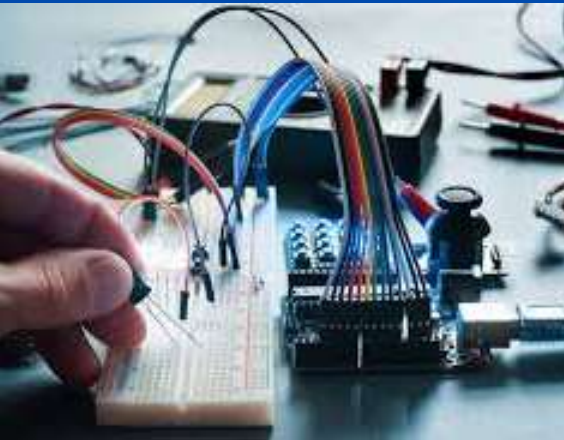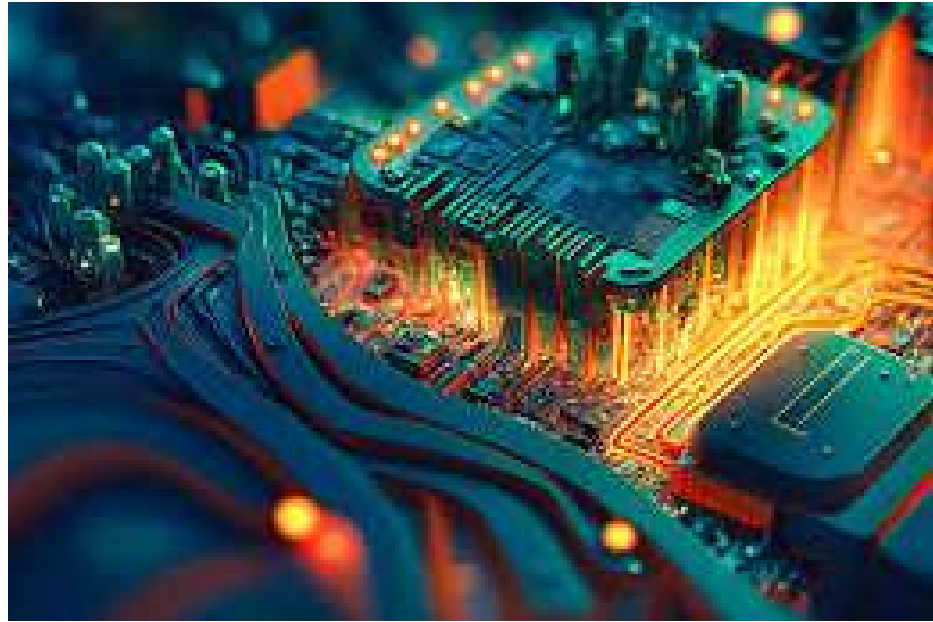**SVCE** | Sri Venkateswara College of Engineering

CIRCUIT TIMES

INSIGHTS

- Faculty Article
- Faculty Participation
- Faculty Proposal Submission
- Student Participation
- Student Achievements
- Academic Events
- PALS
- Faculty Achievements
- Industrial Visit
- Alumni Testimonial

VISION OF DEPARTMENT

To excel in offering value based quality education in the field of Electronics and Communication Engineering, keeping in pace with the latest developments in technology through exemplary research, to raise the intellectual competence to match global standards and to make significant contributions to the society.

MISSION OF DEPARTMENT

To provide the best pedagogical atmosphere of highest quality through modern infrastructure, latest knowledge and cutting edge skills.

To fulfill the research interests of faculty and students by promoting and sustaining in house research facilities so as to obtain the reputed publications and patents.

To educate our students, the ethical and moral values, integrity, leadership and other quality aspects to cater to the growing need for values in the society.

FACULTY ARTICLE

MEMRISTOR

Mrs.C.Gomatheeswari Preethika, M.E., (Ph.D),

Assistant Professor, Department of Electronics and Communication Engineering,
Sri Venkateswara College of Engineering (Autonomous), Sriperumbudur

INTRODUCTION

Nowadays, random access memory (RAM) is used in the majority of computers and it moves swiftly while the user works, but it does not store unsaved data in the instance when the power is lost. Conversely, flash drives operate far more slowly but can save data even when they are not powered. The characteristics of RAM and flash drive are combined in "Memristors". It has the potential to create a memory that combines speed and dependability.

