & Communication Engineering

❖ Hybrid Supercapacitors: Emerging As a Better Choice For Residential And Commercial Use:

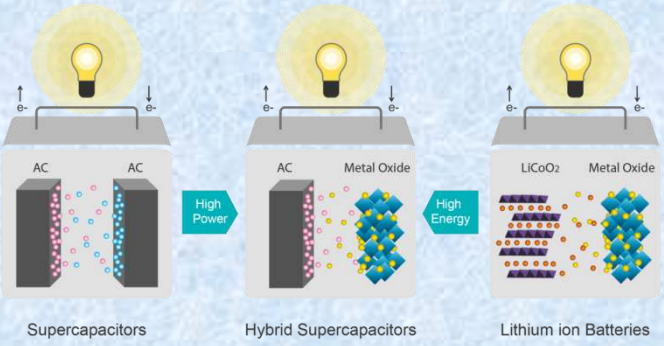
Hybrid super capacitors and solar energy are reshaping energy storage, from India's solar boom to maintenance-free solutions.

Capacitors are a basic yet very important component in electronics. Imagine them as tiny batteries inside almost every electronic device, made up simply of two metal plates that store electric charge. However, there is a more advanced version called a supercapacitor. Supercapacitors use a special carbon material on the metal plates, which allows them to store more electricity and release it very quickly. This makes them perfect for tasks where energy needs to be used or saved very quickly, such as in the brakes of an electric car.



Supercapacitors are great at what they do, but they can't hold as much energy as a regular battery, so they are not used for driving the car long distances. Instead, they work alongside the battery, particularly when the car needs a quick burst of energy or needs to save energy quickly, such as when braking. This not only helps the car run efficiently but also keeps the battery in good condition by preventing overcharging.

Some companies are working on hybrid supercapacitors, which combine features from both batteries and supercapacitors. They are designed for larger tasks, like storing energy in homes or for cellphone towers. This type of capacitor can handle a lot of energy and release it slowly over time, which is perfect for using solar or wind energy even when the sun isn't shining or the wind isn't blowing.



These hybrid systems are especially useful because they last a long time, they are safe, and they help reduce energy costs. They can shift energy usage to times when it is cheaper, and by doing so, they also help reduce the strain on energy grids. This not only saves money but is also better for the environment, as it helps cut down on greenhouse gas emissions.

Mr. Navneet Kumar Pandey
Assistant Professor
Electronics & Communication Engineering

➢ STUDENT CORNER :

Robots and Drones in Modern Electronic and Communication Systems :-

Introduction:

Robots and drones have shifted from being futuristic concepts to becoming essential tools across industries. From precision agriculture and smart warehouses to disaster response, surveillance, transportation, and healthcare, these machines have become an extension of human capability. Their effectiveness depends heavily on the electronic systems that drive them and the communication networks that connect them.

Modern robots rely on sensors, microcontrollers, cameras, actuators, wireless modules, AI processors, and navigation systems to perform tasks accurately. Drones depend on similar components but add flight-control systems, GPS modules, and real-time communication links. Together, these systems allow robots and drones to sense their environment, make decisions, coordinate with each other, and carry out tasks autonomously or semi-autonomously.

The growth of high-speed wireless communication, low-latency networks, and advanced embedded electronics is what made today's generation of intelligent machines possible.

How Robots Work in Modern Digital Systems

1. Sensors and Perception - Robots gather information through cameras, LiDAR, ultrasonic sensors, IR sensors, force sensors, and environmental detectors. These inputs help them understand location, movement, obstacles, and tasks.

2. Control Systems - Microcontrollers and embedded processors convert sensor data into actions. Advanced robots use AI chips to recognize objects, plan movements, and learn from patterns.

3. Actuators and Motion - Motors, hydraulic units, and servo systems allow robots to move, lift, rotate, or grasp objects. Industrial robots rely on high-precision actuators for tasks like welding or assembly.

How Drones Operate

1. Flight Control System (FCS)- This is the "brain" that manages stability, altitude, acceleration, and orientation using gyroscopes, accelerometers, and magnetometers.

2. GPS and Navigation -Drones use GPS modules for route planning, autonomous flight paths, geofencing, and return-to-home capabilities.

