2025 Edition

SIGNAL SURGE

The Annual Magazine of
SSN IEEE Signal Processing Society
Student Branch

SSN

IEEE Signal Processing Society
SSN STUDENT BRANCH CHAPTER

About us

Founded as IEEE's first society in 1948, the Signal Processing Society is the world's premier association for signal processing engineers and industry professionals. Engineers around the world look to the Society for information on the latest developments in the signal processing field. Its deeply rooted history spans 75 years, featuring a membership base of more than 20,000 deeply interested and involved signal processing engineers, academics, industry professionals and students who are all part of a dynamic global community – spanning 120 countries worldwide

To advance the knowledge of signal processing and extend the benefits of the Signal Processing Society, the SSN IEEE SPS Student Branch was set up on August 21, 2023. As we mark the first anniversary of our student branch, we wanted to showcase our achievements to the wider community, which led to the inception of our annual magazine.

"Signal Surge" highlights the workshops, events, and accomplishments of our members. It serves as a testament to the hard work and dedication of our student branch. In this magazine, you will find detailed accounts of the collaborative events that brought together experts and enthusiasts, and the numerous awards and recognitions our members have received.

We believe that "Signal Surge" will be a great source of inspiration and motivation for all signal processing enthusiasts at SSN. Our goal is to foster a vibrant community of learners and innovators who are passionate about the potential of signal processing to transform the world.

Through this publication, we aim to not only celebrate our achievements but also to encourage others to join us in exploring the exciting possibilities within the field of signal processing. Welcome to the inaugural edition of "Signal Surge" – a reflection of our journey and a glimpse into the promising future of signal processing at SSN.

Contents

FROM THE EX-CHAIR OF SSN SPS

Venkatesh M
BME '25
Ex-Chair

Greetings and a warm welcome to all members and colleagues!

As the Ex- Chair of the IEEE Signal Processing Society Student Chapter at SSN College of Engineering, I am excited to share our great achievements and the promising future ahead.

Our SSN SPS chapter has seen outstanding growth this year. Membership has increased significantly from our original base to over 80 dedicated members. This growth shows the rising interest in signal processing within our academic community.

We successfully held our seasonal school program in 2024, offering valuable learning opportunities in modern signal processing technologies and machine learning applications. I am happy to announce that we have received approval for our 2025 seasonal school program. This confirms our focus on educational excellence.

Our chapter has emerged as one of the largest and most active societies in both the IEEE Madras Section and SSN College. We proudly connect international collaboration, with our programs drawing students from various countries to SSN.

Looking ahead, we have an exciting schedule of technical workshops, expert lectures, research symposiums, and hands-on training sessions planned. These events will include distinguished speakers and provide practical experience in this fast-changing field.

FROM THE CHAIR OF SSN SPS

Augustine W Bezalel,
SPS Chair (25-26)

Greetings and a warm welcome to all members and colleagues!

I am truly honored and grateful to serve as the Chair of the IEEE Signal Processing Society Student Chapter at SSN College of Engineering. It is both an exciting opportunity and a great responsibility, and I look forward to building on the achievements of our chapter with the support of our talented and passionate members.

We have an exciting line-up of events planned for the next one year. These include the SPS Cup (Hackathon), a platform to showcase innovation and problem-solving skills; AI-Based Medical System Design for Biomedical Signals, a specialized workshop merging healthcare and technology; a Workshop on MathWorks with hands-on training using industry-standard tools; a Monopoly Event to encourage strategic thinking and interaction in a fun way; and our much-anticipated Seasonal School, offering in-depth learning on cutting-edge signal processing and machine learning topics.

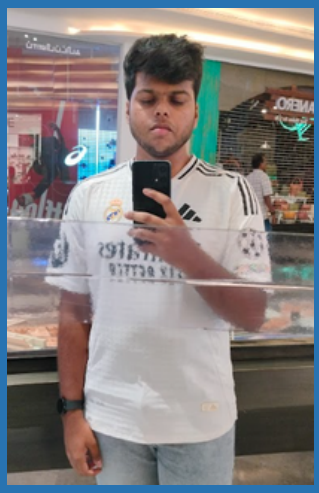
Our strategy moving forward is clear. We will increase member engagement by organizing diverse and impactful events that cater to both technical growth and personal development. We will also focus on fostering individual growth beyond technical skills, we aim to provide opportunities for leadership, teamwork, and communication, ensuring that every member benefits personally and professionally. I am confident that our chapter will not only grow in numbers but also in impact, creating a vibrant and active community that inspires innovation, learning, and excellence.