DEFINITION OF MEMRISTOR

An electrical component with two terminals that is non-linear and links magnetic flux linkage and electric charge is called a memristor.
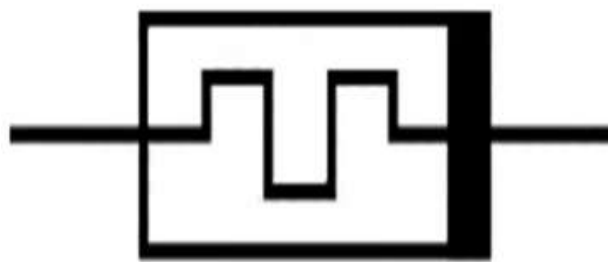

Figure 1 Symbol of Memristor

Leon Chua gave it its initial name and description in 1971. Along with the resistor, capacitor, and inductor, the memristor completes a theoretical quartet of basic electrical components. The memristor's non-volatile ability to store memory even in the absence of power is one of its special qualities. It remembers the amount of charge that has previously passed through a circuit and regulates the flow of electrical current across it. This implies that the resistance of the material can change based on the voltage and current given to it in the past.

Chu realized that the fundamental relationship between the four basic circuit variables namely, Electric current (I) , Voltage (V), Charge (Q) and Magnetic flux (Φ) could be expressed by using four different differential equations, each with a different constant of proportionality.
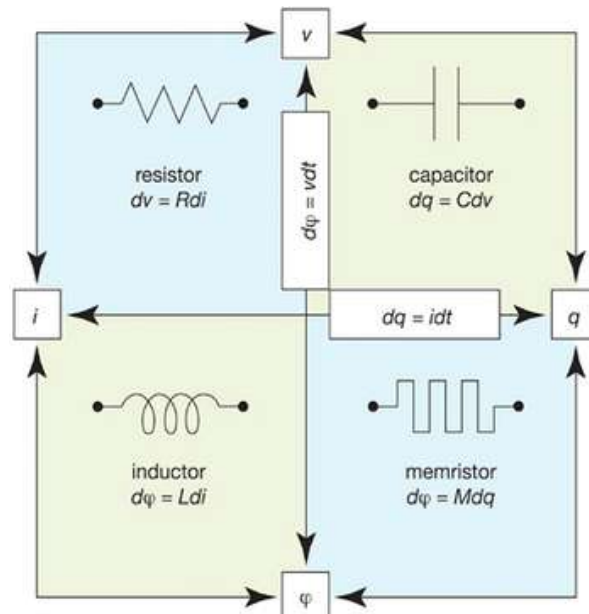

Figure 2 Relationship between the time integrals of current and voltage

Corresponding to the configurations, in resistor the relation between current and voltage is given as,

$dV = R\, dI$

Where R is Resistance.

The relation connecting the charge, voltage and voltage in capacitor is expressed as,

$dQ = C\, dV$

where C indicates the capacitance.

In inductor, the magnetic flux and current relation is indicated as

$d\Phi = L\, dI$

where L is the inductance.

Finally, in memristor the flux and charge are related as below.

$d\Phi = M\, dQ$

where M is the memristance.

Although memristor-like electrical behavior was rarely seen in the following decades of the twentieth century, the first controlled memristor was not constructed until 2005, employing nanotechnology methods. The Hewlett-Packard Company, particularly researchers R. Stanley Williams, Dmitri B. Strukov, Gregory S. Snider, and Duncan R. Stewart, deserve the credit for creating the first functional memristor.

