



# VIGNAN'S INSTITUTE OF MANAGEMENT AND TECHNOLOGY FOR WOMEN

# TECHINNOVATION

## NEWS LETTER

APR - JUN, 2023

DEPT. OF ECE

VOLUME NO.: 28

### ECE Department

Electronics and Communication engineering is a discipline which uses the scientific knowledge of the behaviour and effects of electrons to develop components, devices, systems, or equipment that uses electricity as part of its driving force. This engineering field encompasses many subfields like signal processing, semiconductor chip design, telecommunication, data communication networks, satellite and radar link setup, embedded systems, robotics and many more.

Electronics and Communication engineering department transforms our day-to-day lives through a multitude of innovative technologies and products. The ECE department is intended to expose students to the unlimited opportunities for innovation in this exciting field, and to the methodologies and tools used by ECE engineers for the exploration and design of new technologies and products.

The applications of Electronics & Communication engineering is an endless list with a lot of scope in each and every subfield. It is a versatile branch that opens path for core electronics & communication jobs. Besides the numerous jobs in core field, the IT sector also welcomes an ECE engineer with open arms.

As compared to other branches, there are more interdisciplinary specializations in higher studies for ECE students like Embedded Systems, VLSI, Wireless communication, Signal Processing. Therefore, ECE students have a wider choice.

Department of Electronics and Communication Engineering was started since the inception of Vignan's Institute of Management and Technology for Women during 2008 with an initial intake of 90. The strength was enhanced to 120 during 2010. The Department had added Post graduate programme in VLSI during the year 2011 and Embedded Systems during 2014 with an intake of 18 each.

The Department has state-of-art laboratories equipped with advanced and well-maintained equipment, continuously updated application software packages, more than adequate computing systems with 24x7, 40 MBPS internet facility. All faculties are having a minimum teaching experience of 4 years. Seminars, Guest Lectures, Workshops, and Technical Symposia are conducted in the department to keep faculty and students updated with the latest developments in various technologies.

The Department is accredited by the National Board of Accreditation (NBA) has been accredited by National Board of Accreditation (NBA) successively two times i.e. in 2019 and 2022, which is valid up to 2025.

ECE students of the institution are well placed in different companies with different packages.



### Department Vision

To transform the students into technologically competent professionals, with abilities to address the societal challenges of the time through innovative technical practices in electronics & communication engineering.

### Department Mission

- M1: To foster inquisitive-driven advanced knowledge building among students for reinforcing the domain knowledge, develop capabilities, skills and solve complex engineering problems.
- M2: To prepare industry-ready graduates for global Electronics as well as communication-based engineering companies by conducting training programs, workshops and industry visits.
- M3: To build entrepreneurship and leadership qualities, research aptitude among students for the contribution of economic and technological development in cutting edge technologies in the national and as well as in the global arena.

### Program Educational Objectives:

- PEO1: To develop the student's ability on technical concepts to design, simulate, and synthesize various electronic and communication circuits & systems for their research advancements.
- PEO2: To impart analytical skills and to prepare the students to excel in applying state-of-the-art hardware and software tools to solve complex engineering problems for R&D, Industry, and societal requirements.
- PEO3: To prepare the students to work in teams, take independent decisions, and integrate engineering issues for a successful career in a multi-disciplinary environment.
- PEO4: To promote entrepreneurship among the students to become successful entrepreneurs with professional ethics.

### Program Specific Outcomes:

A graduate of the Electronics and Communication Engineering Program will be able to

- PSO1: **Professional Skills Ability:** Identify, design electronics & communication circuits and conduct experiments with electronics & communication systems, analyze and interpret data, formulate and solve electronics & communication engineering problems.
- PSO2: **Industrial Skills Ability:** Design digital and analog systems, algorithms, fire ware, modern engineering tools, software, etc. as per needs and specifications and work in laboratory and multidisciplinary tasks.
- PSO3: **Ethical and Social Responsibility:** Communicate effectively in both verbal and written form, will have knowledge of professional and ethical responsibilities and will show an understanding of the impact of engineering solutions on the society, and also will be aware of contemporary issues.

### EDITORIAL BOARD

- Mr.P.Harikrishna, HOD, ECE.
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- B. Vedhakshari III-I, ECE (Student)
- Nareddy Pavani III-I, ECE (Student)
- M. Raja Suhasini II-I, ECE (Student)



## HOD'S MESSAGE

**Mr. P. Harikrishna,**  
Associate Professor &  
HEAD OF THE DEPARTMENT,  
DEPARTMENT OF ELECTRONICS  
AND COMMUNICATION  
ENGINEERING.