WELCOMING THE OFFICE BEARERS & CORE COMMITTEE OF '25 – '26

Augustine W
BME '26
Chair

Abirami T
BME '26
Vice Chair

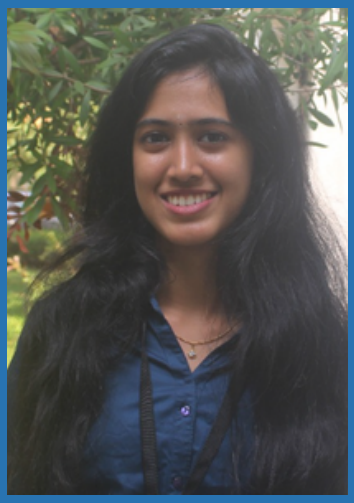
Pradeep KM
CSE '26
Vice Chair



Monish Kumar S
EEE '26
Treasurer

Bharathi K
EEE '26
Secretary

Leelasri B
BME '27
Joint Secretary



Sharadha G
BME '26
Core Committee
Co-Ordinator

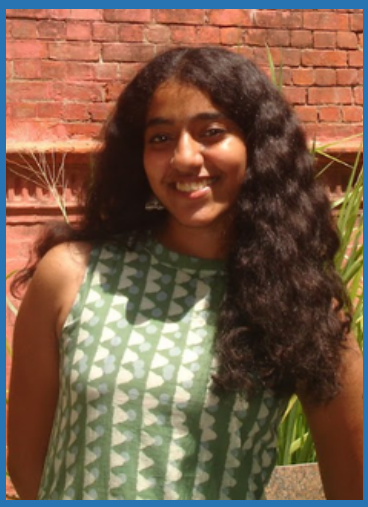
Shivani M
BME '26
Core Committee
Co-Ordinator

WELCOMING THE OFFICE BEARERS & CORE COMMITTEE OF '25 – '26

Anindhitha A
BME '27
Editorial & Content

Aravindaa Krishnan
BME '28
Editorial & Content

Swathi M
BME '27
Design



Maanasvini
BME '27
Design

Varsha V
BME '27
Event Management

Kavya S
ECE '26
Event Management

Seanan
BME '27
Photography & Video

Rasi R
BME '27
Photography & Video

WELCOMING THE OFFICE BEARERS & CORE COMMITTEE OF '25 – '26

Shrinithi SK
BME '26
Social Media & Marketing

Harvin
EEE '27
Social Media & Marketing

Mugilkrishna
CSE '26
Web Development

Prawin K
CSE '27
Web Development

ABOUT OUR COLLEGE

SSN College of Engineering(SSNCE) was established in 1996 with the aim of providing quality higher education and adopts innovative methods to improve the quality of education on a consistent basis. The campus has a cosmopolitan atmosphere with combination of some of the finest graduate, undergraduate, and research programs, enhanced by the most skillful and experienced faculties, remarkable facilities, and a verdant landscape spanning a vast expanse of 230 acres amidst serene surroundings. Experienced and learned professionals strongly nurture the students. The global standards set at SSN in the field of teaching and research spur us on in our relentless pursuit of excellence. In fact, it has become a way of life for us. The highly motivated youngsters on our campus are a constant source of pride. Founded by the visionary Mr. Shiv Nadar, who serves as the illustrious Chairman Emeritus and guiding force behind HCL Technologies, notable to promote, conceptualize and bring about a paradigm shift through the development of outstanding leadership, research, knowledge and ideas for education and allied development sectors.

ABOUT IEEE

Institute of Electrical and Electronics Engineers, is the world's largest professional organization which aims to use advanced technology for assisting human needs. Established in 1963 through the merger of the American Institute of Electrical Engineers (AIEE) and the Institute of Radio Engineers (IRE).

IEEE today has

➢Over 460,000 members in more than 190 countries, with more than 66 percent from outside the United States

➢More than 171,000 Student members

➢344 Sections in ten geographic Regions worldwide

➢2,709 Chapters that unite local members with similar technical interests

➢3,635 Student Branches at colleges and universities in over 100 countries

➢4,194 Student Branch Chapters of IEEE technical Societies

In addition to fostering member collaboration and knowledge exchange, IEEE sets industry standards for innovation and advances the development and application of technology to address societal concerns. IEEE is a major force behind technological advancement and the direction of engineering and technology around the world through conferences, publications, and educational activities.

Mission :

IEEE's core purpose is to foster technological innovation and excellence for the benefit of humanity.

Vision :

IEEE will be essential to the global technical community and to technical professionals everywhere, and be universally recognized for the contributions of technology and of technical professionals in improving global conditions.