A bi-level titanium dioxide thin film that has impurities, or dopants is created on one side that migrate to the other when a current is applied and when the opposite current is applied on the , changing the resistance in each instance. Memristors are being worked into conventional integrated circuits by Hewlett-Packard.
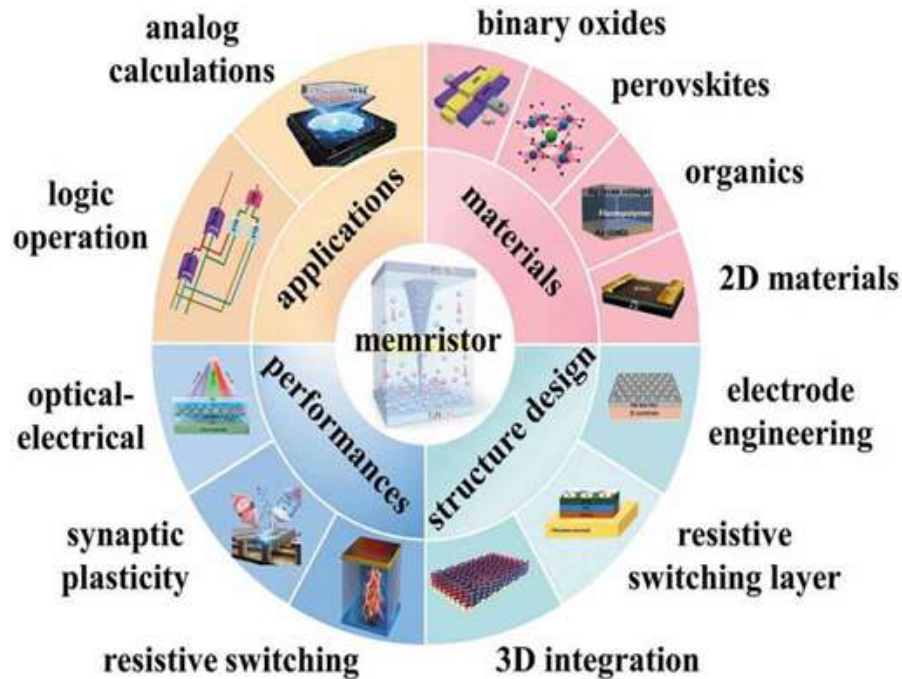

Figure 3 An overview of memristor materials, design, performance and applications

TYPES OF MEMRISTOR

Memristors can be of different types depending about the ways how they are constructed. A brief overview of the different types of memristor is shown in Figure 4.
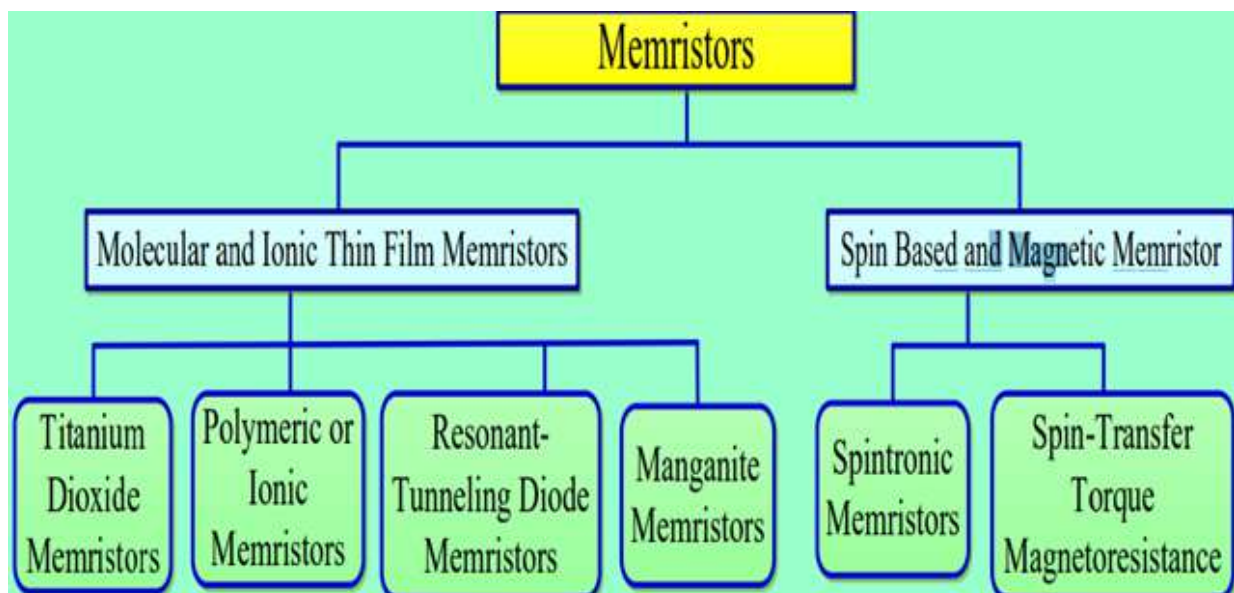

Figure 4 Different types of Memristor

- Thin film memristors made of titanium dioxide (TiO2) are the first to be built and have been extensively studied for modeling and design.
- Polymeric or ionic memristors use a dynamic alloy of polymers and inorganic dielectric materials (some form of dioxide).
- The resonant-tunneling diode memristors use specially doped quantum-well diodes.
- The manganite memristors use a substrate of bilayer oxide films based on manganite as opposed to titanium dioxide.

