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NEXUS

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

- STUDENT ARTICLE : From Analog to AI: How Communication Systems Are Becoming Smarter
- S8 Placement

HOD'S DESK

It gives me immense pleasure to welcome you to another edition of our department newsletter. As we continue to navigate through this dynamic academic year, I am consistently impressed by the dedication and achievements of our ECE community. Our department continues to evolve with the rapidly changing landscape of electronics and communication technology. From 5G networks and IoT applications to artificial intelligence integration and sustainable electronics, we are committed to ensuring our curriculum remains at the forefront of technological advancement.I am particularly proud of our students' recent accomplishments - impressive placement records with leading companies, successful project presentations, research publications, and active participation in technical competitions. Our faculty members continue to contribute significantly through their research endeavors, industry collaborations, and innovative teaching methodologies.

As we look ahead, I encourage all students to actively engage in research opportunities, internships, and skill development programs. The field of ECE offers boundless possibilities, and with proper guidance and your determination, there are no limits to what you can achieve. I extend my gratitude to our dedicated faculty, supportive staff, and enthusiastic students who make our department a vibrant center of learning and innovation. Together, let's continue to strive for excellence and make meaningful contributions to the field of Electronics and Communication Engineering.

Warm regards,

Prof. Dr. Anto Sahayadas
HEAD OF DEPARTMENT
Electronics And Communication Engineering Vimal Jyothi Engineering College, Chemperi

inside

VISION

To be a pacesetter in the field of Electronics and Communication Engineering.

MISSION

To provide quality education for the students in the field of Electronics & Communication Engineering. To educate student about professional and ethical responsibilities and train them to build life skills for their career development.

Jeswin Manoj ,S6 ECE

From Analog to AI: How Communication Systems Are Becoming Smarter

Introduction

Communication has always been the lifeblood of human progress. From analog telegraphs to smartphones and satellite links, we've continuously improved how we transmit information. But now, a silent revolution is underway — one that's blending traditional electronics with the intelligence of artificial intelligence (AI). This article explores how communication systems are evolving to become not just faster and more reliable, but smarter, adaptable, and more context-aware than ever before.

A Quick Flashback: From Analog to Digital

Communication systems began with analog signals — simple variations in voltage or frequency. While powerful for their time, analog systems suffered from noise, distortion, and limited bandwidth. The transition to digital communication brought a huge leap. Encoding information as bits made it possible to use error correction, compression, and encryption, laying the foundation for the modern internet, 4G, and fiber-optic communication. But even digital systems largely followed fixed protocols — they processed data but didn't understand it. This is where AI changes everything.

AI in Communication Systems: What Does It Mean?

AI enables systems to learn, adapt, and predict. When integrated into communication networks, it can:

- Optimize resource allocation (bandwidth, power, channels)
- Predict and avoid congestion
- Detect and correct errors more intelligently
- Adapt to changing environments (weather, mobility, interference)

In short, AI introduces self-awareness and decision-making into systems that were once rigid and reactive.

Real-World Applications

1. **5G and Beyond (6G)**

Modern cellular networks use AI to:

- Predict user movement and handoff requirements
- Allocate spectrum dynamically
- Improve beamforming in Massive MIMO antennas

As we look toward 6G, AI will likely be embedded at every level — from physical layer modulation to application-level service delivery.

2. **Cognitive Radio**

These are radios that sense their environment and learn which frequencies are available. AI helps them avoid interference, detect malicious signals, and switch channels automatically.

3. **Smart Error Detection**

Instead of using static error correction codes, AI can learn patterns of common errors and apply real-time corrections.

This boosts reliability without adding excessive redundancy.

4. **IoT and Edge Devices**

- AI helps manage thousands of interconnected devices:
- Predicting failures
- Compressing data smartly
- Reducing unnecessary transmissions to save power

Machine Learning Techniques Used

- Neural Networks: For pattern recognition in signal processing.
- Reinforcement Learning: For adaptive routing and resource management.

