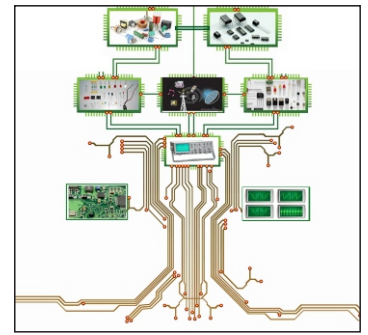


ELECTRONICA

Newsletter

Department of Electronics & Communication Engineering



Volume 11

Issue 2

Jan-June 2026

Vision and Mission of the Institute

Vision

- To be one of the premier institutions of Engineering and Management education through excellence in academics, research, innovation and entrepreneurship with global standards.

Mission

- To impart world class value-based education in Engineering and Management.
- To provide thrust for research activities by establishing centers of excellence in sustainable innovative technologies and collaborate with industries to carry out interdisciplinary research.
- To generate highly skilled and competent manpower with leadership qualities, team spirit and concern for society and environment.
- To nurture organizational culture conducive for faculty to be competent and set higher standards.

Vision and Mission of the Department

Vision

- To be a centre of excellence in Electronics and Communication Engineering through holistic education in academics, research, innovation and entrepreneurship.

Mission

- To produce highly skilled and globally competent professionals in Electronics and communication through academic excellence, with a strong emphasis on societal concerns and ethical standards.
- To nurture progressive research and innovation through Industry collaborations, Centres of Excellence and Start-ups.
- To instil leadership skills in students, enabling them to succeed as entrepreneurs and lead diverse teams in solving real-world problems.

Program Education Objectives

After 2 to 3 years of graduation, the students will have the ability to:

- Solve real world engineering problems by adapting the technological changes through continuous learning to enable global competency.
- Participate actively in advanced learning and multidisciplinary research by designing and developing innovative and cost-effective solutions.
- Exhibit professional skills, effective communication, team work and ethics as an individual/team player/entrepreneur.
- Implement engineering solutions with an empathy to societal values and environmental concern.



Rajeshwari Chatterjee

Rajeshwari Chatterjee, born in 1922, was a pioneering Indian engineer and scientist known for her contributions to microwave engineering and antenna technology. She joined the Indian Institute of Science (IISc) and became its first woman engineer faculty member. Along with her husband, she established India's first microwave engineering research laboratory and conducted pioneering work on antennas, electromagnetic theory, and microwave communication. Her contributions played an important role in advancing electronics and communication engineering in India.

What's inside...

- About the Department
- Technical Articles
- Staff Achievements
- Student Achievements
- Departmental Events

And more...



B. N. M. Institute of Technology

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"The most important thing is to never stop questioning."

— Albert Einstein

Dear Readers,

What if every signal carried a story? What if every circuit held an idea waiting to come alive? And what if every "Why?" was the beginning of an invention?

Welcome to another edition of Electronica—where curiosity meets circuitry, imagination meets engineering, and ideas move from the drawing board into the real world.

Electronics and Communication Engineering is more than resistors, transistors, signals, and systems. It is the invisible force behind the devices we depend on, the networks that connect us, and the technologies that continue to redefine tomorrow. In these pages, we invite you to look beyond the equations and discover the people, ideas, experiments, and innovations that give our field its heartbeat.

This edition brings together the many colours of ECE—from student creativity and faculty achievements to emerging technologies, fascinating facts, thought-provoking insights, and projects that turn challenges into possibilities. Every contribution is a small reminder that innovation does not always begin with a grand invention; sometimes, it begins with a simple question, a failed experiment, or the courage to try once more.

To our contributors, thank you for adding your ideas to this ever-growing circuit. To our readers, thank you for completing it. Your curiosity is the current that keeps Electronica alive.

So, turn the pages with an open mind and a curious spark. Discover something new. Question something familiar. And perhaps, somewhere between these pages, find an idea that inspires you to build something of your own.

Because the future isn't simply something we wait for.

It is something we design.

Happy Reading, Exploring & Innovating!



***The Editorial Team,
Electronica***

ABOUT THE DEPARTMENT

The Department of Electronics & Communication Engineering, established in 2001, admits 120 UG students (plus 12 lateral entry) and 24 PG students specializing in VLSI and Embedded Systems annually. The department boasts highly qualified faculty with an average of nineteen years of experience, including alumni from premier institutes like IITs and universities from Netherlands and Germany and professionals with rich industry exposure. The department provides a vibrant academic environment, enabling students to achieve distinctions, high pass percentages, and excellent placements in reputed companies such as Aisin Industry Co., Ltd., ICHINOSE Co., Ltd., Aisin Automotive, National Instruments, Nokia, Siemens, and IT giants like TCS, Infosys, and Wipro. Its autonomous syllabus emphasizes practical learning, project-based teaching, and research, preparing students for MS programs in top international universities. The department organizes international IEEE conferences, workshops, and seminars, ensuring continuous learning through professional bodies like IEEE, ISTE, and IET. Students benefit from technical skill development programs, internships, and industrial visits that enhance their industry readiness. Soft skills and personality development classes are conducted to support students' holistic growth. Over the years, students have secured 23 university ranks (17 UG, 6 PG) and Eleven gold medals, reflecting their outstanding academic performance. The department has established 14 industry MOUs, Centers of Excellence in Healthcare and Smart Technologies, and fosters innovative lab projects and internships at reputed institutions. Students actively participate in technical, cultural, and sports events, bringing accolades to the department and enriching their overall experience. The first batch of autonomous graduated in the year 2025 with excellent results and good placement packages.

Dr. Yasha Jyothi M Shirur
Professor & Head, Dept. of ECE

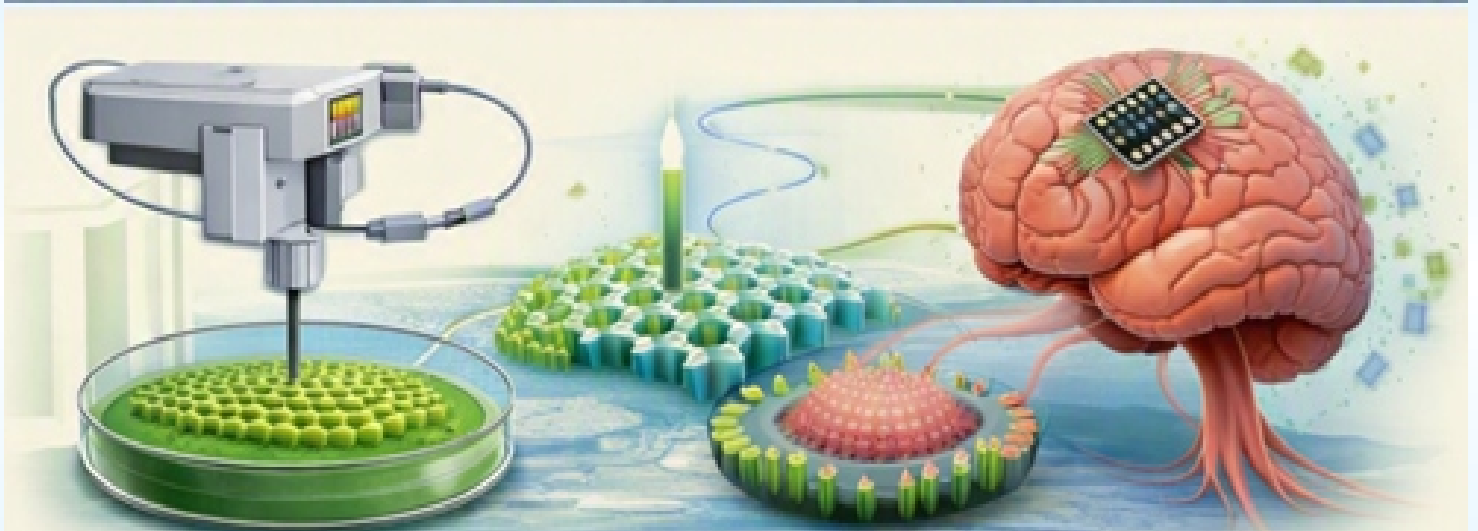
Technical Articles

Thoughts to action through a system, is it possible????

Just imagine anything you thought of can be understood by the system without even saying, typing, just captured through signals??????? This would simplify our work, if further thought of mankind, people with lots of challenges physically, mental will have a best aid to support them. Such an example which can do all these will be neural mapping i.e. Brain Computer Interface (BCI), neuromorphic computing, BNN etc.

Modern BCIs are evolving toward **bio-integrated systems**-using soft materials, bioprinting, and AI to make interfaces more natural and long-lasting. This is where **3D bioprinting** comes in, allowing creation of custom, tissue-compatible electrodes that blend seamlessly with the brain.

From Bioinks to Brain Links: Custom Interfaces for Neural Communication



Major applications such as medical rehabilitation to help paralyzed patients regain movement or communication. Neuroprosthetics for Controlling artificial limbs through thought. Cognitive enhancement for improving memory or attention via neural stimulation. Human-machine interaction so as to Enabling direct control of computers, drones, or virtual environments.

Key Applications



A **Brain-Computer Interface (BCI)** is a technology that creates a **direct communication pathway between the human brain and an external device**, such as a computer, robotic arm, or prosthetic limb. This can be enabled through the use of wearables, which can be further improvised using bio- integrated systems.

The Bioprinting Process



The process of Bioprinting involves Bio-ink preparation, precision printing, culturing and implanting. For these methods to be completed, an accurate and precise electronic instrument is always necessary. Designing such devices are the major challenges today. Major thrust areas of research are creating 3D Neural Interface, creating bioelectrodes as mentioned in the figure.

Advanced Research

3D Neural Interface

Princeton University, 2026



Honeycomb Bioelectrodes

Penn State University, 2026



Few examples related to real-time examples of bio- structures are:

A 3D micro-instrumented flexible electronic sensor and stimulator device interwoven with a 3D biological neural network (BNN) enables stable volumetric sensing and stimulation. This 3D device–3D BNN interface maps and trains neural connectivity over months, establishing a reliable platform for brain-inspired computing.