NEUROMORPHIC COMPUTING

Neuromorphic computing uses artificial neurons and synapses to process data in a similar way the human brain does. It relies on parallel processing, allowing multiple tasks to be handled simultaneously. And its adaptable nature enables real-time learning and low-latency decision-making. Neuromorphic computers as non-von Neumann computers whose structure and function are inspired by brains and that are composed of neurons and synapses.

The creation of artificial synapses is a fundamental element of any neuromorphic endeavor, which involves creating artificial neural systems with physical designs derived from organic nervous systems. The human brain has around 10,000 times more synapses than neurons. Consequently, in order to scale neuromorphic circuits to the level of the human brain, scientists must create a low-power, nanoscale device that resembles a synapse. A memristor is analogous to a synapse in the human brain because it has the same switching characteristics.

REFERENCES

[1]. Memristor Prototype May Give AI Chips a Sense of Time-News (allaboutcircuits.com)

[2]. Carlos Hernani-Morales et al, Machine Learning for Maximizing the Memristivity of Single and Coupled Quantum Memristors, Advanced Quantum Technologies (2024). DOI: 10.1002/qute.202300294.

[3]. Xiao Y, Jiang B, Zhang Z, Ke S, Jin Y, Wen X, Ye C, "A review of memristor: material and structure design, device performance, applications and prospects", Sci Technol Adv Mater. 2023, doi: 10.1080/14686996.2022.2162323, PMID: 36872944; PMCID: PMC9980037.

FACULTY PARTICIPATION

(SEMINAR/FDP/STTP/WORKSHOP/ONLINE COURSE/CONFERENCE)

- **Dr.T.J.Jeyaprabha** successfully completed NPTEL-AICTE-FDP Course on **"Cloud IoT Edge ML"** organized by IIT-Madras during the period Feb-Apr 2024 with **Elite Certification.**
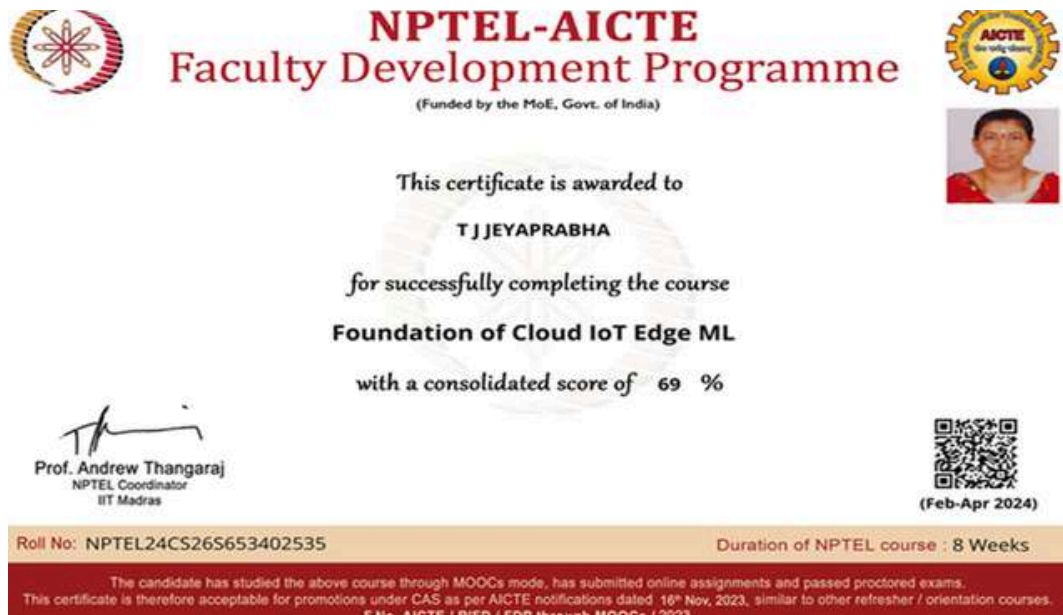
- **Mrs.S.M.Mehzabeen** participated in the National seminar on **"Artificial Intelligence based Advanced sensor design for real time medical applications"** sponsored by DAE-BRNS at Jeppiar Institute of Technology, Chennai from 16.05.2024 to 17.05.2024