It gives me immense pleasure to present the April–June 2023 issue of our department newsletter, **TECHINNOVATION**. This newsletter reflects the dedication and achievements of our students and faculty, celebrating academic excellence, innovation, and creativity. I congratulate everyone involved in maintaining the high standards of the department and wish our students continued success in their professional journey.

### Faculty Article

#### 6G Communication– Shaping the Hyper-Connected Future

By, Mrs.G.Indira Priyadarshini,  
Associate Professor (ECE)



While 5G is still expanding globally, research into 6G communication systems has already begun. 6G is expected to deliver ultra-high data rates (up to 1 Tbps), near-zero latency, and seamless integration of artificial intelligence within communication networks.

For the Electronics and Communication Engineering community, 6G represents a transformative leap. It aims to enable holographic communication, smart cities, autonomous transportation, remote robotic surgery, and immersive virtual environments.

Technologies such as Terahertz (THz) communication, intelligent reflecting surfaces, quantum communication, and AI-driven network optimization are likely to form the backbone of 6G

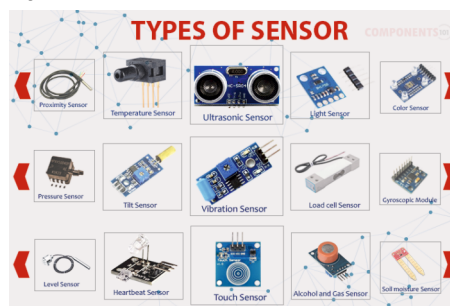
systems. These advancements will require innovative antenna design, advanced signal processing techniques, and energy-efficient hardware solutions.

As educators and researchers in ECE, we must prepare students to embrace this next-generation revolution. The future of communication is not just about connectivity—it is about creating intelligent, self-adaptive, and secure networks that redefine human interaction.

### Student Article

#### The Rise of Smart Sensors in Modern Electronics

By, K. Manasa, III Year ECE

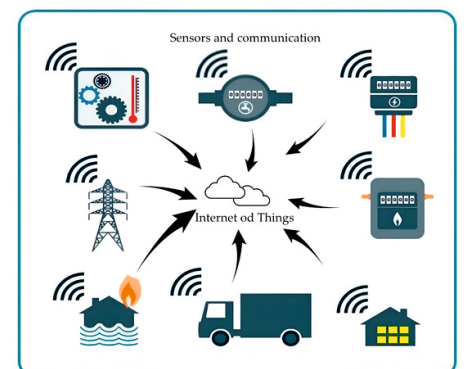


Smart sensors are rapidly transforming the field of electronics and communication. Unlike traditional sensors, smart sensors integrate signal processing, data conversion, and communication capabilities within a single device.

From wearable health monitors to

industrial automation systems, smart sensors collect real-time data and transmit it efficiently for analysis and decision-making. In IoT (Internet of Things) applications, these sensors play a critical role in enabling intelligent environments such as smart homes, smart agriculture, and smart healthcare.

Advancements in microelectronics, MEMS technology, and wireless communication have significantly enhanced sensor accuracy and energy efficiency. As ECE students, understanding sensor interfacing, embedded systems, and wireless protocols opens up exciting opportunities in research and industry. The future of electronics lies in building systems that can sense, analyze, and respond autonomously. Smart sensors are not just components—they are the foundation of intelligent technology.

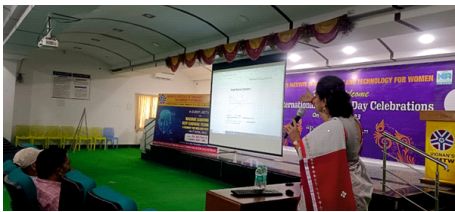


## EVENTS AT DEPARTMENT

### A One-Day National Seminar on “Machine Learning – Deep Learning: A Road Map for Data and Processing”

#### Introduction

The IETE Student Chapter organized a one-day National Seminar on “Machine Learning – Deep Learning: A Road Map for Data and Processing” on 1st April 2023. The seminar focused on emerging trends in Artificial Intelligence and its applications in modern industries.



#### Objective of the Seminar

The main objectives were:

- To introduce the fundamentals of Machine Learning.
- To explain the concepts of Deep Learning.
- To provide insights into real-world AI applications.
- To guide students about career opportunities in ML and DL.
- To demonstrate data processing techniques.

#### Resource Person Details

The session was conducted by a distinguished expert in Artificial Intelligence and Data Science, having practical experience in industry-based machine learning projects.

