NALLA NARASIMHA REDDY
Education Society's Group of Institutions - Integrated Campus
(UGC AUTONOMOUS INSTITUTION)
EAMCET/ECET/ICET/PGECET Code NNRG

SCHOOL OF ENGINEERING

DEPARTMENT
OF
ELECTRONICS AND COMMUNICATION ENGINEERING

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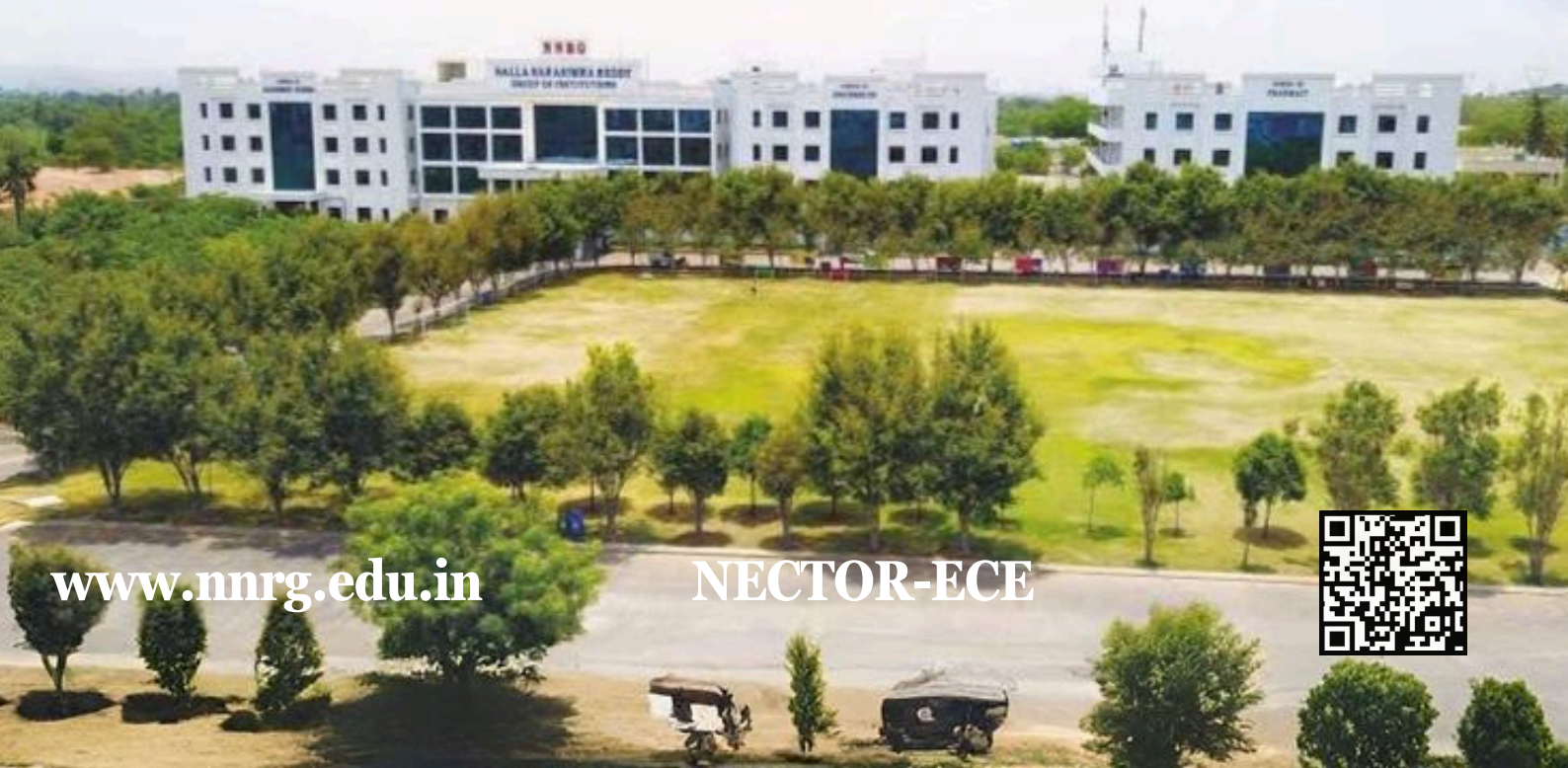
NECTOR