- **Mrs.R.Kousalya, Mrs.S.M.Mehzabeen, Mrs.S.M.Abinaya, Mr.L.K.Balaji Vignesh, Mr.A.Mahadevan** participated in a Faculty Development Programme on **"5G-The Next Generation Connectivity"** organized by the Department of Electronics and Communication Engineering, Sri Venkateswara College of Engineering, Sriperumbudur from 20.05.2024 to 22.05.2024

- **Mrs.R.Kousalya, Mrs.S.M.Mehzabeen, Mrs.S.M.Abinaya** attended webinar on **"Essential skills for crafting quality research"** organized by the Department of Electronics and Communication Engineering, Sri Venkateswara College of Engineering, Sriperumbudur from 23.05.2024 to 25.05.2024

- **Mrs.S.Mary Cynthia, Mrs.S.M.Abinaya** attended Short Term Training Programme on **"Advanced approaches and Insights on Signal processing in Health Care"** organized by the Department of Electronics and Communication Engineering, Sri Venkateswara College of Engineering, Sriperumbudur from 27.05.2024 to 31.05.2024

FACULTY PROPOSAL SUBMISSION (GRANTED)

- **Dr.S.R.Malathi, Dr.M.Athappan** and **Mr.D.Silambarasan** sanctioned with a funding of **Rs.1,79,341 lakhs** in R&D project from **BUREAU OF INDIAN STANDARDS** on the topic of **"ETD 0076 Comprehensive Study of advanced road traffic signal systems in India"** on 06.05.2024

Department of ECE Congratulates our faculty on receiving the

Financial Grant of Rs 1,79,341

in R&D projects from **BUREAU OF INDIAN STANDARDS**
Ministry of Consumer Affairs, Food & Public Distribution, Govt. of India

Titled - ETD 0076 Comprehensive Study of advanced road traffic signal systems in India

Dr. S. R. MALATHI
Professor
ECE

Dr. M. ATHAPPAN
Associate Professor
ECE

Mr. D. SILAMBARSAN
Assistant Professor
ECE

STUDENT PARTICIPATION

(Co-curricular Activities/Extra-curricular Activities)

National Service Scheme

- Cancer awareness program was conducted by NSS-SVCE unit on 22.05.2024 at Biotech Seminar Hall, SVCE. The Chief guest is **Dr.T.Vijay, MBBS- Medical officer** from SVCE Medical center. He gave an awareness speech about the ill effects of tobacco usage which causes cancer and other side effects.

- **First Year ECE, Second year ECE students and along with Program Officer, Mrs.S.M.Abinaya, Assistant Professor from ECE department** participated with all NSS Volunteers. All students and Program Officers interacted with their queries.

Cancer Awareness Program-NSS, SVCE Unit-22.05.2024

STUDENT ACHIEVEMENTS

(Co-curricular Activities/Extra-curricular Activities)

- **Mr. Ram Solaiappan (III Year ECE)** received ISTE Best Student Award for the academic year 2023-24 and he was honored and presented with this recognition during the inaugural ceremony of the ISTE Tamil Nadu Section Engineering Students Convention held at P.S.R. Engineering College, Sivakasi on 03.05.2024

ISTE BEST STUDENT AWARD 2023-24 BY ISTE TAMILNADU SECTION.

Congratulations

Mr. Ram Solaiappan.A, Third-year ECE student has been awarded the ISTE Best Student Award for the academic year 2023-24. Honored at ISTE Tamil Nadu Section Engineering Students Convention, on 03/05/2024 at P.S.R. Engineering College in Sivakasi.

EVENTS ORGANIZED

- **Mrs.S.Kalyani** organized one day webinar on **"SVCE Pathways-Amplify your Career with Electronics and Communication Engineering"** organized by the Department of Electronics and Communication Engineering, Sri Venkateswara College of Engineering, Sriperumbudur on 05.05.2024

EVENTS ORGANIZED

- **Dr.N.Kumaratharan, Dr.M.Bindhu, Mrs K.S.Subhashini, Dr.R.Priyadarshini and Mr.S. Elangovan** organized three days FDP on **"5G: The Next Generation Connectivity"** organized by the Department of Electronics and Communication Engineering, Sri Venkateswara College of Engineering, Sriperumbudur from 20.05.2024 to 23.05.2024

EVENTS ORGANIZED

- **Mrs.S.Mary Cynthia, Dr.A.Ramya, Mrs.B.Elakkiya and Dr.R.Priyadharshini** organized a Three days webinar series on **"Essential Skills for Crafting Quality Research"** organized by the Department of Electronics and Communication Engineering, Sri Venkateswara College of Engineering, Sriperumbudur from 23.05.2024 to 25.05.2024