The soft bioelectrodes use a honeycomb-inspired design that allows researchers to stretch them onto the specific geometry of a patient's brain, without sacrificing structural strength or sensitivity to electrical and physiological signals.

Credit:

- Kate Zvorykina/Ella Maru Studio
- Kumar Mritunjay et al, A three-dimensional micro-instrumented neural network device, Nature Electronics (2026). DOI: [10.1038/s41928-026-01608-1](https://doi.org/10.1038/s41928-026-01608-1).
- Tao Zhou
- Marzia Momin, Luyi Feng, Xiaoi Chen, Salahuddin Ahmed, Basma AlMahmood, Li-Pang Huang, Jiashu Ren, Xinyi Wang, Hyunjin Lee, Samuel R. Cramer, Nanyin Zhang, Sulin Zhang, Tao Zhou. Advanced Materials DOI:10.1002/adma.202516291

*Article by
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Associate Professor
Dept. of ECE, BNMIT*

IRNSS/NavIC: INDIA'S INDIGENOUS NAVIGATION SYSTEM

Technical Architecture, Capabilities, and Applications

ABSTRACT

The Indian Regional Navigation Satellite System (IRNSS), operationally known as NavIC (Navigation with Indian Constellation), represents India's strategic achievement in autonomous positioning and navigation technology. This article examines the technical architecture, constellation design, precision capabilities, and diverse applications of NavIC, emphasizing its role in establishing India's technological sovereignty in satellite-based positioning systems.

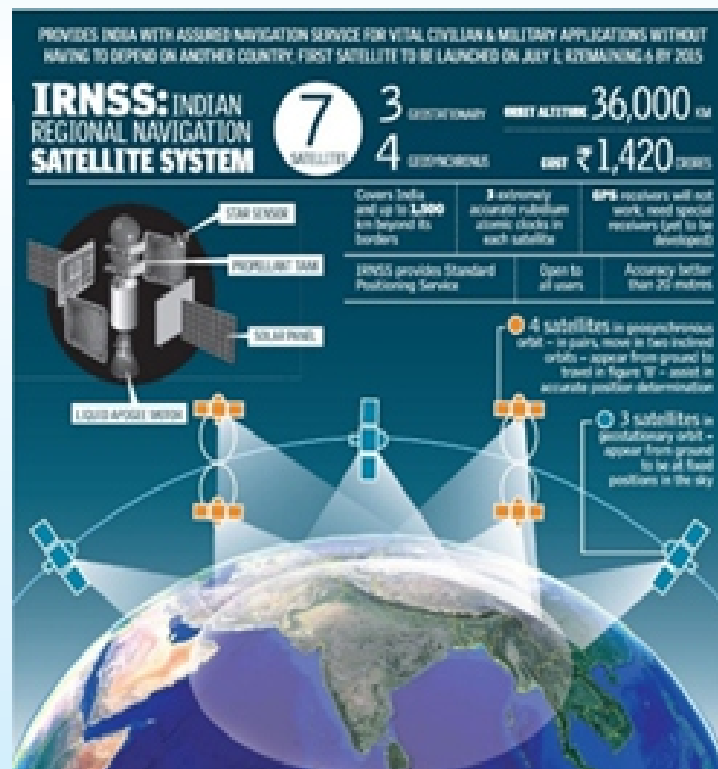
1. SYSTEM OVERVIEW AND STRATEGIC SIGNIFICANCE

NavIC is an autonomous positioning system developed by ISRO, providing positioning, navigation, and timing services across the Indian region and extending 2,000 kilometers beyond. Declared fully operational in 2018, NavIC eliminates India's dependence on foreign positioning systems like GPS, ensuring strategic autonomy and guaranteed service availability independent of geopolitical considerations. The system is designed specifically for the South Asian region with optimized coverage and performance characteristics.

2. CONSTELLATION ARCHITECTURE

2.1 Satellite Configuration

NavIC comprises seven satellites: four in geostationary orbit (GEO) at fixed positions (55°E, 39°E, 93.5°E, 111.75°E) and three in geosynchronous orbit (GSO) with inclinations designed to provide continuous coverage. The GEO satellites remain stationary above fixed equatorial positions, while GSO satellites follow elliptical paths with 24-hour orbital periods, ensuring satellite visibility from any point across the service region. This hybrid architecture optimizes geometric dilution of precision (GDOP) for triangulation accuracy.



IRNSS/NavIC Satellite Constellation Architecture

2.2 Orbital Parameters

Each satellite transmits on L5 frequency (1176.45 MHz) and S1 frequency (2492.028 MHz) bands, carrying navigation signals encoded with ranging information. Satellites maintain atomic clocks (cesium and rubidium) with nanosecond-level accuracy to ensure precise ranging measurements. The spacecraft mass approximately 2,100 kg with solar panel array generating 5 kW power, designed for 12-year orbital lifespan with orbital maintenance capabilities.

3. POSITIONING ACCURACY AND SIGNAL STRUCTURE

Accuracy Specifications: NavIC provides 5-10 meter horizontal positioning accuracy for civilian users across the service region, with enhanced accuracy of 0.5-2 meters available through differential corrections. Vertical accuracy approaches 10-20 meters. Timing accuracy achieves 60 nanoseconds for synchronization applications. The system maintains 24/7 availability with signal redundancy ensuring service continuity even if individual satellites malfunction.

Signal Characteristics:

NavIC transmits Standard Positioning Service (SPS) open to all civil users and Restricted Service (RS) for authorized government/military applications. The SPS signal includes positioning, ranging, and timing information enabling single-frequency positioning. The dual-frequency capability (L5/S1) enables advanced users to perform ionospheric corrections, improving accuracy for critical applications.

4. TECHNICAL ADVANTAGES AND COVERAGE

Regional Optimization:

Unlike global GPS that provides sub-optimal coverage at high latitudes, NavIC is specifically optimized for the Indian subcontinent and extended Asia-Pacific region. The GEO satellite placement at high-elevation angles above the Indian region provides superior multipath mitigation and faster signal acquisition compared to GPS at these latitudes.



NavIC Coverage Map - Service Region and Signal Strength Distribution

5. APPLICATIONS AND REAL-WORLD DEPLOYMENT

- Precision Agriculture: Farmers utilize NavIC for autonomous tractor guidance with centimeter-level accuracy, optimizing fertilizer application and reducing crop input costs.
- Disaster Management: NavIC coordinates emergency response operations, locating disaster victims and directing relief resources.
- Maritime Navigation: Coastal vessels and fishing fleets leverage NavIC for route optimization and collision avoidance.
- Power Grid Synchronization: Electrical utilities employ NavIC-derived timing signals for power system synchronization ensuring grid stability.
- Telecommunications: Mobile networks utilize NavIC for emergency call location services independent of cellular triangulation.

6. STRATEGIC IMPLICATIONS AND FUTURE DEVELOPMENT

NavIC represents India's achievement of technological sovereignty in satellite-based positioning. The system eliminates dependency on foreign infrastructure, ensuring uninterrupted service even during international disputes. ISRO is developing NavIC receiver chipsets promoting indigenous equipment manufacturing and reducing costs. Integration with 5G networks and IoT devices is expanding NavIC applications. Future augmentation satellites planned for enhanced coverage and backup redundancy will further strengthen system resilience.

CONCLUSION

IRNSS/NavIC exemplifies India's technical prowess and strategic foresight in developing indigenous critical infrastructure. With precise positioning, regional optimization, and diverse applications, NavIC has transformed from concept to operational reality serving millions. As India advances space technology, NavIC stands as testament to the nation's capability to develop sophisticated satellite systems ensuring sovereignty and contributing to national development.

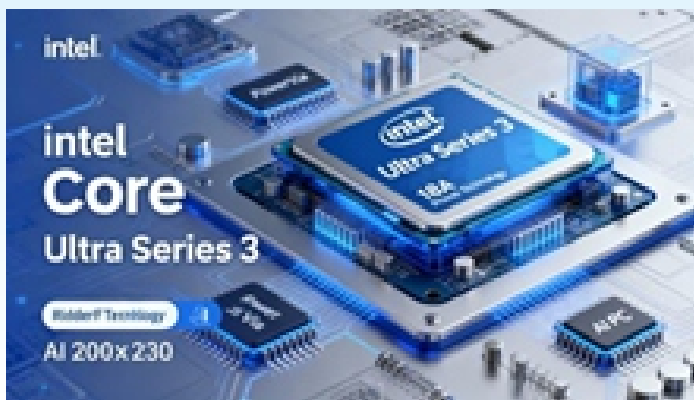
REFERENCES

1. ISRO. (2024). 'NavIC System Performance Report.' Satellite Applications Centre, Ahmedabad.
2. Misra, P., & Enge, P. (2011). 'Global Positioning System: Signals, Measurements, and Performance (2nd ed.).' Ganga-Jamuna Press.
3. Grover, R., & Sharma, A. (2023). 'Indian Regional Navigation Satellite System: Technical Architecture and Performance Analysis.' Journal of Indian Space Science, 48(1), 56-73.
4. Ministry of Space. (2024). 'IRNSS/NavIC System Documentation and User Guidelines.' Government of India Publications.
5. Bhat, S., & Kumar, V. (2022). 'NavIC Applications in Precision Agriculture and Disaster Management.' International Journal of Satellite Communications, 41(3), 234-251.

