AUGUST 2024 VOL.4 ISSUE 8

SVCE | Sri Venkateswara College of Engineering

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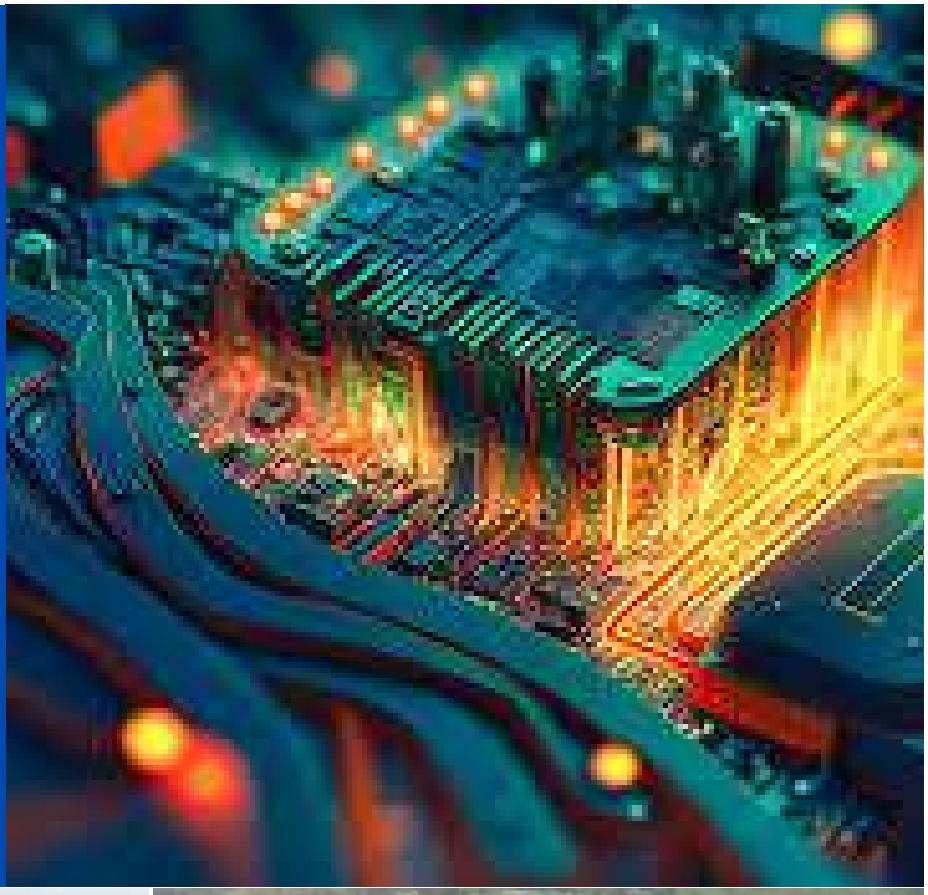

VISION OF DEPARTMENT

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

LOCALIZATION OF UNDERWATER WIRELESS SENSOR NETWORKS

Mr.N.Sathish, M.E., (Ph.D),
Assistant Professor, Department of Electronics and Communication Engineering,
Sri Venkateswara College of Engineering (Autonomous), Sriperumbudur

INTRODUCTION

The exploration of underwater surfaces and their monitoring has become an emerging field of interest for many researchers. Localization is a crucial task in the Underwater Wireless Sensor Network (UWSN). In comparison to terrestrial sensor nodes, localizing underwater sensor nodes is more difficult. In UWSN, the communication of signals between the nodes is a challenging task due to acoustic communication and the position of the node tends to move due to a strong water current in the deep sea whereas in terrestrial the nodes are static and the localization of the node is comparatively easier. Addressing localization issues improves situational awareness, disaster response, and mitigation in crucial areas. In this article, the Range-Based and Range-Free UWSN localization algorithms from numerous research articles were discussed in detail.

The structure of the UWSN consists of surface buoys, reference sensor nodes and ordinary nodes located on the surface of the water bed and the same is presented in Figure 1. The surface buoys know their location with the help of GPS fitted with it. Since the sensor nodes are unable to make direct contact with the surface buoys, the sensor nodes are located with the help of reference nodes or neighbour nodes. Since the reference node estimates it coordinates by using direct contact with the surface buoys.

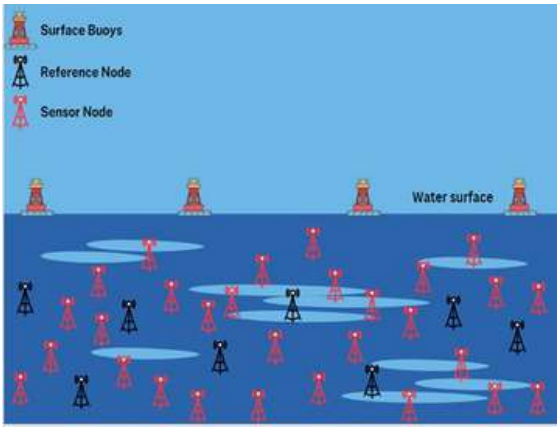

Figure 1 Deployment of sensor nodes in UWSN

2. RANGING ALGORITHM IN UWSN

The UWSN faces a variety of difficulties while attempting to estimate the location or coordinates of sensor nodes. The localization methods of UWSN are grouped into Range based and Range free algorithms [1]. The node-to-node distance can be measured with the help of the range-based algorithms and it is further grouped into two categories: Distance estimation and position estimation. Due to certain limitations in the UWSN, the algorithms based on the range are not mostly preferred. The range-free algorithm roughly estimates the node location without using the range information or any related information. Figure 2 illustrates the classification of localization methods.