#### Session Highlights

The seminar included:

1. Introduction to Artificial Intelligence
2. Fundamentals of Machine Learning
3. Types of Machine Learning (Supervised, Unsupervised,

Reinforcement Learning)

4. Introduction to Deep Learning and Neural Networks
5. Data Preprocessing and Feature Engineering
6. Model Training and Evaluation
7. Real-time Applications of ML and DL
8. Career Opportunities in AI and Data Science

The speaker explained concepts using case studies and real-time industrial examples.

#### Participation

Students from Electronics, Computer Science, and related branches actively attended the seminar. The interactive session encouraged students to clarify doubts regarding AI technologies and career paths.

#### Outcome of the Seminar

- Students gained foundational knowledge of Machine Learning and Deep Learning.
- Awareness about AI-based applications increased.
- Participants understood the importance of data preprocessing.
- Students were motivated to pursue AI-related certifications and internships.
- Enhanced interest in research and project development in ML/DL.



## A One-Day National Seminar on “Research Methodology and Data Management”

The ECLATZ CLUB organized a one-day National Seminar on “Research Methodology and Data Management” on 15th June 2023. The seminar aimed to enhance research skills and create awareness about systematic research practices among students and faculty members.

### Objective of the Seminar

The primary objectives of the seminar were:

- To provide knowledge about research design and methodology.
- To understand data collection techniques.
- To learn data management and documentation practices.
- To familiarize participants with research ethics and plagiarism issues.
- To guide students in writing quality research papers and project reports.

### Resource Person Details

The seminar was delivered by an experienced academician and research expert with extensive knowledge in research methodology, data analysis tools, and scholarly publication processes.

### Session Highlights

The session covered the following key topics:

1. Introduction to Research and its Importance
2. Types of Research (Basic, Applied, Experimental, Analytical)
3. Research Design and Hypothesis Formulation
4. Data Collection Methods (Primary & Secondary Data)

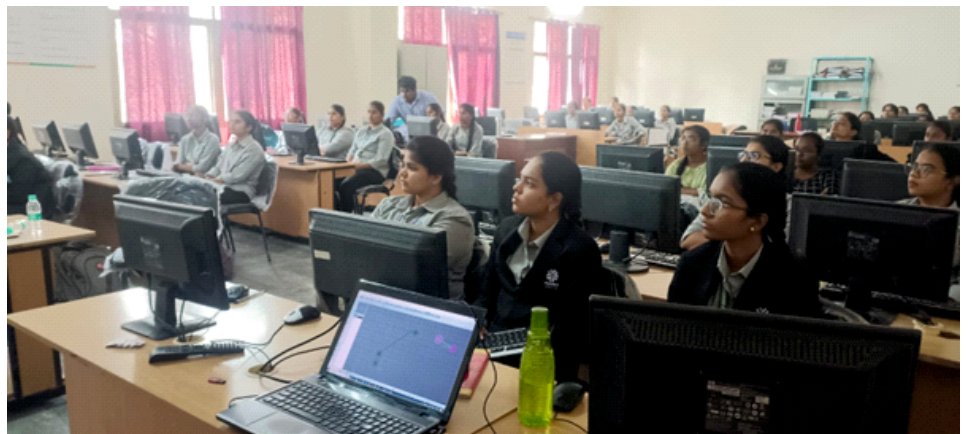
5. Statistical Tools for Data Analysis
6. Data Management Techniques
7. Research Ethics and Avoiding Plagiarism
8. Publishing Research Papers in Reputed Journals

The speaker explained real-time examples and demonstrated how to manage datasets efficiently using digital tools.

### Outcome of the Seminar

- Participants gained clarity about the research process.
- Students understood how to prepare research proposals.
- Awareness about data handling and documentation improved.
- Motivation for publishing research papers increased.

Participants developed confidence in undertaking research projects.



students to explore advanced technologies in Artificial Intelligence.

## AWARDS

### District level NSS participation:



**B Sai Lavanya of 3rd year ECE A won prize for essay writing on Swami Vivekananda**



**Omera Sultana of 3rd year ECE wonprize for declamation**



**Rati Harshitha of III-ECE C won 1st prize for photography**

### NASSCOM Foundation

The Department of Electronics and Communication Engineering organized an inspiring event in collaboration with the NASSCOM Foundation at VMTW. The session aimed to bridge the gap between academia and industry by creating awareness about digital skills, employability, and innovation in emerging technologies. Experts from the NASSCOM Foundation interacted with students, sharing insights on career readiness, skill development, and the role of technology in driving social change. The event motivated students to embrace continuous learning and prepare for the evolving digital future.



