

ELECTRONICS AND COMMUNICATION ENGINEERING

E – MAZINE JANUARY 2025 ISSUE 1

EXPLORING TECHNOLOGY & INNOVATION

KISE of emiconductor in

India







To create, assimilate, disseminate and apply knowledge to develop globally competent graduates in electronics, communication and allied branches of engineering



The department of ECE strives to:

- Assimilate and disseminate knowledge and skillset in the field of Electronics and Communication and allied branches of Engineering
- Nurture an ecosystem conducive to applied research
- inculcate ethical values, leadership abilities and social responsibilities in students



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|| VLSI in Present India ||

VLSI (Very Large Scale Integration) design has revolutionized the electronics industry, enabling the creation of increasingly complex and powerful devices. From the early days of simple transistors to today's sophisticated multi-core processors, VLSI design has consistently pushed the boundaries of what is possible in computing.

The evolution of VLSI design can be broadly categorized into three major phases:

- Early Days (1960s-1970s): The initial phase focused on developing basic transistor structures and simple integrated circuits. Moore's Law, which predicted the doubling of transistors on a chip every two years, became a driving force in this era.
- **Digital Revolution (1980s-2000s):** This phase witnessed the rise of digital circuits and microprocessors, leading to the personal computer revolution. VLSI design enabled the miniaturization and integration of complex digital systems.
- Modern Era (2010s-Present): The modern era is characterized by the emergence of systemon-chip (SoC) designs, 3D integration, and advanced semiconductor technologies. VLSI design now focuses on developing energy-efficient, high-performance, and intelligent systems.



India has emerged as a major player in the global VLSI design landscape. The country boasts a large pool of skilled engineers and a thriving semiconductor industry. Several Indian companies, such as Tata Elxsi, HCL Technologies, and Wipro, are major players in the global VLSI design services market. The VLSI field offers a plethora of opportunities for engineers and researchers. Some of the key areas of focus include:

- IoT and Embedded Systems: The Internet of Things (IoT) drives the demand for low-power, energy-efficient VLSI designs for wearable devices, sensors, and other connected devices.
- Artificial Intelligence (AI) and Machine Learning (ML): AI and ML algorithms are increasingly being implemented in hardware, leading to the development of specialized VLSI architectures for neural networks and other AI workloads.
- **5G and Beyond:** The next generation of wireless communication technologies, such as 5G and 6G, will require advanced VLSI designs for high-speed data processing and signal processing.

Automotive Electronics: The automotive industry is transforming significantly, with the vehicles and advanced assistance (ADAS).
plays a crucial role these technologies.

The future of VLSI design in India looks promising. The country has the potential to become a global leader in the field, driven by the following factors:

- Government Initiatives: The Indian government has launched several initiatives to strengthen the VLSI ecosystem in the country, such as the Semiconductor Mission and the National Policy on Electronics.
- Industry-Academia Collaboration: Strong collaboration between industry and academia is crucial for driving innovation in VLSI design. Several Indian universities and research institutions are actively engaged in VLSI research and development.
- Skilled Workforce: India has a large pool of skilled engineers and researchers in the VLSI domain, providing a strong foundation for future growth.

The Indian government has taken several steps to strengthen the VLSI ecosystem in the country:

- Semiconductor Mission: The Semiconductor Mission aims to attract investments in semiconductor manufacturing and design, create a skilled workforce, and promote innovation in the semiconductor sector.
- National Policy on Electronics: The National Policy on Electronics provides a roadmap for the development of the electronics manufacturing industry in India, with a focus on promoting domestic manufacturing and attracting foreign investments.
- **Production Linked Incentive (PLI) Scheme:** The PLI scheme offers financial incentives to companies that invest in semiconductor and display manufacturing in India.



Along with the government, semiconductor companies such as Global Foundry and Tata Electronics have taken significant steps to strengthen the talent need of semiconductor India.

In conclusion, VLSI design is a dynamic and rapidly evolving field with immense potential for growth in India. By leveraging its strengths in engineering talent and government support, India can play a significant role in shaping the future of this critical technology.

> Divya Kiran Editor-in-Chief

Semiconductor Industry: A New Home is India

India's semiconductor industry is experiencing a significant rise, fueled by the global demand for chips, the country's growing digital economy, and the government's active push to position India as a key player in the worldwide semiconductor supply chain. The government has recognized semiconductors as a strategic priority, as they are critical for various sectors like electronics, automobiles, telecom, defence, and medical devices. The factors contributing to the rise of semiconductors in India are discussed.



Government Initiatives and Policy Support

The Government of India has launched several initiatives to attract investment in semiconductor manufacturing and boost local production capacity. Notable among these are:

- Production-Linked Incentive (PLI) Scheme: Offers financial incentives to companies that produce electronics and related components, including semiconductors, in India.
- Semiconductor Manufacturing Incentive Program (SMIP): As part of the broader PLI scheme, this program offers subsidies for setting up semiconductor fabs and ATMP (Assembly, Testing, Marking, and Packaging) units.
- Digital India Initiative: This aims to transform India into a digitally empowered society, driving demand for chips in various digital devices and systems.
- India Semiconductor Mission (ISM): Launched in 2021, ISM is a specialized body to drive the development of India's semiconductor ecosystem. It coordinates efforts between government, industry, and academia.