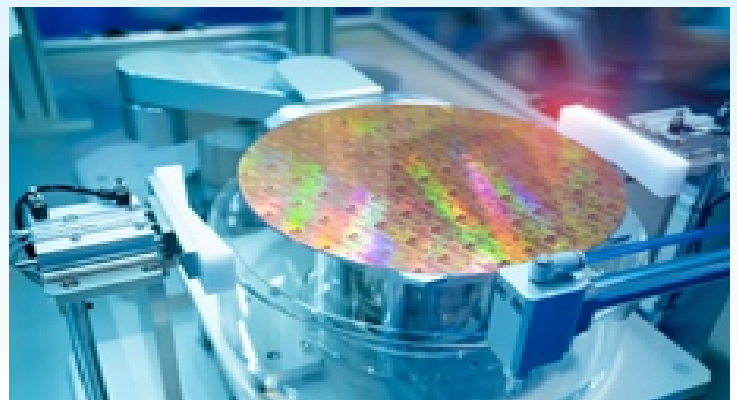
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SIGNAL SPOTLIGHT

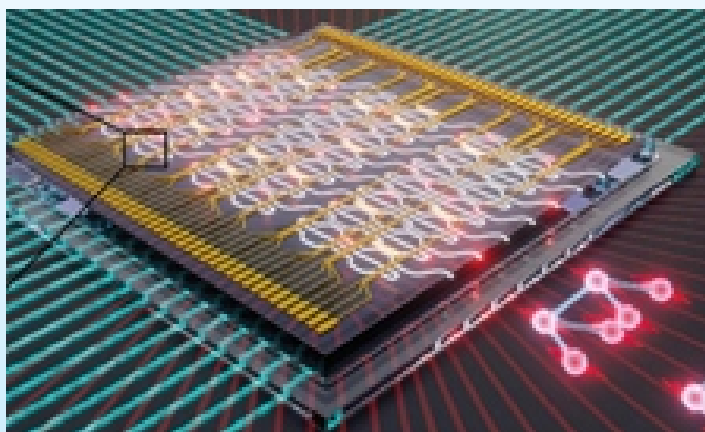
Shining a light on fascinating ECE facts



1. AI chips are getting more powerful and efficient
In January 2026, Intel introduced its Core Ultra Series 3, its first AI-PC platform built using Intel's 18A semiconductor process. The chips are designed to improve AI performance, graphics and energy efficiency.

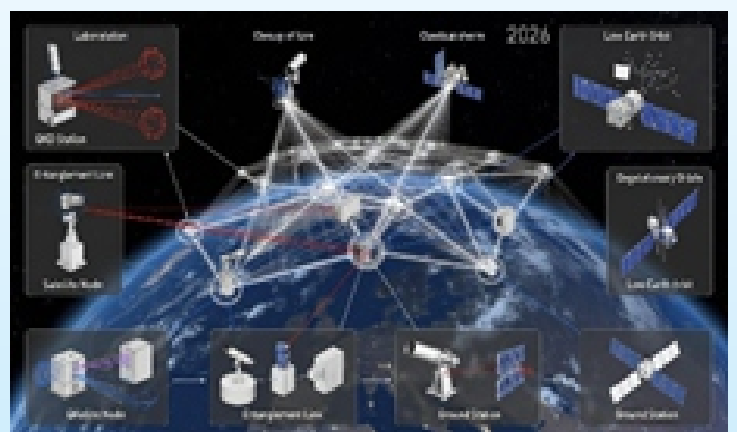


2. Chip manufacturing is reaching incredible precision
Researchers in 2026 highlighted advanced manufacturing techniques aimed at producing increasingly tiny and precise semiconductor structures. AI, digital twins and adaptive manufacturing are being used to improve nanoscale production.



3. Photonic chips are becoming important for quantum technology.

2026 research has shown continued progress in **integrated quantum photonic chips**, which use light rather than conventional electrical signals for certain operations. These chips could help make future quantum systems more scalable and compact.



4. Quantum communication is moving toward practical networks

Researchers reported progress toward large-scale quantum communication networks using **integrated photonics**. Such technologies could eventually support highly secure quantum key distribution (QKD) between many users.



5. Electronics and AI are becoming increasingly interconnected

At Computex 2026, Intel showcased developments spanning chips, processors, **AI systems and rack-scale computing**, showing how modern electronics is evolving from individual components toward complete AI-powered systems.

*Sanjana S
III ECE*

ELECTRONICS FUN QUIZ

How well do you know the world of electronics?

1. The component known as the “brain” of a computer is the _____
2. The component commonly used to emit light when current flows through it is an _____
3. A capacitor mainly stores _____
4. The device that converts AC into DC is called a _____
5. _____ is widely credited with pioneering practical radio communication
6. When resistance increases while voltage remains constant, the current in a circuit _____
7. A _____ is commonly used as a switching device in electronic circuits
8. _____ is a technology that allows devices to communicate wirelessly over very short distances
9. LED stands for _____
10. **BONUS BRAIN-BUSTER!**
If electronics were a superhero team, which component would be best suited to control and amplify electrical signals? _____

Staff Achievements

1. Dr. Lakshmi Bhaskar delivered an invited talk on "Mapping of Modern Science-1" for students of Jawahar Navodaya Vidyalaya, Bagalur Urban, on 30th January 2026.
2. Dr. Lakshmi Bhaskar delivered an invited talk on "Mapping of Modern Science-2" for students of Jawahar Navodaya Vidyalaya, Bagalur Urban, on 23rd February 2026.
3. Dr. Yasha Jyothi M Shirur received the "Eminent Woman Engineer Award" on the occasion of International Women's Day, organized by The Institute of Engineers (India), Karnataka State Centre, Bengaluru, on 23rd March 2026.

Patents

1. Faculty inventors Jyoti R Munavalli, Sakshi Sunil, Harshaprada and Bindu S published a patent titled "Intelligent Key Reminder System with Wireless user notification," Patent No: 202541074433.
2. Faculty inventors Jyoti R Munavalli, Priya Sankpal and Sumathi A published a patent titled "Quantum Computing Framework for Cross-Disciplinary Simulation, Secure Processing, Intelligent System Control, and Predictive Optimization in Engineering and Management Applications," Patent No: 202541079763.
3. Faculty inventors Aneesh M S, Deekshith M V, Hamsini Bhat V, Kandacharam Deepshika, Kshitija K M, Jyoti R Munavalli and Sumathi A published a patent titled "AI-controlled Hybrid Battery Thermal Management System for Electric Vehicles," Patent No: 202541123708.
4. Faculty and student inventors Pragathi M L, Nischitha K M, Shreya S, Keerti Kulkarni and Priyadarshini K Desai published a patent titled "A Pocket Power Source from the Sun," Patent No: 202541092604.
5. Patent published with Patent No: 202541130418. Title: "Smart Hearing Protection with Integrated Water Cutoff and Real Time Alerts." Patentee: BNM Institute of Technology. Inventors: Dr. Bhuvana Suganthi D, Bharath S, Chaithra A, Dr. Yasha Jyothi M Shirur, Dr. Smitha Gayathri D.
6. Faculty inventors Dr. Mahanthesha Ujjinappa, Dr. Tejaswini Ramakanth Murgod, Dr. Nagarathna Chevvenahalli Rangegowda, Dr. Kakoli Bora, Dr. Nandini G and Dr. Sunitha S V published a patent titled "AI and Blockchain based Cloud Security Device," Patent No: 503755-001.
7. Faculty inventors Dr. Rekha P, Dr. B.S. Prathibha, Dr. Yasha Jyothi M Shirur along with students Disha, Kubra Khanum, Mandaara and Koushik Gowda KM published a patent titled "Portable Water Purifier," Patent No: 493511-001.
8. Faculty inventors Dr. Lakshmi Bhaskar and Dr. Jyoti R Munavalli, along with students Dheemanth Bharath, Sriraksha Sudipta, Dhruv M N, Chiranthan and Chethan Kumar Y, published a patent titled "A Modular AI-Powered Assistive Device for Visually Impaired Users," Patent No: 202641056167.
9. Faculty inventors Dr. Basavaraja Patel B M, Dr. S Chandrashekar, Dr. Prasad K N N, Praveen C Jois and Dr. N Sheshaprasad published a patent titled "Wearable Continuous Glucose Monitoring Equipment," Patent No: 496745-001.

Faculty Collaboration Achievements

1. Dr. Yasha Jyothi M Shirur has been coordinating internship, project, and placement assistance with Maven Silicon over the past 3 years. Under this collaboration, 8 PG students have undergone internship/project training, of whom 2 secured placements in semiconductor core companies such as Cadence.
2. Dr. Vrunda Kusanur has similarly been associated with Maven Silicon for internship, project, and placement assistance over 3 years, through which 8 PG students underwent internship/project training, with 2 of them placed in semiconductor core companies including Cadence.
3. Dr. Rekha P has facilitated internship, placement assistance, and funding proposal collaborations with

RoboManthan Pvt. Ltd. and Vanora Robotics over the past 3 years, resulting in 3 UG student internships with RoboManthan and 3 UG student internships along with 2 funding proposals with Vanora Robotics.

4. Dr. Rashmi S Bhaskar led a certification collaboration with Qualcomm, through which 2 faculty members and 8 students — 10 members in total — successfully completed the Qualcomm 5G Introductory-Level Certification.
5. Dr. Smitha Gayathri D maintains an ongoing internship and training collaboration with GTTC, under which a UG student completed an internship, faculty training on PLC was organized, and an industrial visit was conducted.

WoS (Web of Science) Journals

1. Sameera P, Priyadarshini K. Desai and Keerti Kulkarni published a paper titled "Wearable and implantable antennas for healthcare applications: advancements, challenges, and future directions," in International Journal of Electrical and Computer Engineering Systems, April 2026, ISSN: 1847-7003.
2. Smitha Gayathri D published a paper titled "PAPR Reduction in MIMO-OFDM Using Refracted Opposition Based Archerfish Hunting Optimization Algorithm," in Cybernetics and Information Technologies, June 2026, ISSN: 1311-9702.
3. Smitha Gayathri D published a paper titled "Hybrid radome lens structure for gain enhancement and angular radiation control in patch antenna arrays," in Indian Journal of Engineering, May 2026, ISSN: 2319-7757.
4. Rekha P, Smitha Gayathri D, Yasha Jyothi M Shirur and Shamanth published a paper titled "Full-Swing Gate Diffusion Input Based 32-Bit Arithmetic and Logic Unit: Design, Implementation, and Comparative Analysis," in Journal of VLSI Circuits and Systems, June 2026, ISSN: 2582-1458.