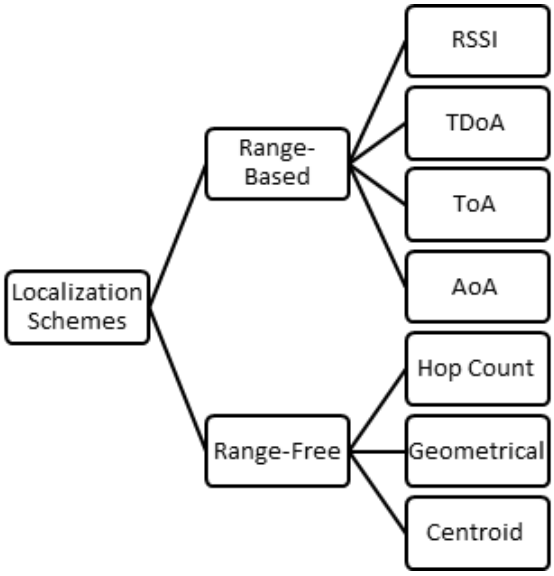

Figure 2 Classification of localization methods

2.1 Range-Based Algorithms

The range-based algorithms are implemented with four steps, namely, discovery of nodes, measurement of range, extraction of data and the estimation of location. The nearby node will assist the sensor nodes in determining their location during the first stage of implementation, and after the range measurement, the data will be sent to the surface buoys during the second stage. The third stage of implementation involves data processing based on statistical theories, and after numerous iterations, the sensor node position will be estimated.

2.1.1 Received Signal Strength Indicator (RSSI)

Surface buoy and sensor node separation can be determined using the RSSI approach. This technique shows the energy lost during signal transmission. The attenuation of the signal during transmission is represented by the RSSI value; a lower RSSI number denotes a lower attenuation. Figure 3 shows the illustration of the RSSI method.

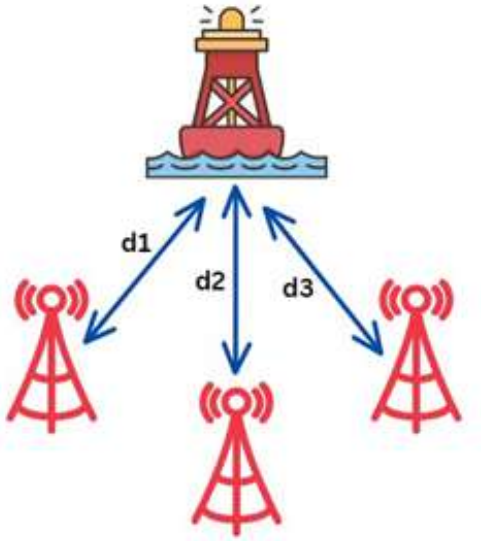

Figure 3 RSSI Method

2.1.2 Time Difference of Arrival (TDoA)

The node-to-node separation can be determined using the TDoA between them, and the node-to-node separation can be obtained by using the speed of the signal in an underwater environment and the time difference [2]. Figure 4 shows the un-localized node y is surrounded by three anchor nodes x1, x2 and x3 namely and the node y receives signal from the anchor node at a time and tx1, tx2 and tx3

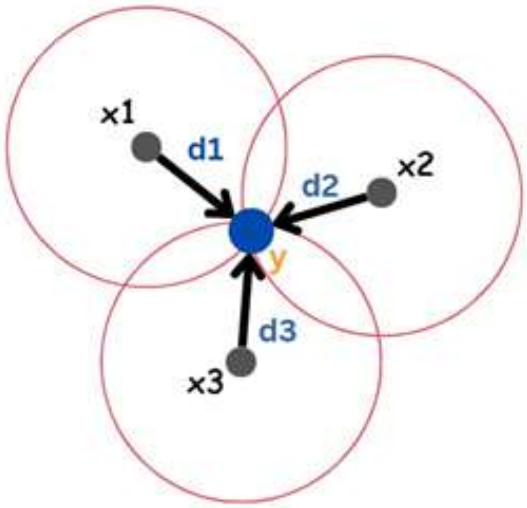

Figure 4 TDoA Method

2.1.3 Time of Arrival (ToA)

The simplest way to calculate the node-to-node distance can be achieved with the ToA algorithm. By tracking the speed of the communication signal and the duration of a signal's journey between two nodes, the distance may be estimated [1]. Precise time synchronization between the nodes is necessary for the ToA approach. One definition of the distance between the nodes is given in Equation 1.

$$d = sr(t2 - t1)$$

2.1.4 Angle of Arrival (AoA)

AoA between the nodes can be used to calculate the separation between the nodes. The estimation of node coordinates can be obtained by using the AoA information. Figure 5 gives the illustration of AoA method estimation.

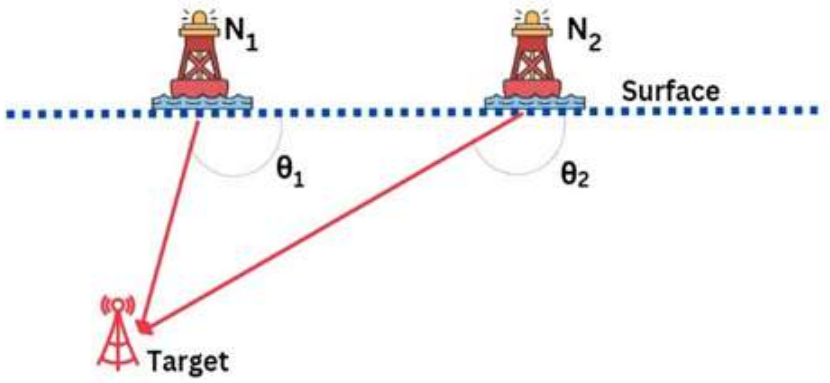

Figure 5 AoA Method

2.2 Range Free Algorithms

Compared to various range-based localization techniques used in UWSNs, the range-free localization technique completely depends on the information available in the packet received. Range-free techniques employ area generation, constraint reduction, and geometric analysis to conduct localization, and they are straightforward, affordable, and energy-efficient. As already discussed the range-free algorithms are grouped under three categories: Hop Count Based algorithms, Geometrical Based algorithms and Centroid algorithms [3].

2.2.1 Hop Count-Based Algorithm

In many localization systems, DV-Hop offers a fundamental distance calculation between the sensor nodes and the anchor nodes. In a WSN, the number of hops is used by DV-Hop to indicate how far anchor nodes are apart. The average of each hop distance is calculated by the anchor nodes and with that information, all the nodes can able to determine the separation between the anchor nodes. In DV-hop scheme consists of two kinds of nodes, the anchor node which knows its location already and another one is an ordinary node whose location is unknown [4]. The structure of the DV-hop count method is shown in Figure 6.

The number of hops is calculated using the steps below.

Step 1: Counting the hops between the unknown and anchor nodes. Using the traditional distance vector routing strategy, anchor nodes communicate their coordinates with the nearby nodes.