3. Communication Links - Radio-frequency control, Wi-Fi, and 4G/5G networks allow live video streaming, telemetry monitoring, and remote piloting.

Applications of Robots

- Manufacturing and Automation: Assembly, welding, packaging, inspection.
- Healthcare: Surgical robots, rehabilitation devices, hospital logistics systems.
- Logistics & Warehousing: Picking, sorting, inventory management, autonomous guided vehicles (AGVs).

- Agriculture: Soil scanning, crop monitoring, automated harvesting.
- Household & Service: Cleaning robots, delivery robots, and customer service bots.
- Hazardous Environments: Bomb disposal, mining, nuclear inspection.

Applications of Drones

- Aerial Surveillance and Mapping: Border security, wildlife tracking, land surveys.
- Agriculture: Spraying, crop analysis, irrigation monitoring.
- Disaster Management: Search and rescue, damage assessment, supply delivery.
- Media and Film: Aerial cinematography, live broadcasting.
- Logistics: Parcel delivery and last-mile transportation.
- Environmental Monitoring: Air quality, deforestation tracking, ocean studies.

Challenges and Limitations

- Despite their capabilities, robots and drones come with practical constraints:
- Battery limitations reduce flight time and operation hours.
- Dependence on communication networks can cause failure in remote areas.
- High maintenance cost for sensors, motors, and electronics.
- Security risks including signal jamming, hacking, and data interception.
- Regulatory restrictions, especially for drones in populated or sensitive areas.
- Ethical concerns regarding privacy, job displacement, and autonomous decision-making.

Future Scope

1. Fully Autonomous Robots and Drones - With better AI and sensor fusion, machines will operate independently in warehouses, fields, and urban spaces with minimal human intervention.

2. Swarm Robotics and Drone Fleets - Groups of robots or drones communicating in real-time will perform large-scale tasks like rescue missions, synchronized mapping, and rapid delivery.

3. 5G and 6G-Enabled Machines - Ultra-low latency networks will allow real-time cloud processing, remote robotic surgeries, and near-instantaneous drone response.

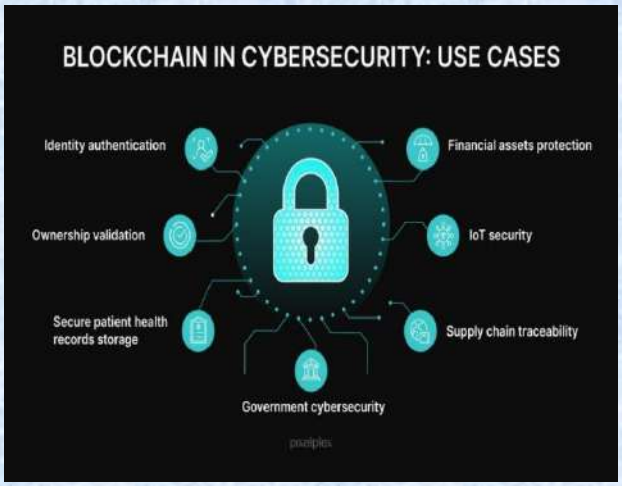
4. Human-Robot Collaboration (Cobots)- Safer and smarter designs will let robots work directly alongside humans without cages or barriers.

Conclusion

Robots and drones are no longer optional technologies — they're becoming essential parts of modern society. Their integration with advanced electronics, AI-driven control systems, and fast communication networks has transformed how industries operate. While technical, regulatory, and ethical challenges remain, the potential is enormous. The future points toward smarter, safer, and more connected robotic systems that work alongside humans, handle high-risk tasks, and increase efficiency across almost every field.

LAKSHAY RASTOGI
2400540310028
EC2

Blockchain and Cyber Security:



Introduction: In the digital age, data has become one of the most valuable assets for individuals, organizations, and governments. However, with the growing dependence on interconnected systems, the threat of cyber attacks has also increased significantly. Cyber security breaches can lead to massive financial losses, data theft, and erosion of public trust. As a result, there is a growing need for technologies that can enhance the security, integrity, and transparency of digital transactions. Among these emerging technologies, **blockchain** stands out as a promising solution to many cyber security challenges.