Scopus Journal Publications

1. Venkatesh Bhandage, Nijaguna Gollara Siddappa, Nagaraj Bhat, Manjunath G. Asuti and Praveenkumar S Challagidad published a paper titled "Tumour GAN-based augmentation and hybrid deep learning model for classification of brain tumour using MRI images," in International Journal of Ad Hoc and Ubiquitous Computing, Vol. 50, No. 3, pp. 123–136, November 2025.
2. Manjunath G. Asuti, Nirmalkumar S. Benni, Arun Kumar G, Ananda M. H., Rekha P. and Sudarshan Bhat published a paper titled "Memristor-Based Priority Encoder and Decoder Circuit," in Micro and Nanosystems, Vol. 18, Issue —, e18764029422867, March 2026, DOI: 10.2174/0118764029422867251204044832.
3. Priyadarshini K. Desai, Keerti Kulkarni and Champa P. N. published a paper titled "Design and Analysis of Wideband, High Gain, Self-Isolated Multiple Antenna for mm-Wave Application," in Journal of Communications, Vol. 21, No. 1, pp. 12–19, January 2026, DOI: 10.12720/jcm.21.1.12-19.
4. V Kusanur, Priyadarshini K Desai, TM Hemanth and KM Manjunath published a paper titled "Performance Analysis of Underwater Communication Using Li-Fi Across different Water Qualities," in Journal of Communications, Vol. 20(5): 589–595, October 2025, DOI: 10.12720/jcm.20.5.589-595.
5. Dr. Lakshmi Bhaskar published a paper titled "CC-LEACH Performance Evaluation: Metrics and Analysis," in Journal of The Institution of Engineers (India): Series B, June 2026, DOI: 10.1007/s40031-026-01353-1.
6. K. Raghavendra, B.G. Jairam, S.V. Sunitha, M.G. Asuti, K.R. Kavyashree, K. Ramya and A. Zareen published a paper titled "Multimodal Sensor Fusion for Waste Management Using Graph Neural Networks," in Journal Européen des Systèmes Automatisés, January 2026, DOI: 10.18280/jesa.590122.
7. Gagana Shree N. D., Monika V., Rekha S. and Dr. Sunitha S. V. published a paper titled "Smart sort and GPS alerts for efficient waste management system," in AIP Conference Proceedings, Vol. 3426, No. 1, 020011, June 2026, DOI: 10.1063/5.0329515.
8. Monika Sharma D, Rajeshwari Madli, Sujaya B L, Divya K V and Prashanth B S published a paper titled "Hybrid DBO-GWO Multi-Objective Clustering with Light Weight Attention Based Routing Framework for Energy

- Optimized IoT Networks," in *Journal Européen des Systèmes Automatisés*, Vol. 59, No. 4, pp. 1171–1179, April 2026, DOI: 10.18280/jesa.590425.
9. P. Latha, N. S. Benni, M. G. Asuti and K. Thamaraiselvi published a paper titled "Smart and efficient waste management through wireless IoT-enabled deep learning," in *Scientific Reports*, Vol. 16, Issue 1, April 2026.
 10. N. S. Benni, G. C. Jagan, Tamizhselvan and M. G. Asuti published a paper titled "Exploring the feasibility of distributed ledger technology for tamper-proof logging in MANETs: challenges and solutions," in *Scientific Reports*, Vol. 16, Issue 2, May 2026.
 11. Rekha P, Smitha Gayathri D, Dr. Yasha Jyothi M Shirur, Kumar Puttaswamy Gowda and Bindu S published a paper titled "Full-Swing Gate Diffusion Input Based 32-Bit Arithmetic and Logic Unit: Design, Implementation, and Comparative Analysis," in *Journal of VLSI Circuits and Systems*, June 2026.
 12. Keerti Kulkarni and Priyadarshini K Desai published a paper titled "Quantum computing in image processing: A review of applications, models, and prospects," in *Franklin Open*, May 2026, DOI: 10.1016/j.fraope.2026.100631.
 13. Rajeshwari Madli, Sunayana S, Vrunda Kusanur, Shobha N, Ananth G S, Suhaas K P, Devi S and Mahesh R published a paper titled "Blockchain-Driven Peer-to-Peer Smart Energy Trading for Decentralized Power Networks," in *Journal Européen des Systèmes Automatisés*, Vol. 59, No. 2, pp. 385–394, February 2026, DOI: 10.18280/jesa.590208.
 14. Vrunda Kusanur, Priyadarshini K Desai, Hemanth T. M., Manjunath K. M. and Suhas Gowda H. B. published a paper titled "Performance Analysis of Underwater Communication Using Li-Fi Across different Water Qualities," in *Journal of Communications*, October 2025, DOI: 10.12720/jcm.20.5.589-595.
 15. Chandrakala G Raju, Sreelatha R, Rashmi S Bhaskar, Keerthi Devarahatty Shivakumar, Abhilasha P Kumar and Nandini S R published a paper titled "Multi-objective Bio Inspired Deep Reinforcement Learning based Routing framework for Energy-efficient IoT Environment," in *International Journal of Intelligent Engineering and Systems*, Vol. 19, No. 5, p. 97, March 2026.
 16. Sowmya T, Chandrakala G Raju, Dr. Sunitha S V, Sujatha T, Ananth G S, Arpitha K, Anusha K S and Veena Davalgi published a paper titled "A Federated Metaheuristic Optimized Deep Learning Framework for Privacy-Preserving Intrusion Detection and Internet of Things Security Analytics," in *International Journal of Safety and Security Engineering*, Vol. 16, No. 6, pp. 1269–1278, June 2026, DOI: 10.18280/ijssse.160609.
 17. Smitha Gayathri D published a paper titled "PAPR Reduction in MIMO-OFDM Using Refracted Opposition Based Archerfish Hunting Optimization Algorithm," in *Cybernetics and Information Technologies*, March 2026.
 18. Smitha Gayathri D published a paper titled "Hybrid radome lens structure for gain enhancement and angular radiation control in patch antenna arrays," in *Indian Journal of Engineering*, June 2026.
 19. Smitha Gayathri D published a paper titled "Energy efficient clustering and routing in wireless sensor network using random differential leader pool strategy with electric Eel foraging optimization algorithm," in *International Journal of Intelligent Engineering and Systems*, June 2025.

UGC-Care Journal Publications

1. Dr. Lakshmi Bhaskar, Varshini M and Sahana K R published a paper titled "Global Sea Level Prediction Using Machine Learning," in *International Journal of Novel Research and Development (IJNRD)*, Vol. 10, Issue 11, pp. d343–d349, November 2025, ISSN: 2456-4184.
2. Jyotirmay H R, Monisha R, Niharika H and Ashwini S Savanth published a paper titled "A Survey on Intelligent Vision-Based Systems for Surface Defect Detection in Electric Vehicle Components," in *International Journal of Engineering and Science Invention (IJESI)*, Vol. 14, Issue 10, pp. 13–17, October 2025, DOI: 10.35629/6734-14101317.

3. Ashwini S Savanth, P S Ravindranath, Sukruth Raghavendra R, Rashmitha R Shet and Shamitha M published a paper titled "Beyond Line-of-Sight Vision Assistance for Forklift Operations," in International Research Journal of Engineering and Technology (IRJET), Vol. 12, Issue 7, July 2025.
4. Pratheek S K, Rathik, Srikanth B R and Sunitha S V published a paper titled "A Survey on Real-Time Water Surveillance Boat with Object Detection and Conveyor Belt Retrieval," in International Journal of Scientific Research in Computer Science, Engineering and Information Technology (IJSRCSEIT), Vol. 11, Issue 6, pp. 185–192, November 2025, DOI: 10.32628/CSEIT2511631.
5. Niranjana D N, Tilak Naidu R, Vijay Aditya and Dr. Sunitha S V published a paper titled "A Survey on Wireless Charging of Electric Vehicles," in International Journal of Scientific Research in Computer Science, Engineering and Information Technology (IJSRCSEIT), Vol. 11, Issue 6, pp. 128–136, December 2025, DOI: 10.32628/CSEIT2511621.
6. S V Vikas, Srinivas BV, Sharan Sheshadri and Keerthi Kulkarni published a paper titled "A Survey on Master-Slave FPV Drone Systems for Military Reconnaissance and Coordinated Aerial Operations," in International Journal of Scientific Research in Computer Science, Engineering and Information Technology, Vol. 11, No. 5, pp. 198–204, October 2025, DOI: 10.32628/CSEIT2511719.
7. Amithesh Y, Dhyuthi K A, Rathna V, Priyadarshini K Desai — "Survey on AI based Network Anomaly Detection for next generation wireless communication system," IRJET, Vol. 10, Issue 3, Mar 2024.
8. Kshitij Satish, Shamanth V, Suhaas B R and Dr. Keerti K published a paper titled "Wearable AI System for Real Time Threat Detection and Dual Spectrum Analysis," in International Journal of Scientific Research in Computer Science, Engineering and Information Technology, Vol. 11, No. 5, pp. 182–187, October 2025, DOI: 10.32628/CSEIT2511721.
9. Adithya M Bhat, Anuchinmayee C, K J Shreesha and Priyadarshini K Desai published a paper titled "A Survey on Trends of Touchscreen Solenoid Door Lock System," in International Research Journal of Engineering and Technology (IRJET), Vol. 12, Issue 10, October 2025.
10. Vinay Gowda D J, Tarun B G and Sudarshan published a paper titled "Concrete Testing Device for In-Site Strength Evaluation and Aging Prediction of RCC Structures," in International Journal of Scientific Research in Computer Science, Engineering and Information Technology (IJSRCSEIT), Vol. 11, Issue 6, pp. 267–273, December 2025, DOI: 10.32628/CSEIT2511647.
11. Varsha B N, Charan H S, Naman Nikshap C N and Rekha P published a paper titled "Mental Health Risk Assessment Based on Social Media Activity," in International Research Journal of Engineering and Technology (IRJET), Vol. 12, Issue 10, October 2025.
12. B N Pallavi, B N Yashas, Vrunda Kusanur and Darshan A S published a paper titled "A Web-Based Digital Marketplace Platform for Direct Farmer-to-Buyer Interaction and Agricultural Trade," in International Journal of Creative Research Thoughts (IJCRT), July 2026, DOI: 10.56975/ijcr.v14i6.310389.