Strategic Partnerships and Collaborations

India has been fostering partnerships with global semiconductor companies, nations, and research institutions. Some key developments:

- TSMC, Intel, and GlobalFoundries: Talks with global semiconductor giants to explore potential collaborations and investments in India.
- U.S.-India Semiconductor Collaboration: India and the U.S. have strengthened ties in semiconductor R&D and production as part of the broader Quad alliance (including Japan and Australia) for secure supply chains.
- Foxconn and Vedanta JV: In 2022, a joint venture between Foxconn and Vedanta announced plans to set up semiconductor manufacturing units in India.



Talent Pool and R&D Capabilities

India has a strong pool of engineering talent and a well-established IT services sector, which provides a foundation for semiconductor design and R&D activities. Many semiconductor companies, like Intel, Qualcomm, AMD, and Texas Instruments, already have significant design and research centres in India.

- India's Silicon Design Ecosystem: The country is a hub for semiconductor design and verification, especially for chip design services. Bangalore (Silicon Valley of India) is home to several R&D centres for global semiconductor firms.
- ISRO and DRDO's Role: Indian Space Research Organisation (ISRO) and Defense Research Development Organisation (DRDO) have been working on developing indigenous semiconductor technologies for their specialized applications, further strengthening local capabilities.

Growing Domestic Demand

With rapid digitization, 5G deployment, smart cities, IoT adoption, and the push towards Electric Vehicles (EVs), India's domestic demand for semiconductors is rising significantly. Industries like automotive, telecom, consumer electronics, and healthcare are increasingly relying on advanced chips for product innovations and automation.

- Automotive Sector: With the rise of electric vehicles, India's automotive industry is becoming a significant consumer of semiconductors for power management, connectivity, and safety features.
- Telecom and 5G Rollout: The deployment of 5G infrastructure requires large quantities of chips for base stations, networking equipment, and smartphones.

Challenges and Opportunities

While India has a promising outlook in semiconductor manufacturing, it faces challenges such as:

- High Initial Investment: Semiconductor fabs require billions of dollars in initial investment, long lead times, and sustained demand to be economically viable.
- Supply Chain Dependencies: India currently depends heavily on imports of raw materials and machinery needed for semiconductor fabrication.
- Skill Development: Though India has a strong talent pool in software and design, it needs to enhance its skills in semiconductor manufacturing and packaging.

In conclusion, the rise of semiconductors in India is being driven by a combination of policy initiatives, strategic partnerships, and growing domestic demand, positioning India as a potential future leader in the semiconductor industry.

Mr. Abdul Imran Rasheed Lead Engineer, Accenture

India's Push for a Semiconductor Ecosystem/ Semiconductor Industries in India

India is making significant strides in establishing a domestic semiconductor ecosystem, driven by the imperative to reduce reliance on imports and strengthen supply chain resilience. The government launched the Semiconductor Mission in 2021, backed by a robust investment of \$10 billion. This initiative aims to position India as a global hub for semiconductor manufacturing, which is increasingly vital for various emerging technologies.

Semiconductors, primarily made from silicon. are essential components in a wide array of devices, from smartphones and communication systems to vehicles and medical equipment. The growth of sectors such as artificial intelligence (AI) and the Internet of Things (IoT) is accelerating the demand for advanced chips that can support complex computing tasks. As these technologies semiconductor evolve. companies are challenged to develop specialized hardware that meets the rigorous performance demands of modern applications.



Moreover, India's skilled workforce and government support create an attractive environment for both domestic and international players in the semiconductor industry. Collaborations with countries like the United States and Taiwan further enhance India's capabilities, aiming to capture a share of the global market, projected to reach \$110 billion by 2030. According to the Semiconductor Industry Association (SIA), the United States owns 46 percent of the market share for global sales of semiconductors. The following companies represent the top five semiconductor industry leaders, in order of market share in 2020: However, challenges remain. The semiconductor manufacturing process is intricate, with lead times stretching

up to 28 weeks. Manufacturers are under pressure to streamline operations and enhance production efficiency, Texas Instruments necessitating investments 13.6% in upgrading facilities. Navigating the complexities of Moore's Law, which predicts the doubling of transistor density, requires ongoing innovation in **NVIDIA** materials and processes. 18.1% In summary, India's strategic initiative to develop a semiconductor ecosystem is poised to redefine its position in the global technology landscape, addressing both domestic needs and international market demands.

Broadcom Inc. 12.9% Intel 28.9% Samsung 26.5% **Dr. Bharath Kumara**

Assistant Professor, Dept. of ECE **MSRUAS**

India's Semiconductor Boom: A New Frontier for Innovation

India's semiconductor boom is a game-changer, addressing both economic and strategic needs in the modern world. With the rising demand for chips in industries such as electronics, automotive, telecommunications, and defense, India's push toward semiconductor manufacturing is set to reduce dependency on imports and enhance technological self-reliance.