Understanding Blockchain Technology :

Blockchain is a **distributed ledger technology (DLT)** that records transactions across a decentralized network of computers. Each transaction is stored in a "block" that is cryptographically linked to the previous one, forming a chain of blocks — hence the name *blockchain*.

Once a block is added to the chain, it becomes nearly impossible to alter without changing all subsequent blocks, making the system highly tamper-resistant.

Unlike traditional databases controlled by a central authority, blockchain operates on a **peer-to-peer network**, where each participant maintains a copy of the ledger. This decentralized structure eliminates single points of failure and ensures data transparency and resilience against attacks.

Blockchain's Role in Enhancing Cyber security :

Blockchain technology offers several features that can strengthen cyber security systems across different sectors:

1. **Data Integrity and Immutability:** Every transaction on a blockchain is cryptographically secured and time-stamped. Once recorded, it cannot be altered without consensus from the network. This ensures data integrity and protects against unauthorized modifications, a common issue in traditional databases.
2. **Decentralization and Reduced Single Points of Failure:** In conventional systems, cybercriminals often target centralized servers to steal or manipulate data. Blockchain's decentralized structure makes such attacks significantly harder, as compromising a distributed ledger would require controlling the majority of the network nodes simultaneously.
3. **Secure Identity Management:** Blockchain can revolutionize digital identity verification through **self-sovereign identity systems**, where users control their own data instead of relying on centralized authorities. This reduces risks of identity theft and data breaches, which are common in current online systems.

4. **Enhanced Authentication and Encryption:** Blockchain networks use advanced cryptographic algorithms for data authentication and verification. These mechanisms prevent unauthorized access and ensure that only legitimate participants can perform transactions.
5. **Supply Chain and IoT Security:** In supply chain management, blockchain ensures product authenticity and traceability, minimizing the risk of counterfeit goods. Similarly, in the Internet of Things (IoT), blockchain can secure communication between devices by providing decentralized trust mechanisms and preventing unauthorized data manipulation.

Applications and Case Studies:

Several industries are already leveraging blockchain to improve cyber security. For example, **financial institutions** use blockchain for secure digital payments and fraud prevention. **Healthcare organizations** adopt blockchain to protect sensitive patient data and ensure secure sharing of medical records. **Government agencies** explore blockchain for securing voting systems, land registries, and public records, reducing risks of corruption and tampering.

A notable example is **Estonia**, which has integrated blockchain into its national digital identity system, allowing citizens to securely access e-government services. Similarly, companies like **IBM** and **Microsoft** are developing blockchain-based cyber security frameworks to enhance enterprise data protection.

Challenges and Limitations:

Despite its advantages, blockchain is not a complete solution to cyber security issues. It faces several challenges:

- **Scalability:** Public blockchains can be slow and energy-intensive, making them less suitable for high-volume applications.
- **Regulatory and Legal Issues:** The absence of uniform global standards for blockchain use creates uncertainty around data privacy and compliance.
- **Smart Contract Vulnerabilities:** Bugs or flaws in smart contract code can lead to security breaches, as seen in several high-profile crypto currency hacks.
- **Integration Difficulties:** Implementing blockchain within existing IT infrastructure can be complex and costly.

Future Prospects

As research and development continue, blockchain is expected to evolve into a key pillar of cyber security. Innovations like **quantum-resistant encryption**, **hybrid blockchain models**, and **AI-integrated security systems** are likely to make blockchain even more robust and adaptable. In the coming years, the convergence of blockchain, artificial intelligence, and the Internet of Things will redefine how organizations approach data protection and digital trust.

Conclusion

Blockchain technology represents a transformative approach to cyber security. By leveraging decentralization, cryptography, and transparency, it addresses some of the most pressing challenges in data protection today. While it is not without its limitations, blockchain's potential to create more secure, trustworthy, and resilient digital systems is undeniable.