NNRG EC TECHNOCRATS ORNATE REPORT



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NECTOR-ECE

Nalla Narasimha Reddy Group of Institutions

NNRG

Integrated Campus

Engineering • Pharmacy • MBA

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

NNRG EC TECHNOCRATS ORNATE REPORT

NECTOR

2025-2026
(MAY-JUNE)

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NECTOR-ECE

INSTITUTE's VISION AND MISSION

VISION:

- To be a premier institution ensuring globally competent and ethically strong professionals.

MISSION:

- To provide higher education by refining the traditional methods of teaching to make globally competent professionals.
- To impart quality education by providing the state-of-the-art infrastructure and innovative research facilities.
- To practice and promote high standards of professional ethics, transparency and accountability.

DEPARTMENT's VISION AND MISSION

VISION:

- To produce creative Electronics and Communication Engineering graduates with cutting edge technology and Research to meet Industry and societal needs.

MISSION:

- To provide innovative learning environment to enable the students to face the challenges.
- To provide value-based education by promoting activities addressing societal needs.
- To enable graduates to develop the skills to solve complex problems in multidisciplinary activities.

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1.SALIENT FEATURES

ABOUT ECE DEPARTMENT

Electronics is the branch of study that has revolutionized the life style of humanity. It is a pace setter and a prime mover behind the transition to a technological society. The field of Electronics and Communication Engineering encompasses all areas of human life. Radio, television, telephones, computers, automobiles, office machinery and house-hold appliances, lifesaving medical equipment and space vehicles represent a mere sample in the wide spectrum of application of Electronics.

In the age of satellite transmitted television and transcontinental computer network, the challenge and opportunities in this profession continue to mushroom. Electronics and Communication Engineering graduates have unlimited opportunities in the field of terrestrial and extra-terrestrial communication systems like telephones, cellular phones, television, optical fiber communication, consumer and entertainment devices. Highly rewarding and greatly satisfying opportunities await the Electronics and Communication Engineers in the field of satellite space programs, embedded technologies etc.

The Department of Electronics and Communication was started in the year 2009. It is a full- fledged academic department for emerging ECE engineers. B.Tech. (ECE) program was duly approved by the AICTE and affiliated to JNTU, Hyderabad. An intake of 60 was sanctioned initially and then it is raised to 180 from the year 2019. PG Program (M.Tech.) with specialization in “Embedded Systems &VLSI” is approved by AICTE for the academic year 2013-14 with an approved intake of 18. For the academic year 2024-25, there are 11 students enrolled in the booming M.Tech Program successfully.

There are 33 Faculty members in the department which includes 8 doctorates from various reputed institutions, and 12 faculty members pursuing their Ph.D. The department is equipped with 8 spacious and well-developed laboratories. Seminars, Workshops and Technical Symposia are regularly conducted in the department to keep faculty and students updated with latest developments in various fields. The department is committed to provide opportunity to embark on a rewarding and exciting learning journey in preparation for a future career.

The Electronics & Communication Engineering (ECE) Department has built a reputation for excellence in teaching and service. Electronic engineers are changing the world to a comfortable global home. The information and technology revolution has been built on the advances of Electronics.

ECE is making exhilarating progress in areas ranging from mi picroelectronics, mobile communications to VLSI Design Automation. The students are inspired by the expertise and knowledge of our faculty, integrating practical with challenging and interesting course-work

The software's and major Equipment that are available in the department are:

- Cadence EDA Tool
- MATLAB-2014b and Tool Boxes (Simulink, Image Processing, Communication, Signal Processing and Digital Signal Processing System)
- Spectrum Analyzer and Signal Generator
- OFDM trainer kit
- Digital Signal Processors Kits (TMS320C6713)
- MPMC COTEX M3 Kit
- Advanced RISC Machine Processor Kits (LPC2148)
- Xilinx SPARTAN 3E FPGA Boards
- Artix-7 FPGA kit, Zynq-7000 SoC kit
- Xilinx Vivado tool