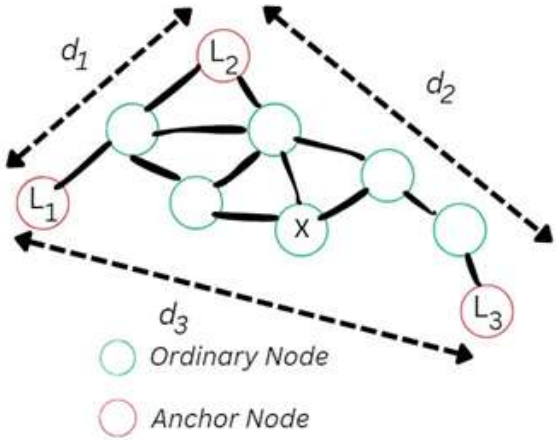

Figure 6 Hop Count Algorithm

Step 2: Initial calculations are made using the minimal hop count and average hop distance to determine how distant the unknown nodes are from the anchor nodes.

Step 3: If the separations of three anchor nodes along with their coordinates are known, plane geometry can be utilized to determine the coordinates of nodes to be localized. The hop count can be converted into physical distance.

2.2.2 Geometrical Based Algorithm

UASNS operate at various scales, and the network's node density can be either sparse or dense. Accurate localization of every sensor is impossible and occasionally unnecessary in a large and dense UASN. An approximate location of the nodes may be sufficient for the majority of applications [5]. To estimate the nodes using the Geometrical based technique, the Approximate Point in Triangle (APIT) and Area Localization Scheme (ALS) are utilized. The sensor field is divided into triangular sections using the APIT approach, and the unknown node N is then located by identifying whether the node is located internally or externally to the triangle and highlighted in Figure 7

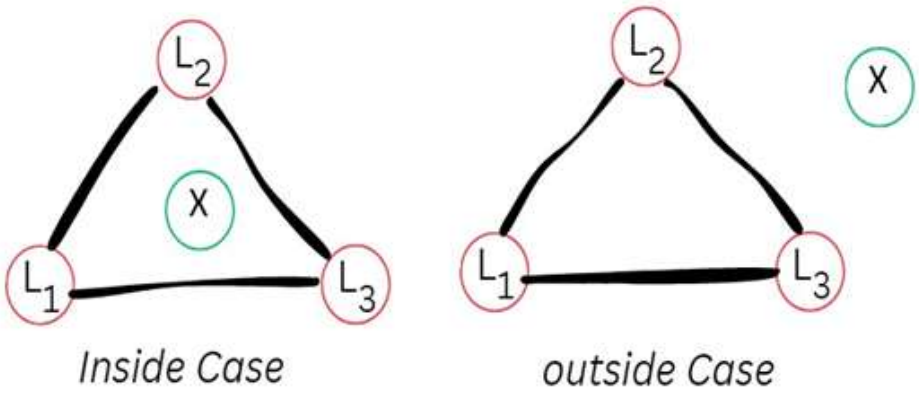

Figure 7 Geometrical Based Algorithm

The large area can be broken down into smaller triangles to locate the intended node and the same can be obtained with the help of the Point In-Triangulation Test (PIT) The node identifies where it is located with the help of the test and the outcome of the test provides information about the node location, whether it is inner to the triangle or outside the triangle [2].

2.2.3 Centroid Algorithm

This algorithm uses the proximity information for computing the node location. There are three main steps in the algorithm's implementation. The unknown location of the node can be obtained with the help of the closest anchor node to the node to be localized. The closest anchor nodes transmit their coordinate information and the node to be localized will receive that information from all the closest anchors for a fixed amount of time. Finally, the location of the node can be calculated by using the centroid of all the closest anchors.

3.CHALLENGES IN UNDERWATER LOCALIZTION

The localization of underwater sensor nodes has notable challenges due to various factors like the ambient temperature and energy usage of sensor nodes. The underwater communication and localization of sensor nodes have a huge impact due to the unavoidable challenges faced by UWSN. The current researchers have plenty of unaddressed challenges that need to be addressed and propose a suitable method to curb the challenges in UWSN [1]. The notable challenges that need to be addressed in addition to the mentioned challenges are:

3.1 Time Synchronization

The most crucial feature of underwater localization is the synchronization of the clock between the nodes. Because of the distortion and offsets that their clocks endure, underwater sensor nodes cannot be time-synchronized. As a result, it is challenging to synchronize the time of underwater sensors.

3.2 Placement and node position

Because of the intense underwater currents, the UWSN are not static, hence the sensor node will drift regularly and it makes the localization process complex and challenging. Deploying the sensor nodes is a difficult process since the surface bed is not flat and nodes are impacted by environmental conditions.

3.3 Energy restriction

The battery-powered underwater sensor nodes have a finite amount of energy. If energy stored in the battery is drained then the batteries can't be replaced or recharged. The sensor nodes mostly consume energy for neighbour node interactions, data processing and localization procedures.

4.CONCLUSION

This article presents an overview of the UWSN, various techniques in underwater localization and the present challenges in UWSN localization. Since each approach of localization cannot choose the best localization method for all circumstances. The goal of this article is to provide an overview of the localization technique and to aid researchers in selecting effective localization techniques to manage the diverse range of applications in UWSN.

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[5] B.Xu, H. Liu and B. Liu, "A node location optimization algorithm based on mobility prediction for underwater wireless sensor networks," 2022 34th Chinese Control and Decision Conference (CCDC), Hefei, China, 2022, pp. 2176-2182, doi: 10.1109/CCDC55256.2022.10034255.

FACULTY PARTICIPATION

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

- **Mr.L.K.Balaji Vignesh, Mr.A.Mahadevan** and **Dr.S.Vidhyashree** have participated in **Six Days Online Faculty Development Programme** on the topic of **"Latest Developments in RF Technologies in 5G and Beyond"** organized by Department of Electronics and Communication Engineering, Rajalakshmi Engineering College (Autonomous), Thandalam from 30.07.2024 to 06.08.2024

- **Mr.L.K.Balaji Vignesh** and **Mr.A.Mahadevan** have participated in **Six Days Online Faculty Development Programme** on **"Artificial Intelligence's Impact on Transforming Software, Robotics, Electrical, Electronics & Mechanical Fields"** organized by Dhaanish Ahmed College of Engineering, Chennai from 05.08.2024 to 10.08.2024.

