

2023-24



# DEPARTMENTAL NEWSLETTER



Yearly in house Newsletter



By

THE DEPARTMENT OF

## Electronics and Communication Engineering

B.P. Poddar Institute of Management and Technology



Issue: OCTOBER EDITION



**EDITORIAL  
BOARD**

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(2nd Year)

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(2nd Year)

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(1st Year)



“

*I believe in excellence.  
It is not enough to be good;  
we must be the best.*

*– Homi Jehangir Bhabha*

Indian nuclear theoretical physicist



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## B. P. Poddar Institute of Management & Technology

### Department of Electronics & Communication



#### Vision, Mission, PEO, PO, PSO

#### Vision of the Institute

To emerge as a progressive and premier institute for Engineering and Technology education with ethical values for creative engineering solutions with global changes.

#### Mission of the Institute

1. Offer quality education through a modern accessible, comprehensive and research oriented teaching-learning process.
2. Create opportunities for students and faculty members in acquiring knowledge through research and development.
3. Providing effective interface with industry by strengthening Industry- Institute interaction and developing entrepreneurial skills.
4. Meet ever-changing needs for the nation through rational evolution towards sustainable and environment friendly technologies.

#### Vision of the Department

To emerge as a premier department for studies in Electronics and Communication Engineering.

#### Mission of the Department

1. Imparting innovative educational program through laboratory and project-based teaching-learning process for meeting the growing challenges of industry and research.
2. Providing an inspiring and conducive learning environment to prepare skilled and competent engineers and entrepreneurs for sustainable development of the society.
3. Creating a knowledge centre of advance technologies committed to societal growth using environment-friendly technologies

#### Program Educational Objectives:

- PEO1:** Graduates of Electronics and Communication Engineering will be able to use latest tools and techniques to analyze, design and develop novel systems and products to solve real life problems.
- PEO2:** Graduates of Electronics and Communication Engineering will have strong domain knowledge, skills and attitude toward employment in core and allied industries, higher studies and research or will become successful entrepreneurs.
- PEO3:** Graduates of Electronics and Communication will exhibit ethical values, professionalism, leadership, communication and management skills, team work and multi-disciplinary approach to adapt current trends in technology through life-long learning.

Program Outcomes (POS)	
1. Engineering knowledge	7. Environment and sustainability
2. Problem analysis:	8. Ethics
3. Design/development of solutions	9. Individual and team work
4. Conduct investigations of complex problems	10. Communication
5. Modern tool usage	11. Project management and finance
6. The engineer and society	12. Life-long learning

#### Program Specific Outcomes (PSO)

**PSO1:** Students will acquire knowledge in Advance Communication Engineering, Signal and Image Processing, Embedded and VLSI System Design.

**PSO2:** Students will qualify in various competitive examinations for successful employment, higher studies and research.

## TECH TRENDS-FUTURE IS NOW

### Ameca

#### Physical Specifications

- Height: ~187 cm (1.87 m)
- Weight: ~49–62 kg
- Structure: Humanoid upper body with articulated arms, hands, neck, and face
- Actuation: ~50–60+ degrees of freedom (including ~27 in face alone)
- Movement:
  - Highly flexible upper-body motion
  - Not designed for full walking like Atlas (focus is interaction)
- Power: Electric actuators with modular hardware design
- Special Feature: Ultra-realistic facial muscle system (Mesmer technology)
- 



#### Vision & Intelligence

- Cameras:
  - Binocular eye cameras for vision and eye contact
  - Additional chest camera for environment awareness
- Sensors:
  - Microphones (binaural hearing) and speakers for communication
- AI & Interaction:

- Facial recognition and object recognition
- Conversational AI (can integrate systems like GPT)
- Emotion simulation (smile, surprise, curiosity, etc.)
- Tracking: Eye tracking and face detection for natural interaction

### Capabilities & Applications

- Extremely realistic facial expressions and gestures
- Human-like communication (speech + body language)
- Used in:
  - Research labs and universities
  - Museums and exhibitions
  - Customer interaction demos
  - AI and robotics development
- Supports remote operation and cloud-based programming

## Atlas (Boston Dynamics)

### Physical Specifications

- Height: ~150 cm (1.5 m)
- Weight: ~80–89 kg
- Structure: Full humanoid body with arms, legs, torso, and head
- Actuation: High-performance electric (earlier versions used hydraulics)
- Degrees of Freedom: ~28+ joints for complex movement
- Mobility:
  - Walking, running, jumping, and parkour
  - Lifting, carrying, and manipulating objects
  - Advanced balance and dynamic stabilization
- Maximum Speed: ~2.5 m/s (varies by task)



- Payload Capacity: ~11–15 kg (task-dependent)
- Special Feature: Exceptional agility (backflips, rotations, complex maneuvers)