2.FACULTY ACHIEVEMENTS

2.1 R & D ACHIEVEMENTS (MAY-JUNE)

S. No.	Journals				Conferences				Patents		Books	Book Chapters	Total
	SCI-E	ESCI	Scopus	Others	IEEE	Scopus	Springer	Elsevier	Published	Granted			
1.	1	0	0	0	3	0	0	0	0	0	0	0	4

Journals:

1. A Swetha B V SubbaRao **B Naga Prasanna** V N KoteswaraRao Devana and V N Sukanya Doddavarapu (2026)"Simple 8-Port 2x2 Multiple-Input Multiple-Output Patch Antenna for Reduced Complexity and Isolation for Ku-Band Applications" Broad Scope International Academic Journal Physica Scripta, pp. 1-15 (**SCI-E**)

Conferences:

1. **Ms Kasharaboina Thrisandhya** "A smart Retail Automation System using QR Code Scanning and ESP32-CAM Platform " 2nd International Conference on Modern Trends in Computers and Electronics(ICMCE-2026) May 2026. **IEEE (Published).**

2. **Ms.M H Sushma Mercilin** "Energy Efficient 2-Trit Ternary Multiplier Architecture using carbon nanotube Field effect transistor for nanoscale VLSI Applications" International Conference on Intelligent and Sustainable Electronics& Computing Technologies (INSECT 2026) May 2026. **IEEE (Published).**

3. **Ms. G. SOUMYA** "Real Time Sign Language Translation on Raspberry Pi Using Lightweight Neural Networks" Global Symposium on Emerging and Communication Technologies (GSEACT - 2026) June 2026. **IEEE (Published).**

R&D Coordinator **HoD-ECE**

3.1 FACULTY EDITORIAL COLUMN

DEEPFAKE ATTACKS: THE GROWING THREAT IN THE DIGITAL AGE

-By
Mrs. SHETTY SRAVANTHI
Assistant professor
ECE Department

Introduction

Artificial Intelligence (AI) has transformed the digital world by enabling innovations such as virtual assistants, automated content creation, and intelligent applications. However, these advancements have also introduced a new cybersecurity threat known as deepfakes. Using advanced deep learning algorithms, deepfakes can generate highly realistic fake videos, images, and audio recordings that closely resemble real people. Although this technology has legitimate applications in entertainment, education, and filmmaking, its misuse has become a growing concern due to its potential to spread misinformation, commit fraud, and manipulate public opinion.

What Are Deepfakes?

The term "deepfake" combines the words "deep learning" and "fake." Deepfakes are AI-generated media that imitate a person's face, voice, expressions, and mannerisms with remarkable accuracy. By training machine learning models on large datasets of images, videos, or voice recordings, cybercriminals can create convincing content that makes it appear as though someone said or did something they never actually did. As AI technology continues to improve, distinguishing genuine content from manipulated media has become increasingly difficult.

How Do Deepfake Attacks Work?

Deepfake attacks begin by collecting publicly available photos, videos, or voice samples of a target individual. AI models analyze facial features, speech patterns, lip movements, and expressions to learn how the person looks and speaks. The trained model then generates realistic synthetic media that can be used to impersonate the individual. These fabricated videos or audio clips are often used in scams, misinformation campaigns, identity theft, social engineering attacks, and financial fraud.

Common Types of Deepfake Attacks

Deepfake technology is used in several forms of cybercrime. Video deepfakes replace or generate faces in videos to create fabricated footage. Audio deepfakes clone a person's voice, enabling attackers to make convincing fake phone calls or voice messages. Image manipulation alters photographs to create misleading visual evidence, while identity impersonation targets business executives, government officials, celebrities, or employees to gain unauthorized access, steal sensitive information, or conduct financial scams.

Conclusion

Deepfake attacks represent one of the most significant cybersecurity threats of the digital age. While AI has the power to drive innovation and improve lives, it can also be exploited to create deceptive and harmful content. Understanding how deepfakes work, recognizing their risks, and adopting effective detection and prevention strategies are essential for maintaining security, authenticity, and trust in an increasingly AI-driven world.