EVENTS ORGANIZED

- **Dr.R.Gayathri, Mr.S.P.Sivagnana Subramanian, Mrs.S.M.Mehzabeen, Dr.M.Kavitha and Mrs.B.Elakkiya** organized Five Days Short Term Training Program (STTP) on **"Advanced approaches and Insights on Signal Processing in Health care"** organized by the Department of Electronics and Communication Engineering, Sri Venkateswara College of Engineering, Sriperumbudur from 27.05.2024 to 31.05.2024
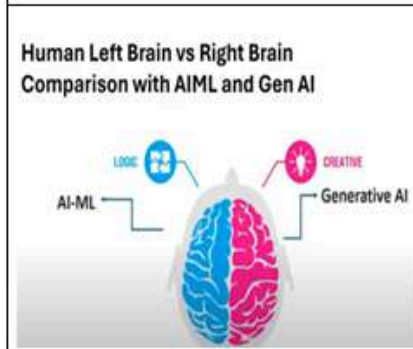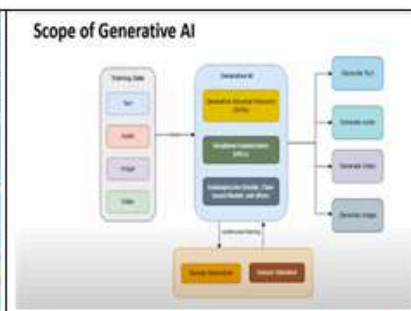
FACULTY ACHIEVEMENTS

- **Dr.N.Kumaratharan** delivered an expert lecture on the topic of **"Ultra Reliability and Low Latency Communication Techniques for Next Generation Networks"** on 20.05.2024 in Faculty Development Programme on **"5G: The Next Generation Connectivity"** organized by the Department of Electronics and Communication Engineering, Sri Venkateswara College of Engineering, Sriperumbudur from 20.05.2024 to 23.05.2024

- **Dr.M.Bindhu** delivered an expert lecture on the topic of **"Edge Computing"** on 20.05.2024 in Faculty Development Programme on **"5G: The Next Generation Connectivity"** organized by the Department of Electronics and Communication Engineering, Sri Venkateswara College of Engineering, Sriperumbudur from 20.05.2024 to 23.05.2024

- **Dr.R.Gayathri** delivered an expert lecture on the topic of **"Deep Learning in Alzheimer's Disease: Diagnostic Classification and Prognostic Prediction using Neuroimaging Data"** on 30.05.2024 in Five Days Short Term Training Program (STTP) on **"Advanced approaches and Insights on Signal Processing in Health care"** organized by the Department of Electronics and Communication Engineering, Sri Venkateswara College of Engineering, Sriperumbudur from 27.05.2024 to 31.05.2024

- **Dr.T.J.Jeyaprabha** acted as reviewer for **IEEE International Conference on Networks, Multimedia and Information Technology (IEEE NMITCON-2024)** organized by **NITTE Meenakshi Institute of Technology, Bengaluru** from 09.08.2024 to 10.08.2024 in association with IEEE Bangalore Section.

PALS

- **Mrs.S.Radhika** participated in the **Lab to Market Conclave** under the theme of **"MARKET PITCH"** on 10.05.2024 at IITM Research Park, Chennai

INDUSTRIAL VISITS

- **Around 175 Students** from **First-year ECE** and **Six Faculty Members** have undergone Industrial visit to **Retech Solutions Private Limited, Chennai** from 03.05.2024 and 06.05.2024

INDUSTRIAL VISIT

- **Around 168 Students** from **Second-year ECE** and **Six Faculty Members** have undergone Industrial visit to **Forge Innovation and Ventures, Sriperumbudur** from 07.05.2024 to 09.05.2024

ALUMNI TESTIMONIAL

Mr.Dinesh Tadepalli
Principal Engineer,
AMD, Hyderabad

"SVCE is one of the prestigious institutions for Bachelors in Engineering and Technology. It has a great curriculum as well as teachers to cover the different fields and departments. I'm glad to be a part of the alum and the concepts taught there, helped me with my career path. They also expand their thirst for knowledge and exposure beyond the class rooms by encouraging outside internships, symposiums and various other presentations"**-Mr.Dinesh Tadepalli, (Batch 2003-2007)**

PROGRAM OUTCOMES

PO1: Engineering Knowledge: 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.