One of the key benefits of this boom is strengthening India's position in the global supply chain. Currently, semiconductor manufacturing is concentrated in countries like Taiwan and China, making the supply chain vulnerable to geopolitical tensions and disruptions. By developing its own semiconductor ecosystem, India can secure a steady supply of chips for critical sectors.





Moreover, the semiconductor industry will boost employment and economic growth. Setting up fabrication plants (fabs), assembly units, and research centers will create thousands of highskilled jobs and attract global investments. This aligns with India's "Make in India" and "Atmanirbhar Bharat" (self-reliant India) initiatives, fostering technological advancement and industrial growth. Another major advantage is its support of India's fast-growing digital economy. With 5G deployment, artificial intelligence, IoT (Internet of Things), and smart devices becoming mainstream, a robust semiconductor industry will drive

innovation and make technology more affordable and accessible. Additionally, a strong semiconductor industry enhances national security. Semiconductors are critical for defense, space, and cybersecurity applications. By manufacturing chips domestically, India can reduce security risks associated with importing sensitive technology.

In conclusion, India's semiconductor boom is a crucial step toward economic resilience, technological leadership, and global competitiveness. It not only ensures a secure supply of chips but also drives innovation, job creation, and self-reliance, making it a vital pillar of India's future growth.

Ms. Shreya Associate Editor

Pioneers of Progress: Key Contributors to VLSI Design

VLSI (Very Large Scale Integration) design, the cornerstone of modern electronics, stands on the shoulders of giants. From the theoretical foundations to the practical implementation, numerous brilliant minds have contributed to this transformative field. Here are some key figures and their groundbreaking innovations:

1. GORDON MOORE (INTEL CO-FOUNDER):

Innovation: Moore's Law, his famous observation that the number of transistors on a microchip doubles approximately every two years, has served as a guiding principle for the semiconductor industry.

Impact: Moore's Law has driven relentless miniaturization and performance improvements in electronics, leading to the powerful devices we use today.

2. ROBERT NOYCE (INTEL CO-FOUNDER):

Innovation: A key inventor of the integrated circuit, Noyce pioneered the planar process, a crucial technique for creating reliable and reproducible integrated circuits.

Impact: The planar process revolutionized semiconductor manufacturing, paving the way for the mass production of integrated circuits and the digital revolution.

3. CARVER MEAD AND LYNN CONWAY:

Innovation: Mead and Conway co-authored the seminal book "Introduction to VLSI Systems," which democratized VLSI design by providing a structured approach accessible to a wider audience.

Impact: Their book empowered a new generation of engineers and researchers to design and implement their integrated circuits, fostering innovation and accelerating the pace of technological advancement.



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4. Federico Faggin (Intel):

Innovation: Faggin led the development of the first commercially successful microprocessor, the Intel 4004. *Impact:* The 4004 marked a turning point in computing history, ushering in the era of personal computers and transforming countless aspects of modern life.

5. Ted Hoff (Intel):

Innovation: Hoff conceived the idea of a general-purpose microprocessor, a programmable device that can perform a wide range of tasks.

Impact: His vision laid the foundation for the modern microprocessor, the brain of every computer and mobile device.

6. Andrew Grove (Intel CEO):

Innovation: Grove, as CEO of Intel, played a crucial role in driving the company's growth and success. He emphasized a culture of innovation and execution, leading to numerous breakthroughs in microprocessor technology.

Impact: Under Grove's leadership, Intel became a dominant force in the semiconductor industry, shaping the course of computing for decades.

These individuals, along with countless other brilliant engineers and scientists, have made significant contributions to the field of VLSI design. Their innovations have not only transformed the electronics industry but have also profoundly impacted society as a whole, enabling advancements in fields as diverse as medicine, transportation, and communication.



Experience Xchange

Hardware Implementation of Video Violence Recognition and Women Tracking based Surveillance System using Machine Learning

In an era where Artificial Intelligence (AI) is revolutionizing security and surveillance, our project presents a real-time, hardware-accelerated solution for violence detection and women's safety tracking. Developed under Texas Instruments (TI) using the SK-AM62A-LP platform, this project was selected among the top 5 finalists out of 77 teams from Texas Instruments, competing within a total of 265 shortlisted teams across India at the VLSI Design International Conference 2025, under the theme Silicon Meets AI.

Traditional surveillance systems lack real-time threat analysis and often require human intervention. In contrast, our solution integrates edgebased Machine Learning (ML) to detect violent activities, track suspicious movements, and send automated SOS alerts. This system is particularly beneficial in urban environments, public transport hubs, and educational institutions, where rapid response is crucial for women's safety.



Experience Xchange

The proposed system is built on a heterogeneous embedded computing architecture that efficiently processes real-time video streams. At the core of this architecture is Texas Instruments'SK-AM62A-LP, which leverages both ARMCortex-A53 cores for general-purpose processing and dedicated AI accelerators for real-time inference. The system captures live video streams through a multi-camera setup, and these feeds are processed using OpenCV and TensorFlowLite to enhance image quality and extract meaningful frames. A custom-trained model handles violence detection, optimized for deployment using TFLite to maximise the SK-AM62A-LP's capabilities. The human tracking module employs person identification (Re-ID) techniques to consistently follow individuals across multiple frames, while violence and weapons detection models identify aggressive behaviours or potential threats. This Al-driven analysis operates on the edge, ensuring low latency by minimizing dependency on cloud processing. When a threat is detected, the system triggers an automated SOS alert, sending real-time GPS coordinates directly to law enforcement agencies, making the response rapid and efficient.