"Think Before You Trust: Not Everything You See or Hear Online Is Real."

3.2 STUDENT EDITORIAL COLUMN

Develop Skills in VLSI, FPGA & Chip Design: Building the Brains Behind Modern Electronics

-By
237Z1A0452
III-ECE-B

Introduction

The semiconductor industry forms the backbone of modern electronics, powering devices such as smartphones, laptops, medical equipment, satellites, autonomous vehicles, and smart appliances. With rapid advancements in Artificial Intelligence (AI), Internet of Things (IoT), 5G/6G communication, and edge computing, the demand for skilled professionals in Very Large Scale Integration (VLSI), Field Programmable Gate Arrays (FPGAs), and chip design is growing rapidly. For Electronics and Communication Engineering (ECE) students, developing expertise in these technologies opens the door to exciting careers in semiconductor design, embedded systems, and advanced electronics.

What is VLSI?

Very Large Scale Integration (VLSI) is the technology of integrating millions or even billions of transistors onto a single silicon chip to create powerful integrated circuits. Modern processors, memory chips, graphics processing units (GPUs), and System-on-Chip (SoC) devices are all products of VLSI technology. The VLSI design process involves several stages, including system specification, Register Transfer Level (RTL) design, functional verification, logic synthesis, static timing analysis, physical design, Design Rule Check (DRC), Layout Versus Schematic (LVS), and chip fabrication. Engineers carefully optimize every stage to achieve the best balance between speed, power efficiency, chip area, and reliability.

Understanding FPGA Technology

Unlike Application-Specific Integrated Circuits (ASICs), Field Programmable Gate Arrays (FPGAs) are programmable chips that can be configured even after manufacturing. Their flexibility makes them ideal for rapid hardware prototyping, design verification, and real-time digital applications. FPGAs are widely used in digital signal processing, artificial intelligence accelerators, embedded systems, wireless communication, aerospace, defense, automotive electronics, and industrial automation. By working with FPGA platforms, students gain practical experience in implementing and testing digital hardware designs before they are fabricated into custom chips.

Essential Skills for Chip Designers

A successful VLSI or FPGA engineer requires a strong foundation in digital electronics, CMOS technology, computer architecture, microprocessors, embedded systems, and hardware description languages such as Verilog and VHDL. Engineers must also understand RTL design, timing analysis, verification methodologies, ASIC design flow, and FPGA implementation. Knowledge of programming languages such as Python and scripting tools like TCL further enhances automation and productivity during chip development. Strong analytical thinking and debugging skills are equally important because modern chip design requires balancing performance, power consumption, and silicon area.

Industry-Standard Design Tools

Professional semiconductor companies use advanced Electronic Design Automation (EDA) tools throughout the chip development process. Popular tools include Xilinx Vivado and Intel Quartus Prime for FPGA design, ModelSim for HDL simulation, Cadence Virtuoso for analog and mixed-signal circuit design, Synopsys Design Compiler for logic synthesis, and Cadence Innovus for physical design. Hands-on experience with these tools allows students to understand industry workflows and significantly improves their employability.

Future of Semiconductor Engineering

Emerging technologies such as Artificial Intelligence, RISC-V processors, 6G communication, automotive electronics, edge computing, robotics, and quantum computing are transforming the semiconductor industry. Future electronic systems will require chips that deliver higher computing performance while consuming less power and occupying smaller silicon areas. This creates enormous opportunities for engineers who possess expertise in VLSI, FPGA development, and advanced chip design technologies.

Conclusion

Developing expertise in VLSI, FPGA, and chip design is an investment in a future driven by technological innovation. By mastering digital design fundamentals, learning hardware description languages, gaining experience with industry-standard EDA tools, and building practical projects, ECE students can prepare themselves for rewarding careers in the rapidly expanding semiconductor industry. As the demand for intelligent and energy-efficient electronic systems continues to grow, skilled chip designers will play a crucial role in shaping the next generation of modern technology.