ABOUT IEEE SPS

Founded as IEEE's first society in 1948, the Signal Processing Society is the world's premier association for signal processing engineers and industry professionals. Engineers around the world look to the Society for information on the latest developments in the signal processing field. Its deeply rooted history spans 75 years, featuring a membership base of more than 20,000 deeply interested and involved signal processing engineers, academics, industry professionals and students who are all part of a dynamic global community – spanning 120 countries worldwide. The Society organizes numerous conferences around the world every year, focusing on the innovations shaping the future of signal processing and the future of our world. Some of the benefits of joining IEEE SPS are:

1.**Signal Processing Repository (SigPort)** is an online repository of manuscripts, reports, technical white papers, theses, and supporting materials such as videos.
2**. Exclusive Discounts:** Savings on conference registrations, SigPort uploads, SPS publications, and upcoming PDH/CEU credits.
3. **Global Networking**: Opportunities to network with leaders, join communities, and connect through local and technical events.
4. **Volunteer Opportunities:** Engage in society activities, choose your involvement level, and contribute through blogs, boards, or organizing events.
5. **The IEEE Signal Processing Society (SPS)** Education Program provides a wealth of resources, knowledge, and programs across various signal processing disciplines. These offerings include Digital Resources, Live In-Person Programming, Diverse Educational Formats, Global Expertise.
6. **The IEEE Signal Processing Society (SPS)** offers several scholarship and award opportunities, including the IEEE Signal Processing Society **Travel Grants, IEEE SPS Student Paper Contest, IEEE SPS Summer School Scholarships, IEEE SPS Distinguished Lecturer Program, IEEE SPS Four-Year PhD Fellowship, IEEE SPS Regional Student Paper Awards, and IEEE SPS Undergraduate Scholarship.**

INAUGURATION OF SSN IEEE SPS - 2024

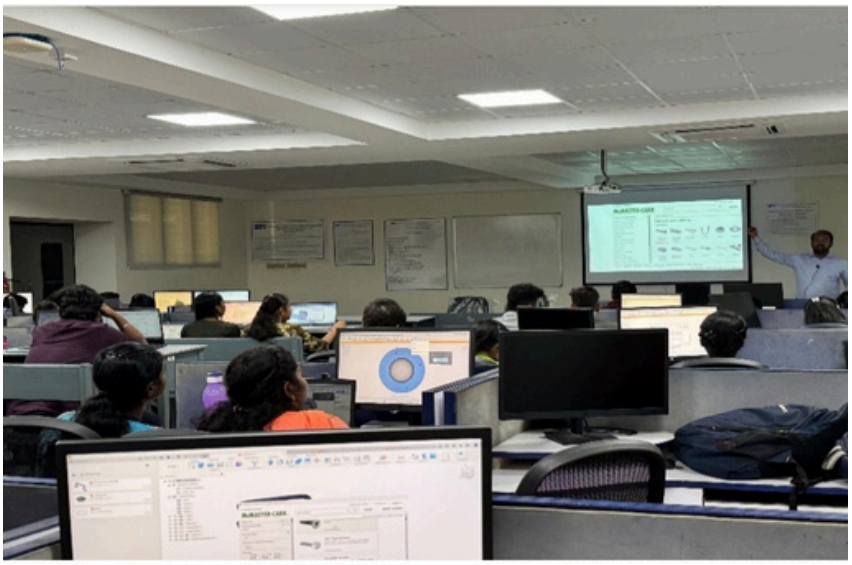
The SSN IEEE SPS Student Branch (2024–25) was inaugurated on August 5, 2024, at the Central Seminar Hall, ECE Department. **Dr. S. Pravin Kumar introduced the BME department and its support for SPS. Dr. V. E. Annamalai highlighted SSN's achievements,** encouraged IEEE membership, and proposed forming new societies. **Dr. N. Venkateswaran gave an overview of SPS, its benefits, and member accomplishments.**

The annual magazine **"Signal Surge"** was released by the dignitaries along with guest speaker **Dr. Karthiganesh Durai (Founder & CEO, KwantumG Research Labs)**. In his talk, Dr. Karthiganesh shared his journey from backbencher to CEO, introduced quantum computing, and discussed its evolution, applications, and future potential —especially in drug discovery. He stressed the importance of a strong foundation in mathematics for aspiring quantum researchers.

TWO – DAY WORKSHOP ON "MEDICAL DEVICE DESIGN & PRODUCT DEVELOPMENT"

The two-day workshop titled "**Medical Device Design & Product Development" on October 7th and 8th, 2024, from 8:30 a.m. to 3:30 p.m., held at the Medical Software Lab, Dept. of BME.** The event was attended by BME undergraduates and students from other colleges **.**

The workshop featured hands on sessions led by Dr. Prasath V, Education Program Specialist at Autodesk, who introduced participants to Fusion 360 and guided them through 3D modeling of medical devices.