MEHUL PURI
2400540310030
EC2

➢ FDP attended / Patent / Research Paper published by faculty members-

Prof. (Dr.) Shailendra Tahilyani
Professor & HOD
Electronics & Communication Engineering

Events Attended / Organized:

[1] Participated in two week **Online Training Programme** on topic "NEP 2020 Orientation and Sensitization Programme" organized by Mahatma Hansraj Malaviya Mission Teacher Training Centre, Hansraj College, University of Delhi in collaboration with Babu Banarasi Das Institute of Technology and Management, Lucknow during 04-14 August 2025.

[2] Rendered Valuable services as Convenor and participated in one week **FDP** on topic "Advanced Computing and Sustainable Technologies" organized by Department of ECE in association with IETE & Force, BBDITM Lucknow during 08 -12 Dec 2025.

Dr. Rupali Agarwal
Associate Professor
Electronics & Communication Engineering

Events Attended / Organized:

[1] Participated in two week **Online Training Programme** on topic "NEP 2020 Orientation and Sensitization Programme" organized by Mahatma Hansraj Malaviya Mission Teacher Training Centre, Hansraj College, University of Delhi in collaboration with Babu Banarasi Das Institute of Technology and Management, Lucknow during 04-14 August 2025.

[2] Participated in one week **FDP** on topic "Advances in Augmented & Virtual Reality and Blockchain Technologies" organized by Department of CSE (IoT and Cyber Security including Blockchain Technology), Bansilal Ramnath Agarwal Charitable Trust: Vishwakarma Institute of Technology, Pune during 29 Sep -04 Oct 2025.

[3] Organized as Coordinator and Participated in one week **FDP** on topic "Advanced Computing and Sustainable Technologies" organized by Department of ECE in association with IETE & Force, BBDITM, Lucknow during 08 -12 Dec 2025.

[4] Participated in one week **FDP** on topic "Modern Web Development & AI Integration" organized by Next Gen Employability Program during 15 -19 Dec 2025.

Mr. Pankaj Verma
Assistant Professor
Electronics & Communication Engineering

Events Attended / Organized:

[1] Participated in two week **Online Training Programme** on topic "NEP 2020 Orientation and Sensitization Programme" organized by Mahatma Hansraj Malaviya Mission Teacher Training Centre, Hansraj College, University of Delhi in collaboration with Babu Banarasi Das Institute of Technology and Management, Lucknow during 04-14 August 2025.

[2] Participated in one week **FDP** on topic "Advances in Augmented & Virtual Reality and Blockchain Technologies" organized by Department of CSE (IoT and Cyber Security including Blockchain Technology), Bansilal Ramnath Agarwal Charitable Trust: Vishwakarma Institute of Technology, Pune during 29 Sep -04 Oct 2025.

[3] Organized and Participated in one week **FDP** on topic "Advanced Computing and Sustainable Technologies" organized by Department of ECE in association with IETE & Force, BBDITM, Lucknow during 08 -12 Dec 2025.

[4] Participated in one week **FDP** on topic "Modern Web Development & AI Integration" organized by Next Gen Employability Program during 15 -19 Dec 2025.

Mr. Amit Kumar Singh
Assistant Professor
Electronics & Communication Engineering

Events Attended / Organized:

[1] Participated in two week **Online Training Programme** on topic "NEP 2020 Orientation and Sensitization Programme" organized by Mahatma Hansraj Malaviya Mission Teacher Training Centre,

Hansraj College, University of Delhi in collaboration with Babu Banarasi Das Institute of Technology and Management, Lucknow during 04-14 August 2025.

[2] Participated in one week **FDP** on topic "Advances in Augmented & Virtual Reality and Blockchain Technologies" organized by Department of CSE (IoT and Cyber Security including Blockchain Technology), Bansilal Ramnath Agarwal Charitable Trust: Vishwakarma Institute of Technology, Pune during 29 Sep -04 Oct 2025.

[3] Organized and Participated in one week **FDP** on topic "Advanced Computing and Sustainable Technologies" organized by Department of ECE in association with IETE & Force, BBDITM Lucknow during 08 -12 Dec 2025.

[4] Participated in one week **FDP** on topic "Modern Web Development & AI Integration" organized by Next Gen Employability Program during 15 -19 Dec 2025.