SANJANA, LAVANYA, YASHAS (M.TECH. BATCH 2024)





ALL INDIA COUNCIL FOR TECHNICAL EDUCATION NELSON MANDELA MARG, VASANT KUNJ, NEW DELHI Certificate of Participation This is to certify that Mr. Divya Kinan from M. S. Ramaiah University of Applied Sciences, Bengaluru has participated and successfully completed the 5-day Online FDP on the theme "Inculcating Universal Human Values in Technical Education" organized by All India Council for Technical Education (AICTE) from 5th August to 9th August 2024.

Dr. Rajneesh Arora airman tional Coordiaation Committee for Induction Progra Prof. Rajive Kumar

F.No AICTE/FDP-SI/OnlineWorkshop/201/230245

Dr. Bharath Kumara and Mr. Divya Kiran have completed the faculty development program on "Inculcating Universal Human Values in Technical Education" conducted by AICTE from 5th Aug to 9th Aug 2024

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Dr. Rajneesh Arora	Prof. Rajive Kumar
Chairman National Coordination Committee for Induction Program	Member Secretary, AICTE

Dr. Varun D as a part of his Postdoc Research has worked at the Center for Research and Development of Weather Radars under Colorado State University's Departments of Electrical and Computer Engineering (ECE) and Atmospheric Science. He had an opportunity to work with the engineers at the CHILL and was involved in antenna development and precipitation The CHILL radar is an advanced, measurement. transportable dual-polarized dual-wavelength (S- and X-band) weather radar system. The CHILL RADAR provided a unique opportunity to conduct case-study analyses for various weather situations in northeastern Colorado.







Dr. Karthikeyan BR has received best oral presentation award for his technical paper presented at International Conference on Public Health from 15th and 16th Aug 2024

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Mrs. Vasanthavalli S has completed NPTEL Course on Python for Data Science securing 72%







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Pedagogy

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Dr. N.V.R. Naida Principal, RIT

DEEPTHI. S

Dr. Anita Kanavalli Prof. & Head Dept. of ISE

RAMAIAH INIVERSITY OF APPLIED SCIENCES

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Technology, Bengaluru - 560 054.

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participated in Five Day Faculty Development Programme on " Deep Dive into Generative AI: The Role of GANs and LLMs " in collaboration with IBM, from 26"- 30" August, 2024,

Organized by the Departments of AI & DS, AI & ML and ISE. Ramaiah Institute of

Faculty

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Professor & Head Dept. of CSE, RIT



completed Faculty have the Development program conducted on "Deep Dive into Generative AI: The Role of GANs and LLMs" organised by Ramaiah Institute of Technology from 26th -30th Aug 2024



Kudos!!

Dr. Sunil Y, Dr. Bharath Kumara and Mr. Vishwanath K have completed FDP on Emerging Technologies, Challenges & Research Prospective Healthcare in w.r.t. Bio-Medical Imaging and Cancer Detection using AI. MI and Nanotechnological Concepts from 21st - 25th Oct 2025 offered by VGST at DSCE, Bangalore