### Vision & Intelligence

- Sensors & Cameras:
  - Depth cameras and stereo vision systems
  - LiDAR and environmental sensors (in newer versions)
- Perception:
  - Real-time obstacle detection and terrain mapping
  - Object recognition and tracking
- Navigation:
  - Uses advanced planning and mapping (similar to SLAM concepts)
- AI & Control:
  - Reinforcement learning and motion planning
  - Real-time decision-making for dynamic environments
  - Autonomous task execution with minimal human input

### Capabilities & Applications

- Highly dynamic full-body movement and coordination
- Can perform industrial tasks like lifting, sorting, and assembly
- Used in:
  - Robotics research and AI development
  - Warehouse and logistics automation
  - Hazardous environment operations (future potential)
- Demonstrates human-like motion with superior precision and strength

## TECH TIPS

In high-frequency circuit design, proper grounding and PCB layout are as important as the components themselves. Minimizing noise, signal interference, and impedance mismatch significantly improves circuit

## RECENT EVENTS

### Report on the 14th Foundation Day Celebration of SPIE Student Chapter, BPPIMT

The SPIE Student Chapter of B.P. Poddar Institute of Management and Technology (BPPIMT), in collaboration with the Department of Electronics and Communication Engineering (ECE), celebrated its 14th Foundation Day on 18th August 2023 with great enthusiasm and academic spirit. The event aimed to encourage technical learning, innovation, and collaboration among students and faculty members.

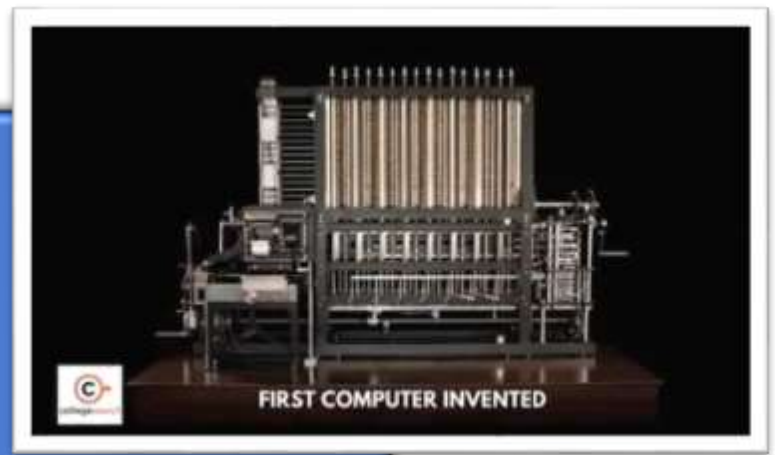


The program began with an inaugural address by Dr. Ivy Majumdar, Faculty Advisor of the SPIE Student Chapter and Head of the ECE Department, who highlighted the importance of SPIE in promoting research and professional growth. An insightful technical lecture on optical communication and sensing technologies was delivered by Dr. Kalyan Biswas from MCKV Institute of Engineering, enriching students with knowledge of recent advancements and applications in the field.

A unique interactive activity, KHET (Laser Chess), was also organized to demonstrate the practical applications of laser optics in a fun and engaging way. Students enthusiastically participated and developed strategic thinking and teamwork skills. The event also featured student presentations on optical devices and related technologies, showcasing creativity and technical understanding.

The celebration concluded with an inspiring speech by Principal Prof. Sutapa Mukherjee, followed by a joyful cake-cutting ceremony attended by over 50 SPIE student members and faculty.

## The Birth of the First Computer



The first computer, ENIAC (Electronic Numerical Integrator and Computer), was built in the 1940s by John Presper Eckert and John Mauchly. It was designed to perform complex calculations for military purposes. ENIAC was constructed using thousands of vacuum tubes, switches, circuits, and extensive wiring that processed data electronically. Information was entered through punch cards, and calculations were completed much faster than manual methods. The machine occupied an entire room and consumed a large amount of electricity. Despite its size, ENIAC became the foundation of modern computing and inspired the development of faster and more advanced computers.

# ACHIEVEMENTS & AWARDS

## *YOU MAKE US PROUD*

### **Technical & Innovation Events (Inter-College)**

- Arijit Dhali, Prabuddha Bikas Chatterjee, Priyanshu Mandal, Shoeb Mir, Debosmita Paul, Anamika Bhunia – 2nd Position in Robowars at Kshitij 2024, organized by IIT Kharagpur, Kharagpur (Inter-College)
- Anuska Das – 2nd Position in Hardware Model Design Competition at Forma 2.23, organized by Abhiyantran – Technical Forum, BPPIMT, Kolkata (Inter-College)
- Vaishnavi Shaw – 1st Runner-up in Tech Enquesta'23 (Technical Quiz) organized by IET On-Campus Student Chapter & Dept. of EE, BPPIMT (Inter-College)
- Ayush Singh – Quiz Master in Tech Enquesta'23 (Technical Quiz) organized by IET On-Campus Student Chapter & Dept. of EE, BPPIMT (Inter-College)