PROGRAM OUTCOMES

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.

PROGRAM OUTCOMES

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 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 lifelong learning in the broadest context of technological change

PROGRAM EDUCATIONAL OBJECTIVES

PEO1: Create value to organizations as an EMPLOYEE at various levels, by improving the systems and processes using appropriate methods and tools learnt from the programme.

PEO2: Run an organization successfully with good social responsibility as an ENTREPRENEUR, making use of the knowledge and skills acquired from the programme.

PEO3: Contribute to the future by fostering research in the chosen area as an ERUDITE SCHOLAR, based on the motivation derived from the programme.

PROGRAM SPECIFIC OUTCOMES

PSO-1: An ability to apply the concepts of Electronics, Communications, Signal processing, VLSI, Control systems etc., in the design and implementation of application oriented engineering systems.

PSO-2: An ability to solve complex Electronics and communication Engineering problems, using latest hardware and software tools, along with analytical and managerial skills to arrive appropriate solutions, either independently or in team.

PROGRAM OFFERED BY THE DEPARTMENT

- **B.E. in Electronics and Communication Engineering**
- **M.E. in Communication Systems**
- **Ph.D / MS (by Research)**

EDITORIAL BOARD

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ELECTRONICS AND COMMUNICATION ENGINEERING

ABOUT THE DEPARTMENT

The Department of ECE was started in the year 1985 and is presently accredited by the NBA. The postgraduate program (M.E) in Communication Systems was started in 2002. There are about 38 faculty members in the department and 14 of them are doctorates. The department is well equipped with lab facilities and software tools like IE3D, ADS, CST Studio, Lab View, Tanner Tools, Cadence, MATLAB, and Prototype Machine.
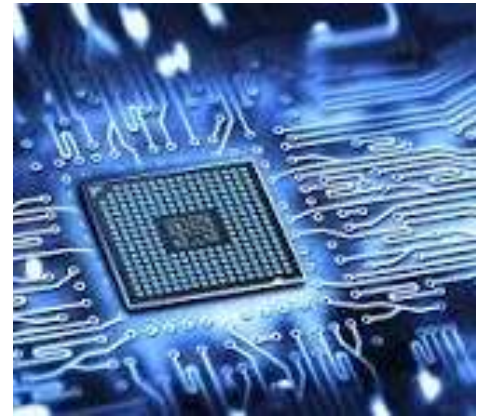
SALIENT FEATURES OF ECE

- The Program has been accredited by the NBA since April 2002.
- Recognized by Anna University, Chennai as an approved research centre for Ph.D. and MS (by Research) with effect from May 2009.
- The major thrust areas of research are RF and Microwave Engineering, Wireless Networks, Network Security, VLSI, Cognitive Radio, Image & Signal Processing, Neural Networks & Soft Computing, Embedded Systems & IoT, Machine Learning, Nano Technology, Robotics, and Artificial Intelligence.
- The department is doing a good number of consultancy work in the field of PCB Prototyping and RF measurements using a Network Analyzer.
- On average over 75 companies visit our department for campus placements External Research grant of Rs 48.26 Lakhs received from ISRO and Cognizant Technology Solutions in the last five years for carrying out various projects.
- Students actively participate in research projects related to Wireless Communications, Networking, Embedded Systems & IoT, Virtual Reality, Robotics, Drones etc.
- Student Counselling Service at SVCE is committed one to promote the mental health and well-being of our students by providing accessible, quality mental health services.
- Student counsellors are available on campus for confidential counselling to all students.
- The department has signed over 12 MOUs with reputed companies to ensure the Industry Institute Interaction.
- Training programs are being conducted to enhance the employability skills of the students and also to achieve good placement in various Industries.