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IQAC

Associate Protessee ECE, DSCE, Coordinator

DAYANANDA SAGAR COLLEGE OF ENGINEERING BENGALURU - 560111, KARNATAKA, INDIA -Department of Electronics & Communication Engineering Department of Electronics Brownion Eleven.cov Bortework and Eleven.cov Hortework as Scholar and Eleven.cov Kaskutaka science and Eleven.cov Visio Group Giora Carl Reven.cov The Scholar and Scholar and Scholar and Scholar and The Scholar and Scholar and Scholar and Scholar and Bortework S 地 IQAC CIATORS 5-Day VGST Sponsored Faculty Development Programme Emerging Technologies, Challenges & Research Prospectives in Healthcare w.r.t. Bio-Medical Imaging and Cancer Detection using AI, ML and Nanotechnological Concepts 21 - 25 October 2024 Certificate of Participation / Appreciation This is to certify that Dr. / Mr. / Mrs. / Ms. / Prof. Sunil Y has attended / participated in the 5 Day VGST-FDP on "Emerging Technologies, Challenges & Research Prospectives in Healthcare w.r.t. Bio-Medical Imaging and Cancer Detection using AI, ML and Nanotechnological Concepts" conducted by the Dept. of Electronics & Communication Engineering of DSCE, Bengaluru, in coordination with VGST, Dept. of Electronics of Communication Engineering of DSCE, Denganov Tester Electronics, IT, BT, S&T, KSTEPS, Gok, from 21*to 25th of Oct. 2024 Dr. SHOBHAK, R. Dr. Pavithra G. Dr. Swepnil S. Ninawe Anerder Professor She Dr. B.G. Prasad Dr. Shoona Kars Prof & HOD, ECL, Dean (R DSCE & Convener Principal DSCE DAYANANDA SAGAR COLLEGE OF ENGINEERING BENGALURU - 560111, KARNATAKA, INDIA Department of Electronics & Communication Engineering DEMEMBENT OF LISTROICS MODIFICITIES FERMINAL BOTGROUCH AS GENERAL MODIFICITIES FERMINAL ENGINEERING AND TRANSPORTS AND AND AND AND AND MAINLINKS SCHICL AND TRANSPORTS (STATES) To fine to data & School and 101 AUTOPS 5-Day VGST Sponsored Faculty Development Programme Emerging Technologies, Challenges & Research Prospectives in Healthcare w.r.t. Bio-Medical Imaging and Cancer Detection using AI, ML and Nanotechnological Concepts 21 - 25 October 2024 Certificate of Participation / Appreciation This is to certify that Dr. / Mr. / Mrs. / Ms. / Prof. Bharath Kumara ____ has attended / participated in the 5 Day VGST-FDP on "Emerging Technologies, Challenges & Research Prospectives in Healthcare w.r.t. Bio-Medical Imaging and Cancer Detection using AI, ML and Nanotechnological Concepts" conducted by the Dept. of Electronics & Communication Engineering of DSCE, Bengaluru, in coordination with VGST, Dept. of Electronics at Communication C R COLLEGE OF ENGINEERING Dr. B.G. Prasad 0111, KARNATAKA, INDIA ics & Communication Engineerin ECRONCS, INFORMATON TECHNOLOGY, DSCE OCETY CO AND SCIENCE & TECHNOLOGY ID TECHNOLOGY PROMOTION S the ASTOL 5-Day VGST Sponsored Faculty Development Programme Emerging Technologies, Challenges & Research Prospectives in Healthcare w.r.t. Bio-Medical Imaging and Cancer Detection using AI, ML and Nanotechnological Concepts 21 - 25 October 2024 Certificate of Participation / Appreciation This is to certify that Dr. / Mr. / Mrs. / Ms. / Prof. Viswanath K. has attended / participated in the 5 Day VGST-FDP on "Emerging Technologies, Challenges & Research Prospectives in Healthcare w.r.t. Bio-Medical Imoging and Cancer Detection using AI, ML and Nanotechnological Concepts" conducted by the Dept. of Electronics & Communication Engineering of DSCE, Bengaluru, in coordination with VGST, Dept. of Electronics, TL, BT, Sét, KSTEPS, GoK - from 21 * to 25* of OC: 2024 Dr. Paritha C. Archite Frederic CL, DSCE, Coordinator FC, DSCE, Coordinator AD Dr. B.G. Prasad DSCE





On the eve of Library day celebrated on 23rd Dec 2024 Dr. Pallaviram Sure has awarded for embarking highest number of footprints at library





On 13th Dec 2024 Dr. Punithavathi D (HoD, ECE) has unveiled the book authored by Dr. Bharath Kumara on "Data Communication"

Mr. Ambresh biradar has successfully completed FDP on quantum computing and its application conducted by Atal academy from 09-Dec-2024 to 14-Dec-2024









Dr. Sunil Y and Dr. Bharath Kumara has successfully completed workshop semiconductor on manufacturing skills conducted by IISc on 05-Dec-2024 to 6-Dec-2024

CERTIFICATION OF PARTICIPATION This is to certify that Dr. Bharath Kumara

💩 K-tech 💥

Cense "

has participated in the SEMICONDUCTOR MANUFACTURING SKILLS — TRAINING WORKSHOP on 5th & 6th Decebmer 2024 at IISc Bangalore

Curi. Mr. Rajoo Ge

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Ssemi

NPTEL+ Workshop Certificate

This certificate is awarded to

VASANTHAVALLIS

for successfully completing the online workshop

Signal Classification using Deep Learning

by Ms. Shanthi and Ms. Sragdhara

Senior Online Course Developer, MathWorks



Mrs. Vasanthavalli S has completed NPTEL Workshop on Signal Classification using Deep Learning offered by Mathworks on 4th Jan 2025

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Date : 4th January, 2025







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Our M.Tech 24-batch Students (Sanjana S, Lavanya and Yashas) have been selected for student Fellowship at VLSI-D 25 Conference from 4th Jan 2025 to 8th Jan 2025 and their projects have been selected as top five projects from TI category



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VLSID 2025

Final Year Students received Internship in different Companies

SI No.	Reg. No.	Student Name	Company Name	
1	20ETEC004079 21ETEC004026 21ETEC004054 21ETEC004324 21ETEC004015 21ETEC004083	Shermel Nathania Diya Naveen Rachana M Om Rashinkar Bhargav A K Yashika M S	Emvega Technologies	
2	20ETEC004076	Vivan Giri W	Multilink	
3	21ETEC004062 21ETEC004329 21ETEC004339	Rashmi S Sahana B V Yashodha	BEML	