The Future: Self-Evolving Networks

Imagine a future where networks configure themselves, heal themselves, and evolve based on usage patterns — with zero human intervention. AI is pushing us toward this vision, where communication systems are not just pipelines but smart entities that understand and adapt.

Conclusion

The journey from analog signals to intelligent, AI-powered communication is not just a technological shift — it's a paradigm change. As electronics and communication engineers, we stand at the frontier of this transformation. Mastering AI is no longer optional; it’s essential for designing systems that are efficient, scalable, and future-ready.

Farewell to EC Batch 2021-25 As we bid farewell to our beloved S8

Electronics and Communication Engineering students of the 2021-25 batch, we are filled with immense pride and bittersweet emotions. Over these four transformative years, you have grown from enthusiastic freshers into accomplished engineers, ready to make your mark in the world of technology. You have not only excelled academically but have also enriched our department with your creativity, teamwork, and unwavering spirit. As you step into the professional world, whether joining leading companies, pursuing higher studies, or embarking on entrepreneurial ventures, remember that you carry with you the strong foundation, technical expertise, and problem-solving skills that will guide you through every challenge. The bonds you've formed, the knowledge you've gained, and the memories you've created will forever remain a part of your ECE family. Though you are leaving these corridors, you will always be a cherished part of our department's legacy. We wish you tremendous success, happiness, and fulfillment in all your future endeavors. Go forth and illuminate the world with your engineering brilliance!

S8 Placement

We are absolutely thrilled to celebrate the remarkable placement achievements of our S8 students! Your success in securing positions with prestigious companies is a testament to your hard work, dedication, and the exceptional skills you have developed throughout your academic journey. We are immensely proud of each one of you and have complete confidence that you will excel in your new roles, contribute meaningfully to your organizations, and continue to make us proud. Your success today is our collective achievement and a source of great joy for the entire faculty and staff. Congratulations once again on this fantastic accomplishment! Wishing you continued success and a fulfilling professional journey ahead.

PTA meetings

We are proud to congratulate our semester toppers who have achieved outstanding academic excellence across all engineering branches. Their remarkable performance reflects their dedication, hard work, and the invaluable support of their families. We extend our heartiest congratulations to these brilliant students and their proud parents, and we are confident they will continue to excel in their future endeavors.

S2

S4

S6

Industrial Visit S4

A 2-day industrial visit to Kodaikanal - Ramakkalmedu was organized by S4 ECE students from April 3rd to 5th, 2025. The trip included 34 Electronics and Communication Engineering students, 2 faculty members, and a parent representative. During the visit, the group explored the Periyar Power House, various attractions in Kodaikanal including Moir Point, Guna Cave, and Pine Forest, along with other scenic locations in the region.

Industrial Visit S8

A comprehensive 5-day industrial visit to Chikmagalur, Hampi, Goa, and Malavan was successfully organized by S8 Electronics and Communication Engineering students, from February 20th to 25th, 2025. The educational tour comprised 38 ECE students, 3 faculty members, and a parent representative, who explored diverse destinations including a visit to the Archaeological Survey of India, gaining valuable exposure to historical heritage, archaeological

preservation methods, and various aspects of industrial and cultural significance across Karnataka, Goa, and Kerala. This multi-destination journey provided students with enriching experiences beyond the academic curriculum, contributing to their holistic development and creating memorable learning opportunities that enhanced their overall educational experience.

Faculty attended FDPs

Ms. Bindu Sebastian and Ms. Jerrin Yomas ,Associate Professors of ECE Department attended 5 day FDP on Exploring AI Paradigms:ML,DL&research perspectives conducted in College of Engineering, Muttathara under CAPE from 10th to 14th March 2025.

SPS Inauguration

Figma workshop

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

1. Graduates will have successful career in the field of Electronics and Communication Engineering and allied sectors
2. Graduates will have the ability to pursue higher studies and research
3. Graduates will demonstrate entrepreneurial skills to develop innovative products and services
4. Graduates will adapt to different roles in global working environment by respecting diversity and professional ethics

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