FACULTY PARTICIPATION

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

- **Mrs.S.Kalyani and Mrs.L.Anju** have attended **PALS Pro-Talk** on the topic of **"Digital Design using Verilog"** on 08.08.2024.
- **Mr.P.Arul** has attended **One Week Online Lecture series Programme** on the topic of **"Recent Research in Power Systems Engineering"** organized by Department of Electrical and Electronics Engineering, Sri Venkateswara College of Engineering (Autonomous), Sriperumbudur from 12.08.2024 to 17.08.2024
- **Dr.S.Pattunnarajam, Mr.L.K.Balaji Vignesh** and **Mr.A.Mahadevan** has participated in **Six Days Online Faculty Development Programme** on the topic of **"Industrial Applications of Embedded Systems and IoT"** organized by Department of Electronics and Communication Engineering, Rajalakshmi Engineering College (Autonomous), Thandalam from 22.08.2024 to 28.08.2024

FACULTY ACHIEVEMENTS

- **Dr.D.Menaka** mentored **three teams** in Hackelite, a 24 hours internal Hackathon event that was organized in collaboration with ECE alumni association on 30.08.2024 & 31.08.2024 and a team **(Tech Explorers)** comprised of six interdisciplinary team got a **special mention prize.**
- **Mrs.L.Anju** mentored **four teams** in Hackelite, a 24 hours internal Hackathon event that was organized in collaboration with ECE alumni association on 30.08.2024 & 31.08.2024 and **three teams secured prizes.**
- **Mr.L.K.Balaji Vignesh, AP/ECE** mentored **three teams** in Hackelite, a 24 hours internal Hackathon event that was organized in collaboration with ECE alumni association on 30.08.2024 & 31.08.2024 and **two teams secured prizes.**
- **Mr.L.K.Balaji Vignesh** acted as a **reviewer** in **International Conference on Electrical, Electronics and Computing Technology (ICEECT-2024)** organized by **Sharda School of Engineering and Technology, Sharda University, Greater Noida, Uttarpradesh** held from 29.08.2024 to 31.08.2024
- **Mr.L.K.Balaji Vignesh** has reviewed the paper on the topic of **"Self-Driving Car using Raspberry Pi"** in **STM Journals (Journal of Microwave Engineering and Technologies)** on 30.08.2024


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Prof./Dr./Mr./Ms. BALAJI VIGNESH LAPPASI KANNAN
of Sri Venkateswara College of Engineering has contributed as
a Reviewer in International Conference on Electrical Electronics and Computing Technologies
organized by Sharda School of Engineering and Technology, Sharda University, Greater Noida, Uttar Pradesh, India,
held on August 29th -31st, 2024.
Prof. (Dr.) Pratima Walde
HoD, EECE, SSET
Sharda University
Prof. (Dr.) Parma Nand
Pro Vice Chancellor
Sharda University
Prof. (Dr.) Sibaram Khara
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FACULTY PUBLICATION

- **Dr.T.J.Jeyaprabha, Jeevanandh Ravi, Mrdulla V Naarayan, Naresh S** published their research work titled **"Innovative Solar Energy Integration for Battery-Less Mobile Phones" in the International Journal of Microsystems and IoT,** ISSN: 2584-0495, Vol. 2, Issue 6, pp. 930-937. **https://doi.org/10.5281/zenodo.13221832**
- **Dr.D.Menaka, Mervin Jerel, Naveenkumar.S, Moneshwar C** published a paper titled **"Decrypting theft suspects in low resolution snapshots"** in **International Conference (SERB sponsored)** organized by Kalasalingam Academy of Research and Education (KARE, Srivilliputhur) jointly with Vidyasagar University, West Bengal on 02.08.2024
- **Mr.L.K.Balaji Vignesh, Mr.A.Mahadevan** published a paper titled **"Multibiometric Authentication System using Gesture Recognition"** in the second International Conference on Intelligent Cyber Physical Systems and Internet of Things (ICoICI 2024) organized by Department of EEE, JCT College of Engineering and Technology, Coimbatore from 28.08.2024 to 30.08.2024

CERTIFICATE OF PRESENTATION

This is to certify that

L K Balaji Vignesh

have successfully presented the paper entitled

Multibiometric Authentication System using Gesture Recognition

at the 2nd International Conference on Intelligent Cyber Physical Systems and Internet of Things (ICoICI 2024) on 28-30 August 2024, organized by Department of EEE, JCT College of Engineering and Technology, Coimbatore, Tamil Nadu, India.

Session Chair | Conference Chair Dr. B. Balraj | Principal Dr. S. Manoharan

CERTIFICATE OF PRESENTATION

This is to certify that

A Mahadevan

have successfully presented the paper entitled

Multibiometric Authentication System using Gesture Recognition

at the 2nd International Conference on Intelligent Cyber Physical Systems and Internet of Things (ICoICI 2024) on 28-30 August 2024, organized by Department of EEE, JCT College of Engineering and Technology, Coimbatore, Tamil Nadu, India.

Session Chair | Conference Chair Dr. B. Balraj | Principal Dr. S. Manoharan

STUDENT PARTICIPATION

(Co-curricular Activities/Extra-curricular Activities)