Research Summary

- 1.P. K, M. G, S. Shetty, S. R, K. Puttegowda and B. Kumara, "Multiple Chaotic Map Based Selective Image Encryption Scheme for Medical Images," 2024 International Conference on Integrated Intelligence and Communication Systems (ICIICS), Kalaburagi, India, 2024, pp. 1-5, doi: 10.1109/ICIICS63763.2024.10860093.
- B. Kumara, P. P. Barmola, R. Arora, S. M. Parikh and R. Maranan, "AI-Enhanced Virtual Twin Modelling for Strengthening IoT Software Security Protocols," 2024 First International Conference on Software, Systems and Information Technology (SSITCON), Tumkur, India, 2024, pp. 1-7, doi: 10.1109/SSITCON62437.2024.10796126.
- 3. Bharath Kumara and S Anantha Padmanabhan, "A condition-based Distributed approach for Secured privacy preservation of Nodes in Wireless Sensor Networks IoT", International-Journal-of-Reconfigurable-and-Embedded-Systems-IJRES, ISSN: 2089-4864. Volume: 13, No.2, July/August 2024. (Scopus Indexed (Q3)).
- 4. K. Manasa, Praveen L S and S N Nagananda (2024), "Development of a control-assist mode multi-DOF bionic arm", Engineering Research Express, Volume 6, Number 4, DOI 10.1088/2631-8695/ada226 (Q3)
- 5. Nandana Narayana, Pallaviram Sure and Chandra Mohan Bhuma, "Experimental investigations on the applicability of LASSO based sparse recovery for compressively sensed OFDM channel estimation" Springer Sādhanā journal, Vol. 49, Article 133 (2024). https://doi.org/10.1007/s12046-024-02444-9
- 6. Sridhar R.V.L.N., Malathi S., Santosh Kumar ,Ugra Mohan Roy, and Sriram K.V. (2025), "Applicability of the Low energy Eye-safe LIBS (LE-LIBS) for H, He and O detection: A viable planetary surface exploration tool", Optics letters, DOI: 10.1364/OL.55162
- 7. Janardhan, K., Bobby, Christy T, 2024. Deep Learning-Based Approach for Automatic 2D and 3D MRI Segmentation of Gliomas. Nanotechnology Perceptions, pp.227-247, <u>https://doi.org/10.62441/nanontp.v20iS7.19</u>, Scopus-index: Q4
- Janardhan, K., Bobby, Christy T, 2024. Glioma Classification using Multi-sequence MRI and Novel Wavelets-based Feature Fusion. Journal of Computational Analysis and Applications (JoCAAA), 33(08),pp.367-384, <u>https://www.eudoxuspress.com/index.php/pub/article/view/1297</u>, Scopus-index: Q4p
- Janardhan, K., Christy Bobby T., 2024, July. MRI Fusion for Glioma Grade Classification. In2024 IEEE International Conference on Electronics, Computing and Communication Technologies (CONECCT) (pp.1-6). IEEE, 10.1109/CONECCT62155.2024.10677196
- 10. Janardhan, K., Christy Bobby T., 2024, Subclass Classification of Gliomas Using MRI Fusion Technique, Recent Advances in Applied Mathematics (RAAM) 2024, Souvenier_RAAM 2024 (pp 113).
- 11. Janardhan, K., Christy Bobby T., B. Ramaswamy Karthikeyan, 2024, Automated Interpretable Glioma Grading of MRI with Machine Learning Models, International Conference on Contemporary Challenges on Intelligence Computation of Materials Science and Energy Engineering (ICIME), held on December 6th-7th, 2024
- Sushma, S., Venkat, S., Mohanavelu, K., Fredo, J. and Bobby, T. (2024) EEG-Based User Identification using Machine Learning and Deep Learning Approaches. Current Directions in Biomedical Engineering, Vol. 10 (Issue 4), pp. 639-644. <u>https://doi.org/10.1515/cdbme-2024-2157</u>. Scopus-index: Q3

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- 1. Dr. Salim Sharieff, Dr. Nadeem Pasha K, Dr. Bharath Kumara, Mr. Chandu Jagan Sekhar M, Dr. Prathibha Kiran, "3D CONCRETE PRINTING DEVICE FOR ON-SITE CONSTRUCTION" Patent Number: 439430.
- 2. Preetam Shankpal, P. Siva Dinesh, Akashdeep Howladar, Ragith Rajan, S. Greeshma, Deepthi S., Dr. Praveen L. S., "INFRARED BASED TOMOGRAPHY DEVICE FOR FINGER FRACTURE DETECTION", Patent Number: 551262
- 3. Krushna Chandra Patel and R Hariharan from FET for their invention titled "METHOD, SYSTEM AND APPARATUS FOR MOTION DETECTION AND VELOCITY ESTIMATION IN VISUAL NAVIGATION SYSTEM", Patent Number: 547529



TEXT BOOKS:

- 1. Dr. G Nandha kishor Kumar, Dr. Bharath Kumara, Dr. Prathiba Kiran, Dr. Jothi, "Data Communication and Computer networks", ISBN NO: 978-93-6674-272-4, 2024, 1st edition, Scientific International Publishing House, Registered under the ministry of SME, Government of India.
- 2. Dr. Bharath Kumara, Dr. Kavitha M V Dr. Guda Ramakrishna Prasad Dr. Mundluru Dharani "Digital VLSI Design" ISBN NO: 978-93-6674-579-4, 2024, 1st edition, Scientific International Publishing House, Registered under the ministry of SME, Government of India.