Memorandum of Understandings Reached

1. The department signed an MoU with Qualcomm Academy for certification courses, coordinated by Dr. Yasha Jyothi M Shirur, effective 2024 for 1 year.
2. An MoU was signed with Maven Silicon Pvt. Ltd for internship/project/placement assistance, coordinated by Dr. Yasha Jyothi M Shirur and Dr. Vrunda Kusanur, dated 29th September 2025, valid for 3 years.
3. An MoU was established with SVYASA Deemed to be University, coordinated by Dr. Bindu S, for the creation of a database of yoga postures and consultancy in pose estimation and pose correction techniques using machine learning, dated 8th November 2023, valid till termination by either party.
4. The department has multiple MoUs coordinated by Dr. Jyoti R. M.: with Renalyx Health Systems Pvt. Ltd for

internships, real-time industry projects, joint proposals, and Centre of Excellence establishment; with Autoyos Pvt Ltd for the same purposes, dated 8th November 2023, valid for 5 years; with GTM4Health Pvt Ltd for internships, real-time industry projects, and joint proposals, dated 2024, valid for 5 years; with IIHMR, Bangalore for internships, start-ups, joint proposals, and Centre of Excellence establishment, valid for 5 years; and with DSEdify Pvt. Ltd for placement drives, industrial visits, student internships, hackathons, and tech talks, dated 11th June 2025, valid for 5 years.

5. Dr. Rekha P coordinates MoUs with RoboManthan and Vanora Robotics for internship, placement assistance, and funding proposals, each valid for 3 years.
6. Dr. D Bhuvana Suganthi coordinates an MoU with Innova Skills for internships, SDPs, workshops, and student training.
7. Dr. Priya R Sankpal coordinates MoUs with AutoTec Systems, to facilitate student internships and projects along with necessary funding support, valid for 8–12 months (2023–24); and with Renalyx Health Systems Pvt. Ltd, covering internships, projects, library access, and academic assistance, along with funding support, valid for 5 years (2023–2028).
8. An MoU with Maven Silicon Pvt. Ltd, coordinated by Dr. Vrunda Kusanur, supports internship/project/placement assistance, dated 29th September 2025, valid for 3 years.
9. Dr. Keerti Kulkarni coordinates an MoU with DSEdify Pvt. Ltd for placement drives, industrial visits, student internships, hackathons, and tech talks, dated 11th June 2025, valid for 5 years.
10. Dr. Rashmi S Bhaskar coordinates an MoU with Qualcomm for student certification courses.
11. Dr. Smitha Gayathri D coordinates MoUs with GTTC, facilitating student internships and projects on a perpetual basis, and with NIELIT, facilitating student internships and certifications.
12. Smt. Sumathi A coordinates an MoU with Subhanu Technologies to facilitate student internships and projects along with necessary funding support, dated 24th July 2024, valid for 5 years.
13. Dr. Sujaya B L coordinates an MoU with CISCO for certification courses, internships, and hackathons.
14. Sri. Kiran K N coordinates an MoU with GTM4Health Pvt Ltd for internships, real-time industry projects, and joint proposals, valid for 5 years.
15. Dr. Priyadarshini K Desai coordinates an MoU with Metiskills for student internships.
16. Dr. Lakshmi Bhaskar coordinates an MoU with Autoyos Pvt Ltd for internships, real-time industry projects, joint proposals, and Centre of Excellence establishment, dated 8th November 2023, valid for 5 years.
17. Dr. Sunitha S. V coordinates an MoU with Advanced Electronics Systems & Solutions for internships, SDPs, workshops, and student training, dated 24th February 2026, valid for 5 years.
18. Mrs. Arpita Kulkarni coordinates two MoUs: with Anthriq, covering technical training, hackathons, projects, joint proposals, and workshops, dated 19th August 2025, valid for 5 years; and with SkyBrain Neurotech, covering technical training, joint proposals, hackathons, projects, and workshops, dated 7th January 2026, valid till termination.

Conference Publications

1. M. Bharathi, Madhu G.C, Krithikaa Mohanarangam, N. Ashok Kumar, Yasha Jyothi M Shirur and N. Padmaja presented a paper titled "Energy Efficient Cryptographic Implementation Using Probabilistic Switching in Low Power Adders" in the 4th International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics (IITCEE), Bangalore, India, 2026, pp. 1–5, doi: 10.1109/IITCEE67948.2026.11394338.
2. Anoop Kiran Angadi Manjunatha, Sarala T and Yasha Jyothi M Shirur presented a paper titled "Comparison of Different Database Management Systems in Terms of Suitability for Storing IoT Data on-Premise" in the 4th

- International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics (IITCEE), Bangalore, India, 2026, pp. 1–6, doi: 10.1109/IITCEE67948.2026.11394158.
3. Shriharini Suresh, Pranathi R, Apoorva S and Lakshmi Bhaskar presented a paper titled "ECG Signal Analysis for Heart Rate Variability and Cardiac Event Detection" in the 2025 IEEE International Conference on Compute, Control, Network & Photonics (ICCCNP), Bangalore, India, 2025, pp. 1–6, doi: 10.1109/ICCCNP63914.2025.11233528.
 4. Vyashak T M, Unnathi G D, Ashwini S Savanth, P S Ravindranath, S Raj and P Upadhyay presented a paper titled "Camera Traffic Generator Software: A Unified Platform for Real-Time Multi-Camera Surveillance" in the 2026 International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics (IITCEE), Bangalore, India, 2026, pp. 1–5, doi: 10.1109/IITCEE67948.2026.11394683.
 5. Ashwini S Savanth, Sunitha S V and Sarala T presented a paper titled "AI Powered Indian Vehicle Number Plate Detection System" in the 2026 International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics (IITCEE), Bangalore, India, 2026, pp. 1–6, doi: 10.1109/IITCEE67948.2026.11394559.
 6. Harsha M S, Manonmaya Tandula S V, Sunitha S V and Rakshitha U presented a paper titled "Sign Language Hand Glove" in the 2026 International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics (IITCEE), Bangalore, India, 2026, pp. 1–6, doi: 10.1109/IITCEE67948.2026.11394085.
 7. Amulya R Prasad, Bhoomika K, Jahnvi A R, Subodh Kumar Panda, Rekha P and Bindu S presented a paper titled "Integrated DAM Automation System" in the IEEE International Conference for Women in Innovation, Technology & Entrepreneurship (ICWITE), 2025, doi: 10.1109/ICWITE64848.2025.11306959.
 8. S Kishore, Sumukh G, Tharun R, Subodh Kumar Panda, Bindu S and Rekha P presented a paper titled "Design and Verification of a Proactive Lane Guidance System using System Verilog" in the Third International Conference on Emerging Applications of Material Science and Technology (ICEAMST), 2025, doi: 10.1109/ICEAMST67459.2025.11335635.
 9. Sumukh G, Tharun R, S Kishore, Dr. Subodh Kumar Panda, Rekha P and Bindu S presented a paper titled "Verification and Synthesis of Multi-Master Multi-Slave AXI4 Stream Interconnect using System" in the Third International Conference on Emerging Applications of Material Science and Technology (ICEAMST), 2025, doi: 10.1109/ICEAMST67459.2025.11335930.
 10. Priyadarshini S, Neha S Hosamath, Subodh Kumar Panda, Smitha Gayathri D, Bindu S and Rekha P presented a paper titled "Design and Verification of a 16-Bit Multi-Slave SPI Protocol in System Verilog Slave AXI4 Stream Interconnect using System" in the 5th International Conference on Mobile Networks and Wireless Communications (ICMNWC), 2025, doi: 10.1109/ICMNWC66779.2025.11354444.
 11. Smitha Gayathri D, Arpitha Kulkarni, Subodh Kumar Panda, Rachana R, Shreesh and Keerthana presented a paper titled "Soil Nutrient Prediction and Crop Recommendation System: Conventional to Modern Methods of Soil NPK Sensing" in the International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics (IITCEE), 2025, doi: 10.1109/IITCEE64140.2025.10915247.
 12. Shamanth K S, Tilak Prasad K M, Sumanth B, Rekha P, Subodh Kumar Panda and Bindu S presented a paper titled "Comparative Analysis of Common Source Amplifiers with Resistive and Diode Connected Loads in 45nm and 90nm Technologies" in the 2025 IEEE International Conference on Compute, Control, Network & Photonics (ICCCNP), 2025, doi: 10.1109/ICCCNP63914.2025.11233719.
 13. Neha S Hosamath, Priyadarshini S, Nazim Khan, Bindu S, Yasha Jyothi M Shirur and Subodh Kumar Panda presented a paper titled "Design and Comparative Analysis of Logic Styles for Low-Power and High-Speed Applications in 45nm and 90nm CMOS Technology" in the 5th International Conference on Mobile Networks and Wireless Communications (ICMNWC), 2025, doi: 10.1109/ICMNWC66779.2025.11354420.