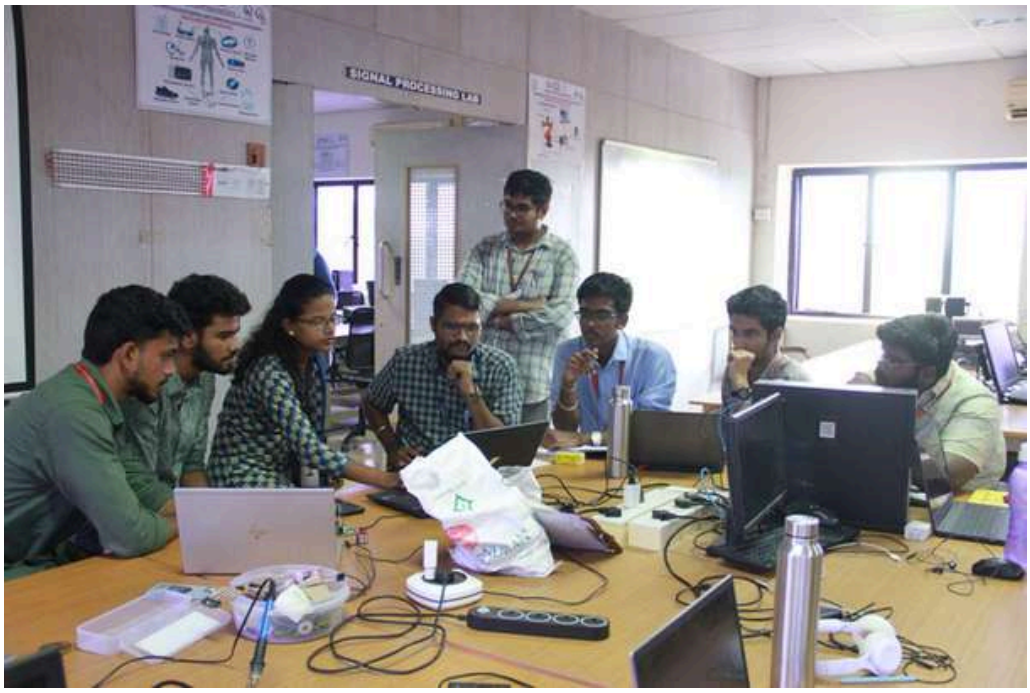
- **Ms.V.T.Harinee, Ms.L.Harini, Ms.N.Dhivya, Ms.S.Meshavarsha** and **Ms.T.Renuka Devi (III Year ECE)** has participated in **Design Quest 2024** in the topic of **"Solving real world Engineering Problems"** held at Sri Venkateswara College of Engineering (Autonomous), Chennai on 01.08.2024

- **Ms.S.B.Janane (III Year ECE), Ms.M.Sethukarasi** and **Mr.Yajnesh Juttu Sundaram (II Year ECE)** has participated in **One Day Training program** in the topic of **"First Aid and Chemical lab safety"** organized by **YRC,** Sri Venkateswara College of Engineering (Autonomous), Chennai on 07.08.2024
- **Mr.U.Arjun, Mr.S.Manikandan, Mr.P.S.Mohammed Kareemullah** and **Mr.J.P.Abeesh (III Year ECE)** has participated in **One Day Workshop** in the topic of **"Achieving Value Proposition Fit and Business Fit"** organized by **IIC,** Sri Venkateswara College of Engineering (Autonomous), Chennai on 07.08.2024
- **Ms.R.Dharani (III Year ECE)** has participated in **"Debate competition"** organized by **Speakers Forum,** Sri Venkateswara College of Engineering (Autonomous), Chennai on 09.08.2024
- **Ms.L.Harini (III Year ECE)** has participated in **"Clash of Minds"** organized by **Speakers Forum,** Sri Venkateswara College of Engineering (Autonomous), Chennai on 09.08.2024
- **Ms.B.Bavithra (III Year ECE)** has participated in **"Essay Writing Competition"** on the theme of **"Innovations Driving Sustainable Development in India: A Vision for the next 25 years"** organized by **IIC,** Sri Venkateswara College of Engineering (Autonomous), Chennai on 13.08.2024
- **Mr.M.Asween Kartheek, Ms.N.Akshaya Nethra** and **Ms.K.Jeevitha (IV Year ECE)** has participated in **"Paper Presentation (Flarendo'24)"** organized by Department of Information Technology, Sri Sairam Engineering College (Autonomous), Chennai on 28.08.2024
- **Mr.V.Shriram Kumar (II Year ECE), Mr.G.Prasanth** and **Ms.J.Subasri (III Year ECE)** has participated in **Hackelite'24** organized by Department of Electronics and Communication Engineering, Sri Venkateswara College of Engineering (Autonomous), Chennai from 30.08.2024 to 31.08.2024

STUDENT PARTICIPATION

(Co-curricular Activities/Extra-curricular Activities)

- A total of **88 students** has participated in the **Hackelite, a 24 hours internal Hackathon** event that was organized by ECE department from 30.08.2024 & 31.08.2024 and showcased their innovative ideas, teamwork, and problem-solving skills. Many students developed their prototype and exhibited their talents in front of alumni judges and internal experts. Totally **seven teams** comprising six students in each team got cash prizes. The event was also coordinated by the student coordinators of ECE alumni association.



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This certificate is presented to VIKASH. S.K *of team* HACKO-HITS *for the active participation in the "HACKELITE" (24-Hours Hackathon) organized by the Department of ECE and Alumni Association on 30th and 31st August 2024, at Sri Venkateswara College of Engineering,Sriperumbudur*

HoD-ECE

Faculty Coordinator

SRI VENKATESWARA COLLEGE OF ENGINEERING

STUDENT ACHIEVEMENTS

(Co-curricular Activities/Extra-curricular Activities)

- **Mr.U.Arjun** and **Mr.P.S.Arulmozhivarman (III Year ECE)** has participated in **"Paper Presentation (Zenista 2k24)"** and secured **first place (Cash Prize of Rs.1500)** organized by Sri Sairam Engineering College (Autonomous), Chennai on 08.08.2024

- **Mr.S.Jeevanantham (II Year ECE)** has participated in **"Paper Presentation (Flare Spark 2k24)"** and secured **second place (Cash Prize of Rs.1000)** organized by Sri Sairam Engineering College (Autonomous), Chennai on 08.08.2024
- **Mr.S.K.Vikash, Ms.V.G.Thanuja, Ms.D.R.Vandhanaa Devi** and **Ms.K.S.Varsha (III Year ECE)** has presented a paper titled **"Swarm Robots for Underwater Rescue"** and secured **third place (Cash Prize of Rs.750)** held at Velammal Engineering College, (Autonomous), Chennai on 10.08.2024

STUDENT ACHIEVEMENTS

(Co-curricular Activities/Extra-curricular Activities)

- **Ms.A.Gayathri (III Year ECE)** has participated in **"Essay Writing Competition"** on the theme of **"Innovations Driving Sustainable Development in India: A Vision for the next 25 years"** and secured **third place (Cash Prize of Rs.500)** organized by IIC, Sri Venkateswara College of Engineering (Autonomous), Chennai on 13.08.2024

- **Mr.Praveen Vasudevan (II Year ECE)** has participated in **Hackelite'24** and secured **first place (Cash Prize of Rs.6000)** organized by Department of Electronics and Communication Engineering, Sri Venkateswara College of Engineering (Autonomous), Chennai from 30.08.2024 to 31.08.2024