Dr. Abhimanyu Kumar Yadav
Associate Professor & DI
Electronics & Communication Engineering

Events Attended / Organized:

[1] Participated in one week **FDP** on topic "Advances in Augmented & Virtual Reality and Blockchain Technologies" organized by Department of CSE (IoT and Cyber Security including Blockchain Technology), Bansilal Ramnath Agarwal Charitable Trust: Vishwakarma Institute of Technology, Pune during 29 Sep -04 Oct 2025.

[2] Organized and Participated in one week **FDP** on topic "Advanced Computing and Sustainable Technologies" organized by Department of ECE in association with IETE & Force, BBDITM Lucknow during 08 -12 Dec 2025.

[3] Participated in one week **FDP** on topic "Modern Web Development & AI Integration" organized by Next Gen Employability Program during 15 -19 Dec 2025.

Mr .Navneet Kumar Pandey
Assistant Professor
Electronics & Communication Engineering

Events Attended / Organized:

[1] Participated in two week **Online Training Programme** on topic "NEP 2020 Orientation and Sensitization Programme" organized by Mahatma Hansraj Malaviya Mission Teacher Training Centre, Hansraj College, University of Delhi in collaboration with Babu Banarasi Das Institute of Technology and Management, Lucknow during 04-14 August 2025.

[2] Participated in one week **FDP** on topic "Advances in Augmented & Virtual Reality and Blockchain Technologies" organized by Department of CSE (IoT and Cyber Security including Blockchain Technology), Bansilal Ramnath Agarwal Charitable Trust: Vishwakarma Institute of Technology, Pune during 29 Sep -04 Oct 2025.

[3] Organized and Participated in one week **FDP** on topic "Advanced Computing and Sustainable Technologies" organized by Department of ECE in association with IETE & Force, BBDITM Lucknow during 08 -12 Dec 2025.

[4] Participated in one week **FDP** on topic "Modern Web Development & AI Integration" organized by Next Gen Employability Program during 15 -19 Dec 2025.

Mr. Diwakar Singh
Assistant Professor
Electronics & Communication Engineering

Events Attended / Achievements -

[1] Participated in two week **Online Training Programme** on topic "NEP 2020 Orientation and Sensitization Programme" organized by Mahatma Hansraj Malaviya Mission Teacher Training Centre, Hansraj College, University of Delhi in collaboration with Babu Banarasi Das Institute of Technology and Management, Lucknow during 04-14 August 2025.

[2] Participated in one week **FDP** on topic "Advances in Augmented & Virtual Reality and Blockchain Technologies" organized by Department of CSE (IoT and Cyber Security including Blockchain Technology), Bansilal Ramnath Agarwal Charitable Trust: Vishwakarma Institute of Technology, Pune during 29 Sep -04 Oct 2025.

[3] Organized and Participated in one week **FDP** on topic "Advanced Computing and Sustainable Technologies" organized by Department of ECE in association with IETE & Force, BBDITM Lucknow during 08 -12 Dec 2025.

[4] Participated in one week **FDP** on topic "Modern Web Development & AI Integration" organized by Next Gen Employability Program during 15 -19 Dec 2025.

[5] Published a **Patent** on topic "Fast Charging Pole using Wind and Solar Energy" having design number 463549-001 in the Patent Office, Government of India during 26th June 2025.

Mr. Ravi Shankar
Assistant Professor
Electronics & Communication Engineering

Events Attended / Organized:

[1] Participated in two week **Online Training Programme** on topic "NEP 2020 Orientation and Sensitization Programme" organized by Mahatma Hansraj Malaviya Mission Teacher Training Centre, Hansraj College, University of Delhi in collaboration with Babu Banarasi Das Institute of Technology and Management, Lucknow during 04-14 August 2025.

[2] Participated in one week **FDP** on topic "Advances in Augmented & Virtual Reality and Blockchain Technologies" organized by Department of CSE (IoT and Cyber Security including Blockchain Technology), Bansilal Ramnath Agarwal Charitable Trust: Vishwakarma Institute of Technology, Pune during 29 Sep -04 Oct 2025.

[3] Organized and Participated in one week **FDP** on topic "Advanced Computing and Sustainable Technologies" organized by Department of ECE in association with IETE & Force, BBDITM Lucknow during 08 -12 Dec 2025.