MESSAGE FROM HoD's DESK

The Department of ECE consistently does a commendable job in disseminating the latest knowledge and inviting specialists from diverse domains for discussions on the most recent advancement and trends besides conducting regular classes. We hope every student who visits our department has an engaging, motivating and positive experience. We consistently strive to ensure that instructors and other staff personnel possess the necessary abilities and knowledge to stimulate their students' intellectual curiosity, creativity and critical thinking. I hope you enjoy your time here and thoroughly use our amenities for promising career development

Dr. G.A. SATHISH KUMAR HoD/ECE

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CHOOSING SVCE: A PATHWAY TO SUCCESS AND GROWTH

- One of the prestigious and top ranked Autonomous engineering institution affiliated to Anna University, Chennai.
- Accredited by NAAC and NBA.
- Over 28 % of the alumni work abroad.
- Highest placement offers of Rs.25 LPA and 20 LPA in PayPal and Amazon.
- Highly qualified faculty and staff with an average experience of over 20 years.
- World class Laboratories to foster innovation and research.
- Alumni working in fortune 500 companies like Google, Microsoft, Facebook, Mercedes Benz, INTEL, etc.,
- State-of-the- art-campus with modern amenities in the industrial corridor of Chennai.

.

A Bachelor's Degree in Electronics and Communication Engineering with expertise in one of the following specialization

HONOURS SPECIALIZATION

Wireless Communication Systems

VLSI

Antenna and Microwave Technology

Signal Processing and Data Science

IoT Systems and its Applications

Networking and Security

Our Recruiting Companies

accenture, amazon, Deloitte, Infosys, wipro, Ford
Cognizant, CATERPILLAR, SCHWING Stetter, FLSMIDTH, PayPal, verizon
IIO Ma Signe, L&T, SIEMENS, ASHOK LEYLAND, ABB, ThoughtWorks
Tech Mahindra, Atos Syntel, Capgemini, tcs TATA CONSULTANCY SERVICES, YAMAHA, TechnipFMC
HEXAWARE, freshworks, Informatica, vedanta, wood., SAINT-GOBAIN
HCL, HYUNDAI, Honeywell, TVS, flex, TEMENOS

Top Universities where our students are pursuing Higher Education

MINORS

Artificial Intelligence and Machine Learning and Machine Learning

Data Science and Analytics

Robotics

Semiconductors

Advanced Communications

Bio-medical Signal Processing

And Many More....

>>> DEPARTMENT OF ELECTRONICS AND COMMMUNICATION ENGINEERING

M.E COMMUNICATION SYSTEMS

ADMISSIONS OPEN FOR THE ACADEMIC YEAR 2024-25

SVCE started the Department of Electronics and Communication Engineering in the year 1985. The Department offers B.E. in Electronics and Communication Engineering and M.E. in Communication Systems. It is also approved as aResearch Centre in Ph.D and MS (by Research) programmes by Anna University, Chennai.

>>> ABOUT SVCE

Sri Venkateswara College of Engineering (Autonomous) is a premier self-financing institution started in the year 1985. The college offers 10 B.E/B.Tech Programmes and 10 M.E/M.Tech Programmes in Engineering and Technology. The Programs are approved by AICTE and the college is affiliated to Anna University, Chennai. The college is also accredited by National Assessment and Accreditation Council (NAAC). Many programs are accredited by National Board of Accreditation (NBA). The college is also certified by ISO 9001:2015. The institution received the autonomous status in the year 2016. Our Vision is to be a leader in Higher Technical Education and Research by providing state-of-the-art facilities to transform the learners into global contributors and achievers.

>>> ADMISSION INFORMATION

A pass in a recognized Bachelor's degree or equivalent in the relevant field and should have obtained atleast 50% in the qualifying degree examination. Admissions are through Tamil Nadu Common Entrance Test (TANCET) conducted by Anna University or GATE

>>>RESEARCH GRANTS

Our faculty members have received major external research grants from prestigious organizations such as ISRO, AICTE, DRDO, and TNSCST, etc., to the tune of ₹56.26 Lakhs in the last three years for doing various funded projects.

>>> SCHOLARSHIPS FOR PG STUDENTS

- Tution fee (Rs. 50,000/year) waiver for 30% of the students of sanctioned class strength on merit basis, as applicable.
- Management Scholarship for tution fees and assistance for books and instruments.
- GATE Scholarship of Rs. 12,400 per month for students having valid GATE Score. Sponsorships for students to attend conferences.
- Intramural M.E/M.Tech Student Research Grant to carry out innovative projects.

>>> MAJOR RECRUITERS

>>> RESEARCH AREAS

- Biomedical Instrumentation
- Computer Networks & Network Security
- Digital Signal Processing & Image Processing
- Embedded Systems
- Fiber Optic Communication
- IoT (Internet of Things)
- Nano Electronics
- RF & Microwave Engineering
- Robotics & Artificial Intelligence
- VLSI & Microelectronics
- Wireless Communication Networks

Join the Revolution: Transform Communication Systems with SVCE