STUDENT ACHIEVEMENTS

(Co-curricular Activities/Extra-curricular Activities)

- **Mr.S.Lohith Ashwa (II Year ECE), Ms.K.Tanushri** and **Ms.T.Renuka Devi (III Year ECE)** has participated in **Hackelite'24** and secured **second place (Cash Prize of Rs.4500)** organized by Department of Electronics and Communication Engineering, Sri Venkateswara College of Engineering (Autonomous), Chennai from 30.08.2024 to 31.08.2024


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CERTIFICATE

OF APPRECIATION

This certificate is presented to RENUKA DEVI. T of team TEAM TRACEROUTE for securing II place in the "HACKELITE" (24-Hours Hackathon) organized by the Department of ECE and Alumni Association on 30th and 31st August 2024, at Sri Venkateswara College of Engineering,Sriperumbudur

HoD-ECE Faculty Coordinator


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This certificate is presented to LOHITH ASHWA S of team TEAM INVINCIBLE for securing II place in the "HACKELITE" (24-Hours Hackathon) organized by the Department of ECE and Alumni Association on 30th and 31st August 2024, at Sri Venkateswara College of Engineering,Sriperumbudur

HoD-ECE Faculty Coordinator

- **Mr.J.Moghith Kumaran (II Year ECE), Mr.R.Lalith Kumar, Mr.K.Manojkumar** and **Mr.Mohammed Raeef (III Year ECE)** has participated in **Hackelite'24** and secured **third place (Cash Prize of Rs.3000)** organized by Department of Electronics and Communication Engineering, Sri Venkateswara College of Engineering (Autonomous), Chennai from 30.08.2024 to 31.08.2024


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This certificate is presented to MOGHITH KUMARAN J of team BRIGHTMIND INNOVATORS for securing III place in the "HACKELITE" (24-Hours Hackathon) organized by the Department of ECE and Alumni Association on 30th and 31st August 2024, at Sri Venkateswara College of Engineering,Sriperumbudur

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CERTIFICATE

OF APPRECIATION

This certificate is presented to LALITH KUMAR R of team VOICE VIBES for securing III place in the "HACKELITE" (24-Hours Hackathon) organized by the Department of ECE and Alumni Association on 30th and 31st August 2024, at Sri Venkateswara College of Engineering,Sriperumbudur

HoD-ECE Faculty Coordinator

STUDENT ACHIEVEMENTS

(Co-curricular Activities/Extra-curricular Activities)

- **Mr.S.Jakyim Jonan (III Year ECE)** has participated in EWB Inauguration on the theme of **"For being the former Design Team Manager"** and secured **first place** organized by **EWB,** Sri Venkateswara College of Engineering (Autonomous), Chennai on 30.08.2024
- **Mr.S.Sakthivel (III Year ECE)** and **Ms.K.Jeevitha (IV Year ECE)** has participated in **Hackelite'24** and secured **special mention place (Cash Prize of Rs.1000)** organized by Department of Electronics and Communication Engineering, Sri Venkateswara College of Engineering (Autonomous), Chennai from 30.08.2024 to 31.08.2024

SVCE Sri Venkateswara College of Engineering

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

CERTIFICATE

OF APPRECIATION

This certificate is presented to S. SAKTHIVEL of team TECH EXPLORERS for securing SPECIAL MENTION place in the "HACKELITE" (24-Hours Hackathon) organized by the Department of ECE and Alumni Association on 30th and 31st August 2024, at Sri Venkateswara College of Engineering,Sriperumbudur

HoD-ECE

Faculty Coordinator

SVCE Sri Venkateswara College of Engineering

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

CERTIFICATE

OF APPRECIATION

This certificate is presented to JEEVITHA K of team TECH EXPLORERS for securing SPECIAL MENTION place in the "HACKELITE" (24-Hours Hackathon) organized by the Department of ECE and Alumni Association on 30th and 31st August 2024, at Sri Venkateswara College of Engineering,Sriperumbudur

HoD-ECE

Faculty Coordinator

- **Mr.N.Jegatheesh (II Year ECE)** has participated in **"Paper Presentation (CYBERTRIX 24)"** and secured **first place (Cash Prize of Rs.3000)** organized by St.Joseph's Institute of Technology (Autonomous), Chennai on 31.08.2024

EVENTS ORGANIZED

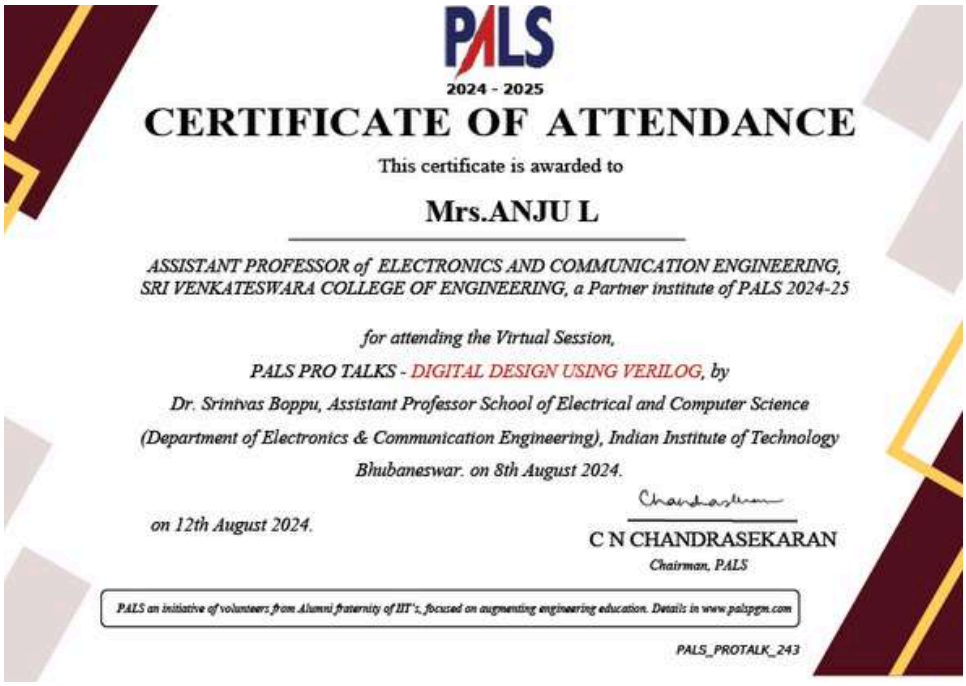
- **ECEA, IETE-SF** and **RAIC of ECE Department** lead by Dr.T.J.Jeyaprabha, ASP/ECE (Coordinator), Mrs.S.Mary Cynthia, AP/ ECE (Assistant Coordinator) and Mr.A.G.Murali Krishna, AP/ECE (Assistant Coordinator) **inaugurated all 03 students clubs** (ECEA, IETE-SF & RAIC) for the year 2024-25 on 08.08.2024. The **invited dignitary** was **Dr.Tata Sudhakar, Scientist G (Retd)., NIOT, Chennai.**