[4] Participated in one week **FDP** on topic "Modern Web Development & AI Integration" organized by Next Gen Employability Program during 15 -19 Dec 2025.

Mr. Kishan Kumar
Assistant Professor
Electronics & Communication Engineering

Events Attended / Organized:

[1] Participated in two week **Online Training Programme** on topic "NEP 2020 Orientation and Sensitization Programme" organized by Mahatma Hansraj Malaviya Mission Teacher Training Centre, Hansraj College, University of Delhi in collaboration with Babu Banarasi Das Institute of Technology and Management, Lucknow during 04-14 August 2025.

[2] Participated in one week **FDP** on topic "Advances in Augmented & Virtual Reality and Blockchain Technologies" organized by Department of CSE (IoT and Cyber Security including Blockchain Technology), Bansilal Ramnath Agarwal Charitable Trust: Vishwakarma Institute of Technology, Pune during 29 Sep -04 Oct 2025.

[3] Organized and Participated in one week **FDP** on topic "Advanced Computing and Sustainable Technologies" organized by Department of ECE in association with IETE & Force, BBDITM Lucknow during 08 -12 Dec 2025.

[4] Participated in one week **FDP** on topic "Modern Web Development & AI Integration" organized by Next Gen Employability Program during 15 -19 Dec 2025.

[5] Published a **Patent** on topic "Fast Charging Pole using Wind and Solar Energy" having design number 463549-001 in the Patent Office, Government of India during 26th June 2025.

Ms. Keerti Mishra
Assistant Professor
Electronics & Communication Engineering

Events Attended / Organized:

[1] Participated in two week **Online Training Programme** on topic "NEP 2020 Orientation and Sensitization Programme" organized by Mahatma Hansraj Malaviya Mission Teacher Training Centre, Hansraj College, University of Delhi in collaboration with Babu Banarasi Das Institute of Technology and Management, Lucknow during 04-14 August 2025.

[2] Participated in one week **FDP** on topic "Advances in Augmented & Virtual Reality and Blockchain Technologies" organized by Department of CSE (IoT and Cyber Security including Blockchain

Technology), Bansilal Ramnath Agarwal Charitable Trust: Vishwakarma Institute of Technology, Pune during 29 Sep -04 Oct 2025.

[3] Organized and Participated in one week **FDP** on topic "Advanced Computing and Sustainable Technologies" organized by Department of ECE in association with IETE & Force, BBDITM Lucknow during 08 -12 Dec 2025.

[4] Participated in one week **FDP** on topic "Modern Web Development & AI Integration" organized by Next Gen Employability Program during 15 -19 Dec 2025.

Mr. Rajeev Singh
Assistant Professor & DI
Electronics & Communication Engineering

Events Attended / Organized:

[1] Participated in two week **Online Training Programme** on topic "NEP 2020 Orientation and Sensitization Programme" organized by Mahatma Hansraj Malaviya Mission Teacher Training Centre, Hansraj College, University of Delhi in collaboration with Babu Banarasi Das Institute of Technology and Management, Lucknow during 04-14 August 2025.

[2] Participated in one week **FDP** on topic "Advances in Augmented & Virtual Reality and Blockchain Technologies" organized by Department of CSE (IoT and Cyber Security including Blockchain Technology), Bansilal Ramnath Agarwal Charitable Trust: Vishwakarma Institute of Technology, Pune during 29 Sep -04 Oct 2025.

[3] Organized and Participated in one week **FDP** on topic "Advanced Computing and Sustainable Technologies" organized by Department of ECE in association with IETE & Force, BBDITM Lucknow during 08 -12 Dec 2025.

EDITORIAL BOARD

Prof. (Dr.) Shailendra Tahilyani
(Professor & Head)

Mr. Pankaj Verma
(Assistant Professor)

Student Coordinators
Anshika Mishra
Geetam Sharma
Ayush Srivastava
Raghav Awasthi

" To succeed in your mission, you must have single-minded devotion to your goal."

– Dr. A.P.J Abdul Kalam

WORDS OF THANKS

We are highly thankful to every member for their dedications and hard work. It is the team work that made this Newsletter possible. We on behalf of our team would also like to express our gratitude towards our readers.

THANK YOU