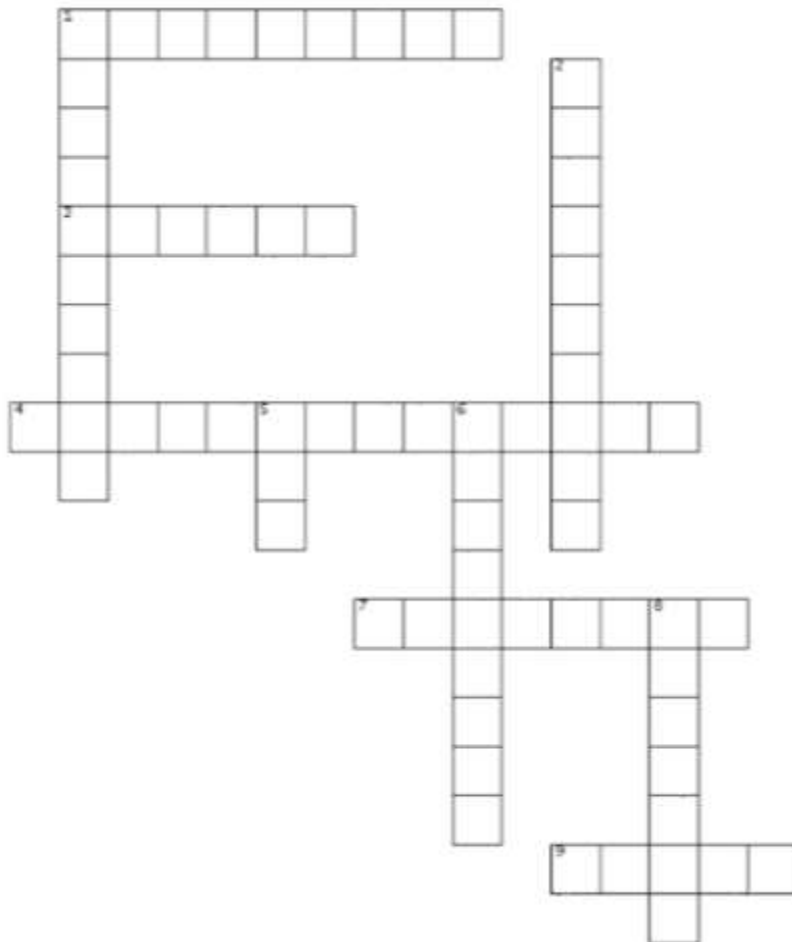
### **Cultural & National Level Achievements**

- Sayantika Paul – 1st Position in All India National Level Online Solo Dance Competition (All India Level)



An Arduino board can read signals from the environment — like temperature, motion, light, or sound — and instantly turn them into real-world actions such as moving motors, glowing LEDs, or sending wireless data. It's like giving

# BRAIN-BREAK CROSSWORD PUZZLE



## ACROSS

1. maximum rate of data transfer over a network
3. core part of an operating system
4. creation of virtual versions of hardware resources
7. system that monitors and controls incoming and outgoing network traffic
9. small high-speed memory used to store frequently accessed data

## DOWN

1. distributed ledger technology used in cryptocurrencies
2. process of converting data into a secure format
5. set of rules that allows different software to communicate
6. step-by-step procedure to solve a problem
8. delay before data transfer begins in a network

## ANSWER TO MARCH EDITION 2023-24

**ACROSS**

3. SYSTEM A system that manages hardware and software resources
4. A high-level programming language known for web development
6. A process of finding and fixing errors in code
8. TABLE A structure used to store key-value pairs

**DOWN**

1. A software bug that causes a program to crash
2. A program that translates high-level language into machine code line by line
5. COMPUTING A model that provides on-demand computing resources over the internet
7. A type of database that stores data in JSON-like format

### FREQUENCY FACT

The thin copper tracks on a PCB act like miniature highways, guiding electrical signals precisely between components to make every electronic device function smoothly.

“We do not have the fantasy of competing with the economically advanced nations in the exploration of the Moon or the planets or manned space-flight.”— **Vikram Sarabhai**

## **Vikram Sarabhai (1919–1971)**

Vikram Sarabhai was an Indian physicist and the founder of India’s space program.

He played a crucial role in establishing India as a space-faring nation.



- Born in Ahmedabad, India, into a prominent industrial family
- Studied at the University of Cambridge, specializing in cosmic rays
- Founded the Indian Space Research Organisation (ISRO) in 1969
- Established key institutions like:
  - Physical Research Laboratory (PRL)
  - Thumba Equatorial Rocket Launching Station
- Promoted the use of space technology for national development, including communication, weather forecasting, and education
- Awarded the Padma Bhushan (1966) and Padma Vibhushan (posthumously, 1972) Sarabhai believed that space science should directly benefit society, especially in a developing country like India.

## **EDITORIAL BOARD**

### **Faculty**

- Dr. Ivy Majumdar
- Ms. Rashmita Mishra
- Dr. Vedatrayee Chakroborty

**ECE isn't just a department — it's a vibe. Keep exploring. Keep creating. Keep shining!**