14. Rakshitha A, Shilpa R, Bindu S, Neha S Hosamath, Subodh Kumar Panda and Smitha Gayathri D presented a paper titled "Gate-level Comparison of CMOS and GDI Logic Gates with the Design of a 16-Bit Kogge-Stone Adder using GDI Technique" in the 2025 IEEE International Conference on Compute, Control, Network & Photonics (ICCCNP), 2025, doi: 10.1109/ICCCNP63914.2025.11233572.
15. Rekha P, Smitha Gayathri D, Yasha Jyothi M Shirur, Maaz Hussain, Bindu S and Subodh Kumar Panda presented a paper titled "Mitigating Perceptual Drift in ROS2 LiDAR-Based SLAM During Wall-Parallel Motion" in the 2026 International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics (IITCEE), 2026, doi: 10.1109/IITCEE67948.2026.11394124.
16. Shriniketana Kalale, Subodh Kumar Panda, Manjunath G Asuti and Sudarshan D presented a paper titled "Design and Verification of a Glitch-Filtered Clock Gating Controller using System Verilog" in the 2026 International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics (IITCEE), 2026, doi: 10.1109/IITCEE67948.2026.11394610.
17. Subodh Kumar Panda, Smitha Gayathri D, Raghavendra, Rekha P and Bindu S presented a paper titled "Home Confinement and Rehabilitation Monitoring Using Anklet Systems" in the 2026 International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics (IITCEE), 2026, doi: 10.1109/IITCEE67948.2026.11394437.
18. Karanam Vasudha and Subodh Kumar Panda presented a paper titled "Single Cycle Performance and Temperature-Dependent Analysis of INR18650-20R Li-ion Cells" in the 2026 International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics (IITCEE), 2026, doi: 10.1109/IITCEE67948.2026.11394053.
19. M. Roy, V. Bhandage, A. Jeyabose, S. Prabhu and Manjunath G. Asuti presented a paper titled "Synergizing EEG and MRI for Autism Classification: Exploring the Feasibility of Machine Learning Models" in the 2025 International Conference on Cognitive, Green and Ubiquitous Computing (IC-CGU), Bhubaneswar, India, 2025, pp. 1–7, doi: 10.1109/IC-CGU67042.2025.11337976.
20. M. N. Kumar, C. G, G. G. R, Sudarshan Bhat and Manjunath G. Asuti presented a paper titled "Real-Time Tracking and Control in Smart Hydroponics: Advancing Urban Farming Solutions" in the 2025 IEEE 7th International Conference on Computing, Communication and Automation (ICCCA), Greater Noida, India, 2025, pp. 1–6, doi: 10.1109/ICCCA66364.2025.11325708.
21. Shreyas S, Manjunath G. Asuti and Sudarshan Bhat presented a paper titled "Modelling and Analysis of Battery Thermal Management Systems using Simulink for Electric Vehicles" in the 2025 5th International Conference on Mobile Networks and Wireless Communications (ICMNWC), Tumkur, India, 2025, pp. 1–6, doi: 10.1109/ICMNWC66779.2025.11354364.
22. Parinith M, Manjunath G. Asuti, Sudarshan Bhat and Rekha P presented a paper titled "Modular Top Level Architecture Synthesis and Signal Routing in a 32-Bit RISC Processor" in the 2026 International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics (IITCEE), Bangalore, India, 2026, pp. 1–5, doi: 10.1109/IITCEE67948.2026.11394596.
23. D. N. Niranjana, R. Tilak Naidu, V. Aditya, S. Bindu, M. K. Prashanth and K. Kulkarni presented a paper titled "Analysis of ECG Signal for the Detection of Arrhythmia and Atrial Fibrillation" in the 2025 5th International Conference on Mobile Networks and Wireless Communications (ICMNWC), Tumkur, India, 2025, pp. 1–5, doi: 10.1109/ICMNWC66779.2025.11354404.
24. Suhaas B R, Shamanth and Keerti Kulkarni presented a paper titled "Assessing Urban Heat Vulnerability through Remote Sensing" in ETCC-2025, organized by PES University, 2025, doi: 10.1109/ETCC65847.2025.11108370.
25. Shriniketana Kalale, Subramanya D, Varshini R and Keerti Kulkarni presented a paper titled "Detection and Extraction of Sound Vibrations from Silent Videos using MATLAB" in the 2025 IEEE 2nd International

- Conference on Information Technology, Electronics and Intelligent Communication Systems (ICITEICS), Bengaluru, India, Aug 30–31, 2025, doi: 10.1109/ICITEICS64870.2025.11340842.
26. Arya S, Arpita Kulkarni and Suchith H J presented a paper titled "EMG-Based Hand Motion Analyser and Real-Time Energy Tracking" in the 2026 International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics (IITCEE), Bengaluru, India, 2026, pp. 1–6, doi: 10.1109/IITCEE67948.2026.11394443.
 27. Neha N, Kiran K N, Mahima M Hebbar and K U Dikshitha presented a paper titled "Novel Quantum Cryptography Protocol for Secure Satellite Communication" in the 2026 International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics (IITCEE), 2026, doi: 10.1109/IITCEE67948.2026.11394447.
 28. Kushal Gowda K, Kiran K N, Ankith H Bharadwaj, Jathin N and Sheba Selvam presented a paper titled "Bio-Inspired Autonomous Swarm Framework for Adaptive Waste Management in Constrained Aquatic Environments" in the 2026 International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics (IITCEE), 2026, doi: 10.1109/IITCEE67948.2026.11394667.
 29. Niveditha, G. K. Shashank, R. R. Sumanth, P. K. Desai and N. Hemanth Prasad presented a paper titled "Design and Analysis of SRAM Circuits at 45nm Technology Using Sleeper Cells" in the 2025 Second International Conference on Computing, Semiconductor, Mechatronics, Intelligent Systems and Communications (COSMIC), Mangalore, Karnataka, India, 2025, pp. 330–336, doi: 10.1109/COSMIC67569.2025.11380847.
 30. Mahima S K and Priyadarshini K. Desai presented a paper titled "A Study on Beamforming Capabilities of Yagi-Uda versus Short Dipole Antennas" in the 2025 Second International Conference on Computing, Semiconductor, Mechatronics, Intelligent Systems and Communications (COSMIC), Mangalore, Karnataka, India, 2025, pp. 1–6, doi: 10.1109/COSMIC67569.2025.11380950.
 31. Sarala T and T.C. Manjunath presented a paper titled "Design and Development of AI-ML Based Next Generation Communication Networks for Improving the Capacity, Efficiency with Mathematical Models" in the 2026 International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics (IITCEE), Bangalore, India, 2026, pp. 1–10, doi: 10.1109/IITCEE67948.2026.11394558.
 32. Vyshak T M, Gaayana G R and Sarala T presented a paper titled "Unified Cognitive Orchestration System: The Next Paradigm for End-to-End Port Management and Predictive Truck Appointment Scheduling" in the 2026 International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics (IITCEE), Bangalore, India, 2026, pp. 1–6, doi: 10.1109/IITCEE67948.2026.11394151.
 33. Tharun Ra, Nazim Khan and Sunitha S V presented a paper titled "Analysis of IoT Edge Devices with Hybrid Tracking System" in the 2025 1st International Conference on Advancement in Futuristic Technologies (ICAFT), Belagavi, India, 2025, pp. 1–6, doi: 10.1109/ICAFT66710.2025.11452901.
 34. S Kishore, Sumukh G and Sunitha S V presented a paper titled "IoT-Enabled Virtual Doctor Robot" in the 2025 International Conference on Emerging Technologies in Electronics and Green Energy (ICETEG), Mysore, India, 2025, pp. 1–5, doi: 10.1109/ICETEG66194.2025.11473085.
 35. S. Anuradha, Sujaya B. L., D. Gupta, K. Shakhnoza, M. Allaberganova and S. Sabirov presented a paper titled "Graph Neural Networks for Network-Based Biomarker Discovery in Complex Diseases" in the 2025 IEEE 3rd Global Conference on Wireless Computing and Networking (GCWCN), Lonavala, Maharashtra, India, 2025, pp. 1–8, doi: 10.1109/GCWCN66157.2025.11448477.
 36. Sakshi N Sunil, Dr. Bindu S, Kishore, Dr. Sujaya B. L., D. R. Harshapradha and P. Rekha presented a paper titled "Weather-Aware CubeSat Link Simulation with Dynamic Power Control" in the 2025 Third International Conference on Emerging Applications of Material Science and Technology (ICEAMST), Bengaluru, India, 2025, pp. 905–910, doi: 10.1109/ICEAMST67459.2025.11335689.

37. Vaishnavi C M, Trupti R and Manjunath G. Asuti presented a paper titled "Design and Synthesis of a 5-Stage Pipelined RISC-V Processor Using Verilog" in the 2025 International Conference on Emerging Technologies in Electronics and Green Energy (ICETEG), Mysore, India, 2025, pp. 1–6, doi: 10.1109/ICETEG66194.2025.11472984.
38. C. M. Vaishnavi, R. Trupti, Manjunath G. Asuti and Jyoti R. Munavalli presented a paper titled "A Comprehensive Review on Implementation Analysis of 5-Stage Pipelined RISC-V Processor" at the AIP Conference Proceedings, Sustainable Computing & Intelligent Systems, Jaipur, India, June 2026, doi: 10.1063/5.0327888.
39. Vrunda Kusanur, Varshini M, Sahana K R and Preksha S Jorapur presented a paper titled "DermAI: An Adaptive AI Framework for Customized Skincare and Cosmetic Selection" in the 2026 IEEE International Conference on Electronics, Computing and Communication Technologies (CONECCT), July 2–5, 2026.
40. Dr. Anitha N, Dr. V. Saidulu and Dr. Rashmi S. Bhaskar presented a paper titled "AI-Driven Multidimensional Poverty Mapping Using Satellite and Socioeconomic Data" in the IEEE International Conference on Emerging Trends in Computing and Communication 2025 (ETCOM), Nov 28–29, 2025, doi: 10.1109/ETCOM66606.2025.11436185.
41. Smitha Gayathri D presented a paper titled "Smart Subsafe Passage Sentinel" in the 2026 Proceedings of the 4th IEEE International Conference on Knowledge Engineering and Communication Systems (ICKECS), June 2026, doi: 10.1109/ICKECS70176.2026.11528105.
42. Smitha Gayathri D presented a paper titled "Design and Simulation of XOR, TSPC, and MUX Based Hybrid Phase Detectors in 45nm CMOS" in the 2026 Proceedings of the 4th IEEE International Conference on Knowledge Engineering and Communication Systems (ICKECS), June 2026, doi: 10.1109/ICKECS70176.2026.11527822.
43. Smitha Gayathri D presented a paper titled "Significance of Utilizing UVM for Verifying Complex Bridges in Modern SoC Designs" in the 2026 International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics (IITCEE), June 2026, doi: 10.1109/IITCEE67948.2026.11394281.
44. Smitha Gayathri D presented a paper titled "Implementation of Fair Chance Round Robin Arbiter and its Comparative Analysis" at IEEE-WIE, ICTWIE 2025, January 2026, doi: 10.1109/ICWITE64848.2025.11307144.
45. Smitha Gayathri D presented a paper titled "A Privacy Preserving Multimodal Smart Mirror with Edge AI Blockchain Security and Quantum Inspired Optimization for Personalized Wellness" in the 2026 International Conference on Intelligent and Innovative Technologies in Computing, Electrical and Electronics (IITCEE), June 2026, doi: 10.1109/IITCEE67948.2026.11394087.