EVENTS ORGANIZED

- **FODSE Club** functioning under the **Department of Electronics and Communication Engineering** and **Department of Information Technology** conducted the **Valedictory 2023-24 and inauguration 2024-25** held at **Library Seminar Hall, SVCE** on 12.08.2024. The Event was coordinated by Dr.T.J.Jeyaprabha, ASP/ECE and Dr.N.Devi, ASP/INT. The **invited dignitary** was **Mr.Rakesh Elamaran, CSE Alumnus (2016-20), Security Engineer 2, Comcast, Chennai.**

PALS

- **Two faculties and 18 Students** participated in the first lecture of **PALS PROF TALKS SERIES -DIGITAL DESIGN USING VERILOG** on 08.08.2024 (Online mode)
- **One student** has registered for the **PALS ANALYZE** case study event.



PALS
2024 - 2025

CERTIFICATE OF ATTENDANCE

This certificate is awarded to

Mrs.ANJU L

ASSISTANT PROFESSOR of ELECTRONICS AND COMMUNICATION ENGINEERING, SRI VENKATESWARA COLLEGE OF ENGINEERING, a Partner institute of PALS 2024-25

for attending the Virtual Session,

PALS PRO TALKS - DIGITAL DESIGN USING VERILOG, by

Dr. Srinivas Boppu, Assistant Professor School of Electrical and Computer Science (Department of Electronics & Communication Engineering), Indian Institute of Technology Bhubaneswar. on 8th August 2024.

on 12th August 2024.

C N CHANDRASEKARAN
Chairman, PALS

PALS an initiative of volunteers from Alumni fraternity of IIT's, focused on augmenting engineering education. Details in www.palspgm.com

PALS_PROTALK_243

INDUSTRIAL VISIT

- A total of **19 students (III Year ECE)** visited to **Asahi India Glass Ltd., SIPCOT, Irungattukottai** organized by **BIS, Chennai Branch office** on 29.08.2024. During the visit, the students gained valuable exposure to various aspects of the company's operation. Asahi glass limited is one of the most leading manufacturers of automotive glasses with **IS2553 P2 standard.** Finally, a **quiz program** is conducted on **IS2553 P2 standards** and **prizes were announced.**

ALUMNI ACTIVITIES

Guest Lecture Program

- The **Department of Electronics and Communication Engineering** organized an Expert Talk on **"Out Of The Box Thinking In The Time Of AI"** by **Dr.Lakshmanan Nataraj, Principal R&D Engineer, Trimble Inc, Chennai (SVCE ECE alumnus 2003-2007 batch)** on 09.08.2024 at 1.30 p.m in Biotech Seminar Hall. The lecture emphasized the importance of thinking outside the box in AI, encouraging students to go beyond traditional approaches. Dr. Lakshmanan Natraj highlighted the need for innovative problem-solving, exploring unconventional methods to address complex challenges in AI. He discussed real-world examples where creative thinking led to breakthroughs in AI applications, such as developing unique algorithms and combining diverse fields like computer vision, signal processing and cybersecurity. The event is coordinated by **Dr.D.Menaka and Ms.S.Kalyani, Alumni coordinators.**

ALUMNI ACTIVITIES

Hackerlite

- **Hackelite, a 24 hours internal Hackathon event** was organized in collaboration with **ECE alumni association** on 30.08.2024 & 31.08/.024. The event was conducted to develop innovative solutions by the students to real-world challenges in accordance with the problem statements provided by the **Smart India Hackathon 2024 (SIH).** The event had **19 registered teams**, 15 participant teams accounting to a **total of 88 students**, showcasing innovative ideas, teamwork, and problem-solving skills .The **event** was **inaugurated** by **ECE Alumnus from 1997-2001 batch, Mr.Siddharta Govindaraj, Founder Silver Stripe Software Pvt Ltd. Mr.Sunil Mukundan, Senior Director and Architect, Netskope,** an ECE alumnus from the same batch also presided the event. The jury for evaluating the performance of teams comprised of **Internal Experts (Dr.T.J.Jeyaprabha-ASP/ECE, Dr.D.Menaka-ASP/ECE, Mrs.K.Srividhya-AP/ECE, Mrs.LAnju-AP/ECE, Mr.M.K.Varadarajan-AP/ECE, Mr.P.Arul-AP/ECE, Mr.S.Elangovan-AP/ECE, Mr.L.K.Balaji Vignesh-AP/ECE, Mr.D.Silambarasan-AP/ECE & Dr.G.Ayappan-AP/ECE)** and **Alumni. Ms.Sowmya Venkateswaran, Design Engineering Manager, Cadence Design systems, ECE alumnus from 2005-2009** batch presided over the Valedictory event. She was joined by **Mr.Karuppiah Vishal, Quality Assurance Engineer at Amazon, ECE Alumnus from 2013-2017 batch.** Prize amount was sponsored by the SVCE management and Alumni. Additionally, internship at Silver Stripe Software Pvt. Ltd was sponsored by Alumni for the I prize winning team. Prizes were distributed to the winners and the event concluded with the national anthem. The event was organized by **Dr.D.Menaka-ASP/ECE, Mrs.K.S.Subhashini-AP/ECE, Mrs.K.Srividhya-AP/ECE, Mrs.S.Kalyani-AP/ECE, Mrs.LAnju-AP/ECE** and **Mr.M.K.Varadarajan-AP/ECE**

ALUMNI ACTIVITIES

Glimpses of Hackerlite

Inauguration:

- **Keynote Address:** 1) Mr.Siddharta Govindaraj, Alumnus, ECE 1997-2001 batch, Founder-Silver Stripe Software Pvt Ltd, 2) Mr.Sunil Mukundan, Sr.Director & Architect, Netskope, ECE Alumnus – 1997-2001 batch

Principal, Dr.S.Ganesh Vaidyanathan, interacting with student teams

ALUMNI ACTIVITIES

Glimpses of Hackerlite

Internal Jury, interacting with student teams

Jury: Ms.Sowmya Venkateswaran, Design Engineering Manager, Cadence Design systems,ECE Alumnus (2005-2009) Batch

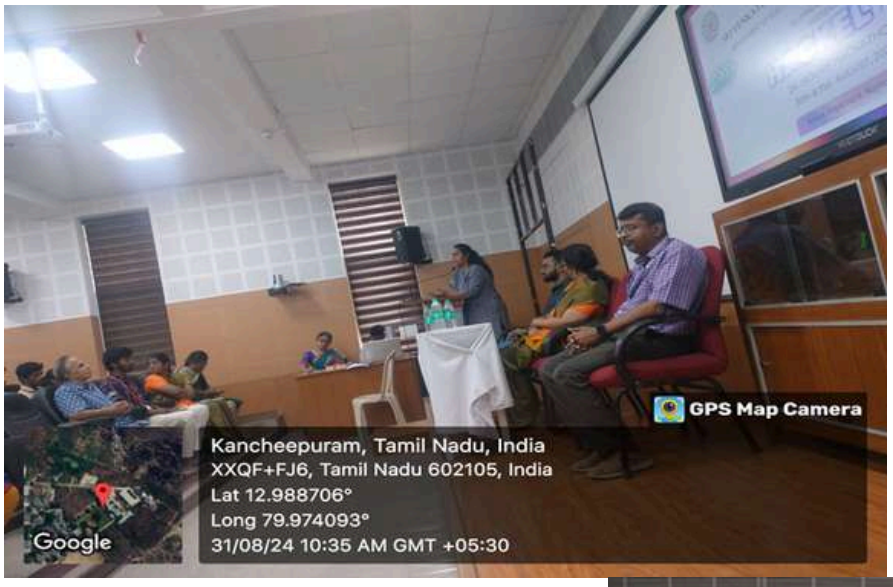
Prize Winners

Prize	Team Name	Student Details
I	Risk Bearers	Praveen Vasudevan, II year and his team
II	Team Invincible Team Traceroute	Lohith Ashwa S, II Year and his team Leena K, III year and her team
III	Voice Vibes Bright Mind Innovators	Lalith Kumar R, III year and his team Naresh Kumar R, II year and his team
Special mention	Tech Explorers Pandaz Rocks	Jeevitha K -IV year and her team Roshinee BVN - III year AD and her team

ALUMNI ACTIVITIES

Glimpses of Hackerlite

Valedictory Function



ALUMNI ACTIVITIES

Alumni Scholarships

- A sponsorship towards **tuition fees** was given to **06 (ECE Girl Students) Ms.S.Kalaimagal, Ms.P.Preethi, Ms.D.Karunya, Ms.P.Abinaya (II year ECE), Ms.S.Swetha (III Year ECE)** and **Ms.A.Yuvasri (IV Year ECE)** based on their financial need and academic credential by 1**985-89 batch and 1997-2001 batch alumni.** Two alumni from 1989 batch and four alumni from 2001 batch addressed the beneficiaries and handed over the cheque to the students on 30.08.2024 held at Library seminar hall, SVCE.

ALUMNI TESTIMONIAL

Ms.Preethi Venkatesan,
Lead Data Scientist,
Target, Bangalore

"SVCE is the place we had more joy with learning. The important phase of our life. The main strength of SVCE, I would say that was the faculty members. The amount of training and moral support they provide is commendable. The placement cell is another big strength of SVCE. It not only strives hard to get all eligible students placed, but also brings the best companies in the industry. I would like to sincerely thank SVCE for laying the foundation for my career."**-Ms.Preethi Venkatesan, (Batch 2010-2014)**

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

CHIEF EDITOR

CO-EDITORS

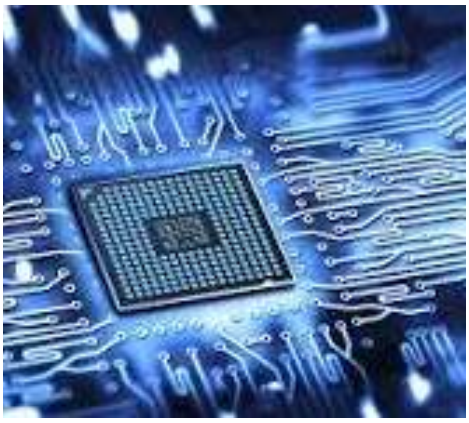
Sri Venkateswara College of Engineering

Autonomous Institution, Affiliated to Anna University, Chennai
Approved by the AICTE, Accredited by NAAC

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

VISIT WWW.SVCE.AC.IN

Contact US

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admissionenquiry@svce.ac.in

SCAN & APPLY

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.

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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, SIEMENS, ASHOK LEYLAND, ABB, ThoughtWorks, Tech Mahindra, Atos Syntel, Capgemini, TCS 50, YAMAHA, TechnipFMC, HEXAWARE, freshworks, Informatica, vedanta, wood., SAINT-GOBAIN, HCL, HYUNDAI, Honeywell, TVS, flex., TEMENOS

Top Universities where our students are pursuing Higher Education

NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE, PennState Great Valley, THE UNIVERSITY OF MELBOURNE, WISCONSIN, UNSW AUSTRALIA, Northeastern University, UNIVERSITY OF MARYLAND

MINORS

Artificial Intelligence and Machine Learning and Machine Learning

Data Science and Analytics

Robotics

Semiconductors

Advanced Communications

Bio-medical Signal Processing

And Many More....

Sri Venkateswara College of Engineering

Autonomous Institution, Affiliated to Anna University, Chennai
Approved by the AICTE, Accredited by NAAC

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.

RESEARCH AREAS

Join the Revolution: Transform Communication Systems with SVCE

- 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

MAJOR RECRUITERS

ERICSSON, CSS CORP, TAFE, amazon, TATA COMMUNICATIONS, ZOHO Work. Online, Infosys, Cognizant, WIPRO, accenture High performance. Delivered., L&T Infotech, HCL