## STUDENT PROJECTS

### Missing People Identification Using Machine Learning and Raspberry Pi

Students: Gundra Yashaswi, Emudaboina Nandini, Cheera Navya  
Guide: Mrs. G. Swathi

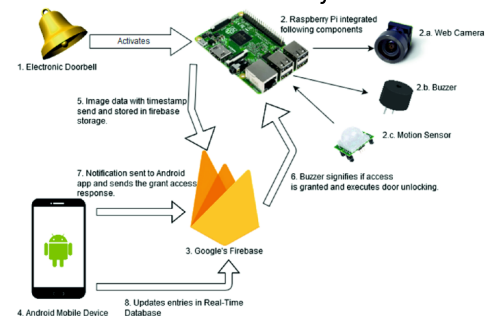


The project aims to assist in identifying missing persons using facial recognition powered by machine learning algorithms. Implemented on a Raspberry Pi platform, the system compares captured images with stored databases to identify matches. This solution demonstrates the potential of AI-driven surveillance systems in improving public safety and law enforcement efficiency.

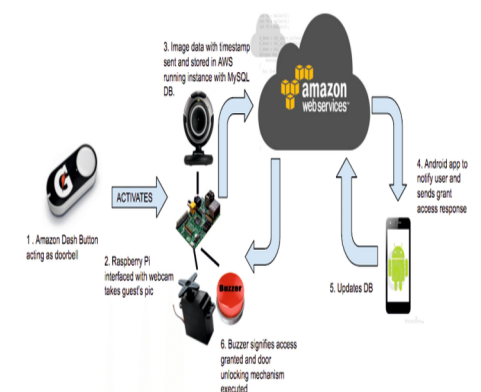
### IoT Based Smart Doorbell with Raspberry Pi

Students: Kommineni Sindhu, Barla Pujitha, Koduru Sandhya

Guide: Mr. K. Ashok Reddy



This smart doorbell system integrates IoT and Raspberry Pi to provide real-time visitor alerts and video streaming to homeowners. It enhances home security by allowing remote monitoring and communication through mobile applications. The project showcases practical implementation of embedded systems and IoT in smart home automation.



## Protecting Women with Instant Location Alert

Students: Annam Alekhya, K. Lahari, Bademalke Afrozjaha

Guide: Mr. D. Naresh



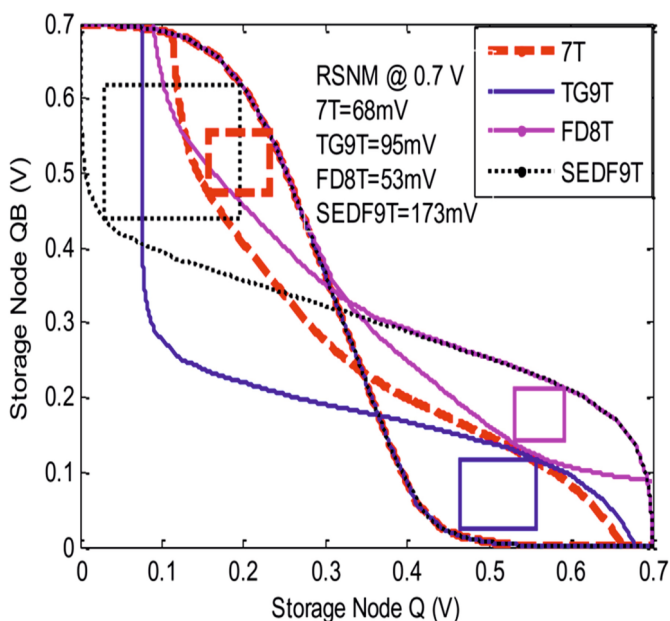
This project is designed to enhance women's safety by providing an instant location alert system. In emergency situations, the device sends real-time GPS location data to predefined contacts. The system ensures quick assistance and improves personal security through wearable technology and communication modules.

## Transmission Gate-Based 9T SRAM Cell for Low-Power IoT Applications

Students: Dasari Akhila, Adepu Swarnrekha, Kamatam Manasa

Guide: Dr. SK. Masthan Basha

The project proposes a 9T SRAM cell design using transmission gates for improved voltage resilience and reduced power consumption. The design is particularly suitable for IoT applications where low power and reliability are critical. The work contributes to advancements in memory cell design for next-generation embedded systems.



## Program Outcomes (Adapted from NBA)

Engineering Graduates will be able to:

**PO1: Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

**PO2: Problem Analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**PO3: Design/Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

**PO4: Conduct Investigations of Complex Problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO5: Modern Tool Usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

**PO6: The Engineer and Society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

**PO7: Environment and Sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

**PO8: Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**PO9: Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO10: Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**PO11: Project Management and Finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO12: Life-long Learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.