Books

1. Reena Kulkarni and Keerti Kulkarni authored the book “Industrial Cyber-Physical Systems: Building Resilience for Industry 4.0”, published by Book Bytes International Publications in September 2025 (ISBN 978-81-991695-3-1).

Book Chapters

1. Dr. Yasha Jyothi M Shirur authored the book “Smart Agriculture: Harnessing IoT for Future Farming – IoT-Based Technologies for Precision Farming and Smart Agriculture”, published by Bentham Science Publishers on 9th June 2026.
2. Dr. Smitha Gayathri D and Dr. Yasha Jyothi M Shirur contributed a chapter titled “Vehicular Power Line Communication”, published by Scrivener (Wiley) Publications on 11th July 2025.
3. Bindu S contributed a chapter titled “Integration of Nanotechnology and Machine Learning in Healthcare: Fundamentals, Applications, and Future Scope”, published by Scrivener Publishing LLC, 2026.

4. Bindu S and Smitha contributed a chapter titled “Emotional Intelligence in AI: Bridging the Gap Between Humans”, published by Scrivener Publishing, 2026.
5. Sunitha S V, Lakshmi Bhaskar, and Sumathi A contributed a chapter titled “Raspberry Pi Agrobot”, accepted on 8th April 2026 for publication by CRC Press, Taylor & Francis Group.
6. Dr. Rekha P contributed a chapter titled “High Performance Analog Circuit Design”, published by Wiley Scrivener Publishing, 2026.
7. Benni N. S., Suresh L., Poornima H. S., and Asuti M. G. contributed a chapter titled “5G Backhaul Interference Management via Sea Lion Optimization Routing”, in Lecture Notes in Networks and Systems, Vol. 1914, Springer, June 2026.
8. Arun Agrawal, Rashmi S. Bhaskar, and Sanjay Badhe contributed Chapter 9, “Anomaly Detection in Behavioral Surveillance Using Deep Learning Techniques”, published by IGI Global Scientific Publishing, April 2026.
9. Smitha Gayathri D, Rekha P, Dr. Yasha Jyothi M Shirur, and Poornima contributed Chapter 15, “High Performance Analog Circuit Design”, in the book “Advanced Circuit Design”, Wiley Scrivener Publishing, 2026 (accepted).
10. Smitha Gayathri D and Roopashree contributed Chapter 11, “Emotionally Intelligent Systems: Human-Centered AI for Next-Gen Robotics”, in “Emotional Intelligence and Human-Machine Interaction in Advanced Hardware

Student Achievements

1. Thanuja emerged as Winner of SIH 2025, winning a cash prize of ₹75,000, on 08–09 December 2025.
2. Sriraksha Srinivas, 8th Semester ECE, was honored with the Recognition Award for 2025 by the IEEE GRSS Bangalore Chapter, on 24 January 2026.
3. Amogh M S, Rajath D K, Aditya Anil Chanda, Amogha Bharadwaj and Yashas Rajendra secured 1st Place in the Defence Domain and won a cash prize of ₹20,000 at NavaNIETi — National Level 24-Hour Hardware Hackathon, organized by the Department of Electronics & Communication Engineering, The National Institute of Engineering, Mysuru, on 5 March 2026, with the project Smart Border Intrusion Detection prototype.
4. Nagaraja M and Kaushik G secured 2nd Prize at Nadicare Hackathon – MedTech Innovators, with a cash prize of ₹5,000, on 14 March 2026.
5. Ananya V Shahapur and Faheemah M won 3rd Prize at Nadicare Hackathon – MedTech Innovators, with a cash prize of ₹2,000, on 14 March 2026.
6. Sindhu G, Sinchana D S, and Harshita secured 3rd Prize at Virtuovation 2.0, with a cash prize of ₹5,000, on 23–24 March 2026.
7. Shreesha Kumar P and Yashas Rajendra secured a cash prize of ₹4,000 at GRIDX Hackathon 2026, on 15 April 2026.
8. Mr. Vinay Gowda D and Mr. Tarun BG, students of Electronics and Communication Engineering, received a fund of ₹4,000.00 for their B.E. project titled "Concrete Testing Device for In Site Strength Evaluation and Aging Prediction of RCC Structures" under the guidance of faculty member Mr. Sudarsha N.
9. Ms. Vindhya B.M, Ms. Thrishali H Banjan, and Ms. Shilpa Raju N, students of Electronics and Communication Engineering, received a fund of ₹5,000.00 for their B.E. project titled "Adaptive Hexapod Bot with Terrain Navigation Surveillance and Applications" under the guidance of faculty members Dr. Subodh Kumar Panda and Dr. Manjunath G. Asuti.
10. Ms. Neha S Hosamath, a student of VLSI Design and Embedded Systems, received a fund of ₹5,000.00 for her M.Tech project titled "Design of Floating Point ALU Using FS-GDI Technique" under the guidance of faculty members Dr. Rekha P and Dr. Bindu S.

Seminar on Roadmap to IITs & PSU Jobs through GATE

The Department of Electronics and Communication Engineering, B.N.M. Institute of Technology (BNMIT), Bengaluru, organized an expert talk titled “Roadmap to IITs & PSU Jobs through GATE” on 8th January 2026, from 11:00 AM to 12:00 PM, at the N401 Seminar Hall. The event was conducted in association with the IEEE Circuits and Systems Society and IMS GATE Academy.

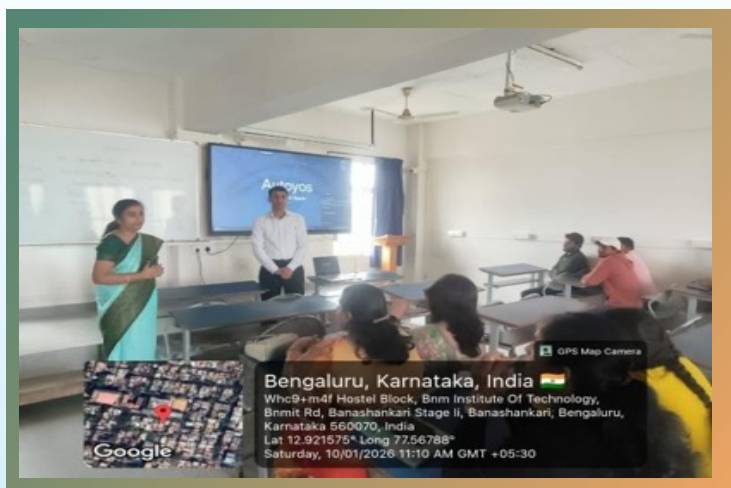


Expert session on “Career Opportunities After GATE” being delivered to ECE students as part of the roadmap to IITs and PSU jobs workshop

The session on “Roadmap to IITs & PSU Jobs through GATE” was highly informative and beneficial for aspiring students. It provided a clear direction and practical guidance for achieving academic and professional goals through GATE. The Department of Electronics and Communication Engineering, BNMIT, expresses sincere gratitude to IMS GATE Academy and the resource person for their valuable contribution.

Expert Talk on Technology Readiness Level, Commercialization, Tech Transfer "The Evolving Healthcare Landscape: Navigating Change and Driving Progress"

The expert talk titled "The Evolving Healthcare Landscape: Navigating Change and Driving Progress," was held at the BNM Institute of Technology (BNMIT) on January 10, 2026. The expert talk titled “The Evolving Healthcare Landscape: Navigating Change and Driving Progress”, was held on 10th January, 2026, at 11:00 AM at N402.



The Innovations and ED Cell – BNMIT, in association with The Centre of Excellence, Healthcare and Smart Technologies, IEEE EMBS Student Chapter, and IIC–BNMIT, organized an Expert Talk titled "The Evolving Healthcare Landscape: Navigating Change and Driving Progress," where Dr. Bharathkumar Hegde, Co-founder of Autoyos, Bengaluru, shared insights on building medical products with cutting-edge technology, showcasing Autoyos's dry eye diagnosis innovations like the iRobo autonomous eye screening system and intelligent dry eye analyzer; while stressing the importance of Technology Readiness Level, Commercialization, and Tech Transfer in converting projects into viable products. The session concluded with a faculty interaction exploring future collaborations, giving students and faculty valuable insight into navigating the evolving healthcare landscape.

Expert Talk on “Bridging Academia and Industry: A Journey into SoC Design”

The Department of Electronics and Communication Engineering, B.N.M. Institute of Technology (BNMIT), Bengaluru, organized an expert lecture titled “Bridging Academia and Industry: A Journey into SoC Design” on 10th January 2026, from 11:00 AM to 12:30 PM, at the N401 Seminar Hall. The event was conducted in association with the IEEE Circuits and Systems Society.