ECE Department has conducted an Internship for 3rd Sem students focused on Electronic Circuit design using Multisim Software. Students have been exposed to the software to design electronic circuits.

The internship started from 17th Sept - 23rd Sept 2024 with an assessment of the given assignment





New B.Tech batch 2025 has joined from 17th Sept 2024. Department has conducted an Induction Program for freshers on 19th Sept 2025





ECE department has procured PCB Milling Machine and the Installation has been done on 30th Sept by experts from entuple technologies









Dr. Sunil Y and Dr. Bharath visit to Cense 6th Dec 2024 as a part of the workshop conducted at IISc





On 6th November, the Department organized an invited talk on the Future of ECE by **Dr. KM Sudharshan**, Professor and Director of the School of ECE, REVA. At the same event, the ECE Club "**Circuitopia**" and the department magazine "**E-Mazine**" were launched.





Mr. Vinit Gupta from IMS Gate academy on 13 Dec 2024 has given carrer counselling session for 3rd year students on approaches towards gate preparation

Dr. Shreyanka S has participated in workshop on International capacity building program organised by Karnataka state higher education council in collaboration with British COuncil from 3rd to 6th Dec 2024







A workshop has been conducted by Ms. Deepthi S, Dr. Pallaviram Sure and Ms. Vasanthvalli S on LabView Foundations for Communications and IoT Applications on 16th - 17th Dec 2025, Participants have been introduced to LabView Terminologies of Programming. VI. Control panel, Block Diagram, Functions, Palettes, different datatypes and different LabView programming exercises for Communications and IoT applications have been carried out by the students.

Dr. Pradeep Kumar T S, a Professor from VIT Chennai gave a distinguished lecture on 20th Dec 2024. The speaker introduced the students to drone engineering, and technology use-cases for flying drones including rescue and surveillance under FANET. Different cellular frequency bands and challenges in 6G implementation have been covered. He gave an introduction to NS2 and NS3 network simulators and has shown a demo on NetSimulyzer.







Convocation has been and 83 B.Tech. graduates, 1 postgaduate and 6 degrees have been awarded degrees from the ECE Department.

PhD Awarded:

- Saravanan S.
- Sameer Ahamed
- Narasimha Murthy
- Siva Monohar Reddy
- Gayatri Malhotra
- Nandhana Narayana

ECE department has organised a faculty development program on Next Generation Communications: Use Cases and Challenges from 27TH TO 31ST JAN 2025. Industry Experts Dr. Sushma from EMAG Simulation and Mr. Padbanabhan from INTEL has shared the ongoing advancements. Inhouse subject

Experts Dr. Varun D, Dr. Pallaviram and Dr. Shreyanka have enlightened the research orientation and possibilities.





PSUs: The opportunities Final Year Students should Target

Public Sector Undertakings (PSUs) are government-owned corporations that offer attractive job opportunities. While many PSUs recruit through the Graduate Aptitude Test in Engineering (GATE), several also conduct their recruitment processes independent of GATE scores. Here, Table 1 will inform about the PSUs that also recruit students without GATE Eligibility and Table 2 will inform tentative months of application submission and exams for a few PSUs.

Students should keep track of these companies and should prepare.

Maharatna Companies	Navratna Companies	Miniratna Companies	Others
Coal India Limited (CIL) B.E./B.Tech with a	Hindustan Aeronautics Limited (HAL)	Nuclear Power Corporation of India Limited (NPCIL)	Indian Space Research Organization (ISRO)
Oil and Natural Gas Corporation (ONGC)	Power Grid Corporation of India Limited (PGCIL)	National Institute of Electronics and Information Technology (NIELIT)	Bhabha Atomic Research Centre (BARC)
Steel Authority of India Limited (SAIL)	Bharat Electronics Limited (BEL)	Central Warehousing Corporation (CWC)	National Thermal Power Corporation (NTPC)
Bharat Heavy Electricals Limited (BHEL)	Hindustan Petroleum Corporation Limited (HPCL)	Airports Authority of India (AAI)	Defence Research & Development Organisation (DRDO)
Indian Oil Corporation Limited (IOCL)	National Aluminium Company Limited (NALCO)	Rashtriya Chemicals & Fertilizers Limited (RCF)	Bharat Sanchar Nigam Ltd. (BSNL)

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Opportunity Board

Based on the previous exams of the mentioned PSUs the tentative details have been extracted

PSU	POST		PSU	POST	TENTATIVE NOTIFICATION DATES
BSNL	JTO	Last date of application submission : Apr	BARC	JRF, SRF, Research Associates	Last date of submission of application form: Feb
NTPC	Executive	Written Exam : Jun Online registration: Mar Last date of	PGCIL	Executive Trainees	Online form available: Dec /Jan Written Exam : Feb
Trainees	submission: Mar Written Exam : May		2	Online start registration: Aug	
BHEL	Engineer Trainees	Online submission of applications: Aug Closing of online submission: Sep Written Exam : Oct	NALCO	Graduate Engineer Trainee	Last date for Online registration: Aug Postal submission of form: Sep Written Exam: Sep Interview: Oct/Nov
DRDO	Scientist-B Entry	Application available from: May Late date of submission: Jun Written Exam : Sep	SAIL	Manageme nt Trainee	Application available from: Jun Last date of submission: Jun Written Exam : Jul
IOCL Enginee	Engineers/ Graduate	Apprentice Engineers Online application: Jan Last date of submission of Online	Indian Railway s	Section Engineer	Last date of submission of application form: Apr Written Exam : Jul/Aug
DMRC	Junior Engineers	torm: Feb Written Exam : Feb Late date of submission :Aug Written Exam: Oct	MTNL	JTO	Last date of submission of application form: Apr Written Exam : Aug



Based on the previous exams of the mentioned PSUs the tentative details have been extracted

PSU	POST	TENTATIVE NOTIFICATION DATES	PSU	POST	TENTATIVE NOTIFICATION DATES
ONGC Graduate Trainees	Registration : Apr Last date for receiving registration slip with enclosures: May	Bridge & Roof co. (I) Ltd	Trainee Engineers	Last date of submission of application form: Sep Written Exam : Oct	
		Online registration :	ISRO	Scienti <mark>st/En</mark> gineer	SC Online application availability: Jan/Feb Written Exam : Apr
NHPC	Trainee Engineers	Apr/May Last date for receiving registration slip: May Written Exam : Jun/Jul	GAIL	Executive Trainee	Online application available from: Oct Last date of submission: Oct Written Exam : Nov
ECIL	Graduate Engineer Trainee	Last date of submission of application form: Jul Written Exam : Oct	VIZAG STEEL	Managemen t Trainee	Online registration : Apr/May Last date for receiving registration slip: May Written Exam : Jun
SJVNL	Executive Trainees	Last date of submission of application form: Jun Written Exam: Sep	BEL	Probationar y Engineer	Online registration : Apr/May Last date for receiving registration slip: May Written Exam : Jul
BPCL	Managem ent Trainee	Submission: Jun Written Exam : Aug		Engineering	Application available from: Jun /Jul
HPCL	Officer Trainees	Last date of submission of Online form: Jan	BHARATI	Assistants	Last date of submission: Aug Written Exam : Oct
		Written Exam : Feb			

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Forthcoming Events

1. HACK FOR INDIA: AI AGENTS TRANFORMING LIVES

HACK FOR INDIA IS AN ONLINE HACKATHON STARTING FROM FEB 28, 2025 | ENDS ON MAR 23, 2025

2. TECHXCELERATE 2025

100% VIRTUAL FROM ANYWHERE. NEXT EVENT STARTS APRIL 6TH! NO CODING EXPERIENCE NECESSARY

3. REACTIVE HACKATHON

THIS IS AN ON GOING HACKATHON

4. QUANTUM X-25

THIS HACKATHON IS CONDUCTED AT NEW HORIZON COLLEGE OF ENGINEERING ON APR 10,2025

5. CONFERENCE

INTERNATIONAL CONFERENCE ON ELECTRONICS, COMPUTING, COMMUNICATION AND CONTROL TECHNOLOGY ICECCC 2025, CMR INSTITUTE OF TECHNOLOGY BENGALURU | 1ST - 2ND MAY 2025



LINKS FOR ALL THE UPCOMING EVENTS

Altruists



MR. ABDUL IMRAN RASHEED



MS.SANJANA



DR.BHARATH KUMARA



MR.YASHAS





Happy New Year 2025 to All readers!!

We are happy to announce the expansion of our team by including 2 more editors. Altogether we will try to provide new issues every 6 months. I would like all readers to support us by contributing articles and other information. We also welcome any suggestions that help us improve and provide you with better content.

The Theme of our upcoming issue will be



Editorial Team



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DR. L S PRAVEEN EDITOR, ASSISTANT PROFESSOR, ECE





MRS. DEEPTHI S EDITOR, ASSISTANT PROFESSOR, ECE

Editorial Team



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ARPITHA HEGDE ASSOCIATE EDITOR, 6TH SEMESTER, ECE





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SACHIN R SHENOY ASSOCIATE EDITOR, 4TH SEMESTER, ECE





SHREYA S ASSOCIATE EDITOR, 4TH SEMESTER, ECE

E-MAZINE JANUARY 25 🗢

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- 1. Invited Articles should be within 300 to 500 words.
- 2. Student Articles Should be within 200 to 300 words.
- articles/ poems/ photos/ project articles or any other 3. All contributions should be contributors' work.
- 4. Articles or any contributions should not directly or metaphorically criticise a nation, state, government, organization, university, religion or person.
- 5. Article should not use any kind of indecent or provocative language.

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**GUIDELINES AND DISCLAIMERS WILL BE UPDATED BASED ON THE INSIGHTS.

E-Mazine is a biannually magazine from the Department of Electronics and Communication Engineering, MS Ramaiah University of Applied Sciences. It compiles thoughts about buzzing technologies. This also logs the events, achievements and successes of our Students, Faculties and Alumni.

"Innovation is a journey, not a destination." Morris Chang



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