Large gathering of students and faculty attentively participating in the expert lecture, displaying strong engagement and interest in the academic–industry interaction session.



Group photograph of faculty coordinators and student members of the IEEE BNMIT Student Branch and Circuits and Systems Society taken at the conclusion of the technical event, symbolizing successful collaboration and active student involvement.

The session opened with an introduction to the growing importance of System-on-Chip (SoC) design in modern electronics, followed by a talk by Mr. Venkatesh Murthy Muthigi, who shared his professional journey and the role of academic foundations in shaping a successful industry career. He covered SoC architecture and design flow, its applications in consumer electronics, communication systems, and embedded platforms, along with industry expectations, essential skills for transitioning into the semiconductor industry, and career pathways in VLSI, product companies, and R&D. The session gave students valuable insight into SoC design and industry workflows, strengthened their understanding of industry expectations, motivated many to pursue careers in VLSI and semiconductors, and reinforced industry–academia collaboration through meaningful expert engagement.

Hackathon on “Life Line: Alerts That Can't Wait”

The Department of Electronics and Communication Engineering, B.N.M. Institute of Technology (BNMIT), Bengaluru, organized a hackathon titled "Life Line: Alerts That Can't Wait" on 10th February 2026, from 11:00 AM to 2:00 PM, at N605. The event saw participation from 20 students and was conducted under the guidance of Faculty Advisor Dr. Lakshmi Bhaskar, with Dr. Sujaya B L serving as the invited judge.

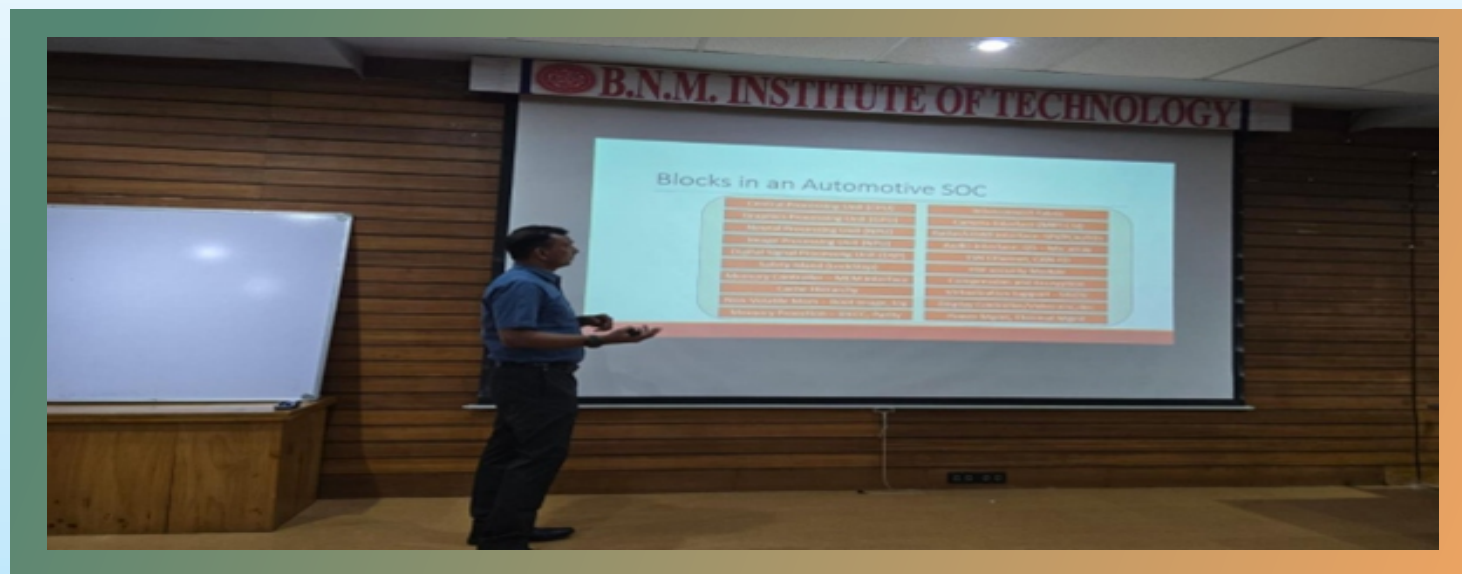


The students were given problem statements and they propose their Alert system solution after a week.

The hackathon, titled "Life Line Alerts That Can't Wait," focuses on innovative solutions likely related to timely medical or emergency alerts, aligning with EMBS themes in biomedical engineering using REAL TIME OPERATING SYSTEMS. The IEEE-EMBS BNMIT SBC organized this event in association with the Department of ECE, BNMIT. The main objective of this presentation was to highlight the implementation of key techniques and demonstrate alerting systems in hospitals through hardware interrupting systems.

Technical Talk on “Future of Automotive: How E/E Architecture is Powering the Shift to Software-Defined Vehicles”

The Department of Electronics and Communication Engineering, B. N. M. Institute of Technology, in association with the IEEE Circuits and Systems Society and IEEE Nanotechnology Council, organized a Technical Talk titled “Future of Automotive: How E/E Architecture is Powering the Shift to Software-Defined Vehicles” on 14 February 2026 at 11:00 a.m. in N401 Seminar Hall.



Industry expert delivering an insightful session on Automotive SOC architecture during the technical talk at BNMIT

Hackathon on “Life Line: Alerts That Can't Wait”



Students actively engaging with the industry expert during the technical session

Mr. Rajesh, Principal Engineer at Intel, provided students with valuable exposure to real-world automotive system design and current industry trends. Participants gained clarity on career opportunities in automotive electronics, embedded systems, and software-defined vehicle platforms. The event successfully strengthened industry-academia interaction and encouraged students to explore advanced research areas in mobility technologies. The speaker emphasized the need for interdisciplinary knowledge in embedded systems, software engineering, and communication protocols to succeed in this field.

The technical talk was informative and well-received by both students and faculty. Such industry-oriented sessions contribute significantly to enhancing technical awareness and preparing students for emerging technological challenges. The Department of ECE looks forward to organizing more such expert talks in the future.

Industrial Workshop on Brain Signal Processing

The workshop “Industrial Workshop on Brain Signal Processing” was conducted on 18th February 2026, from 9:00 a.m. to 4:00 p.m., at B.N.M. Institute of Technology, with a total of 64 participants. The workshop was organized by the IEEE Signal Processing Society in association with the Centre of Excellence in Healthcare & Smart Technologies, ECE. The session was delivered by Rakesh C Jakati, CEO of SkyBrain Neurotech, who provided industry-oriented insights into EEG signal processing using Python.



Faculty and Students actively engaging in the workshop

The workshop introduced participants to the fundamentals of EEG signal processing with an emphasis on connecting theoretical signal processing concepts to practical biomedical applications. The sessions focused on hands-on implementation of EEG filtering techniques, spectral analysis, frequency band decomposition, and brain signal visualization. Participants also gained exposure to open-source EEG datasets and neuroscience kits. Overall, the workshop successfully bridged theory and practice, serving as a strong foundation for advanced learning in neurotechnology, brain-computer interface systems, and healthcare signal processing.

Workshop on Design Thinking, Critical Thinking, and Innovation Design

Department of Electronics and Communication Engineering in association with ISTE students Chapter-BNMIT The Institution of Engineers (IEI), and the Institution's Innovation Council (IICI) organized a workshop on “Design Thinking, Critical Thinking and Innovation Design” 26th February 2026 from 10:00 AM to 12:00 PM at B N M Institute of Technology, with a total of 55 participants. The session was coordinated by Sumathi A (ISTE Co-Coordinator), Dr. Ashwini Sawanth (IEI Coordinator), and Kiran K N (IIC Coordinator), under the guidance of Dr. Yasha Jyothi M Shirur, HoD, ECE, BNMIT.



Glimpses of workshop on Design Thinking, Critical Thinking and Innovation Design

The workshop introduced design thinking as a human-centered mindset for problem-solving, tracing its origins and evolution. Dr. Ashwini explained that it goes beyond the process to focus on understanding user needs, fostering creativity, and applying critical thinking to develop innovative, practical solutions.

Participants explored the five stages—Empathize, Define, Ideate, Prototype, and Test—with special focus on empathy mapping. Through interactive group activities, they identified real-world problems, framed problem statements, brainstormed solutions, and built basic prototypes, gaining hands-on experience in collaborative, user-centered innovation.

Industrial Visit to XP Robotics, Bangalore

The Department of Electronics and Communication Engineering, B. N. M. Institute of Technology, in association with the Institution's Innovation Council (IIC), IEEE Robotics & Automation Society, and BNM Institute of Technology, organized an Industrial Visit to XP Robotics, Bangalore on 19 May 2026 from 2:00 p.m. to 5:00 p.m. for the students of BNMIT.



Industry experts demonstrating advanced robotic systems and automation technologies to BNMIT students during the industrial visit.

The industrial visit to XP Robotics was highly informative and beneficial for the students. It successfully strengthened industry-academia interaction and provided practical insights into modern robotic technologies. The Department of ECE looks forward to organizing more such industrial visits to enrich students' technical knowledge and professional skills.

Boot Camp on Open-Source SoC Design and Verification using Verilator and Yosys

The Department of Electronics and Communication Engineering, BNMIT, in collaboration with the National Institute of Electronics and Information Technology (NIELIT), Calicut, organized a five-day Boot Camp on Open-Source SoC Design and Verification from 29th June to 3rd July 2026. Conducted under the guidance of experts from NIELIT, the program was designed to provide students with practical exposure to industry-standard methodologies used in modern System-on-Chip (SoC) design and verification.



Answers

- | | |
|-------------------------------|-------------------------|
| 1. Microprocessor | 6. Decreases |
| 2. LED (Light Emitting Diode) | 7. Transistor |
| 3. Electrical charge | 8. Bluetooth |
| 4. Rectifier | 9. Light Emitting Diode |
| 5. Guglielmo Marconi | 10. Transistor |

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