Students were instructed about installation and basics were taught on the first day. On the second day, **students were guided to design a 3D model of a medical device.** The event also included lectures by Dr. Vijay J on the stages of medical device development and Dr. Suresh Anand on regulatory compliance in design.

IEEE DAY 2024

The IEEE Signal Processing Society SSN organized **"Dots & Dashes"** on 28th October 2024 at the Mini Auditorium, targeting first and second-year students with 30 participants. Coordinated by Pradeep KM and Venkatesh M, the event featured two rounds focused on signal decoding.

In Round 1, **teams signaled words using semaphore code** across three phases, with decreasing memorization time for 3-letter, 4-letter, and 5-letter words.

Top-scoring teams advanced to Round 2, where **trivia questions were encoded in Morse code,** delivered visually or via audio. Teams decoded the questions using a provided key and raced to hit the buzzer and answer. **Speed and accuracy determined scores, and external tools were strictly prohibited.** The event concluded with prizes awarded to the top two teams based on combined scores.

SPS SCHOLARSHIP PROGRAM

-Supraja Vaidhyanathan, BME 2020 - 24
Biomedical engg. Ph.D Student, University of Houston

The application process for the **SPS Scholarship Program** opens in **March** every year and remains open until the end of **June**. Applications are submitted **through the IEEE website.** The primary eligibility criterion for this program is **membership in the IEEE Signal Processing Society.**

Under this program, a total of **$7,000** is provided as a scholarship in three installments: $2,000 in each of the first two years and $3,000 in the final year. It is recommended to renew the application for the 2nd and 3rd years.

The application includes several questions, such as:

- The signal processing courses you have completed in past semesters or plan to complete in upcoming semesters (a minimum of 3 subjects).
- Projects and achievements you have accomplished.
- Hackathons and competitions you have participated in.
- The need for this scholarship.
- Why you believe you are eligible for the program.
- How you intend to use the scholarship.
- Where you see yourself in the next 5-10 years.
- Letters of Recommendation (LOR) from two of your project guides.

I received my first-year scholarship of $2,000 and used it to complete my final year project at NIMHANS, Bangalore. Currently, I have applied for the renewal of the scholarship for the second year.

SYMPOSIUM ON PH.D FORUM

-Shri Thrisha Arunkumar, BME 2020 - 24

On **March 1st and 2nd, PDEU, Gandhinagar,** hosted a dynamic PhD Forum in collaboration with IEEE Signal Processing Society Gujarat Chapter. Gathering esteemed scholars, industry experts, and budding researchers, the event served as a melting pot of ideas, insights, and inspiration

Day one commenced with illuminating lectures, setting the tone for the forum's intellectual discourse. Dr. K S Sowmiya Ani, renowned for her expertise in AI Assisted Scientific Writing and Publishing, captivated the audience with her insights garnered from years of experience as the founder editor and reviewer at Sowmis_AWW, and as an editor at Cactus Communications. Her session not only illuminated the nuances of effective scientific communication but also underscored the pivotal role of technology in modern research dissemination.

Following this enlightening start, Dr. Sanjeev K Vafrshney, a distinguished scientist at the Department of Science and Technology, Government of India, explained the importance of research and delineated various national and international opportunities for aspiring scholars. His address served as a compass, guiding young researchers through the myriads of academic pursuits.

SYMPOSIUM ON PH.D FORUM

-Shri Thrisha Arunkumar, BME 2020 - 24

Following this session we had a talk on **"Navigating the journey from research to paper publication"** by Dr. Dhaval Pujara, Director of SOT, PDEU. He gave insights on translating research findings into impactful publications, demystifying the process for aspiring scholars.

Day two focused on entrepreneurship opportunities in India, presented by Mr. Ravi Patel, and real-world case studies bridging academic research and industry success, led by **Mr. Nilesh Ranpura.** Attendees also had the chance to showcase their research projects, highlighting the diverse areas of study within the field.

At the end of the session budding researchers showcased their projects across various domains of Signal Processing. I had the opportunity to present a poster on the Severity of Tremors Prediction for Persons of Parkinson's Diseases using Machine Learning and Signal Processing Algorithms. Though I was not able to win in my track I was awarded an Appreciation award.

The PhD Forum has been more than just an event; it has been a transformative experience, shaping the trajectory of my academic journey and instilling in me a lifelong commitment to the pursuit of knowledge and innovation.

ICASSP '24 - SEOUL

Dr. N. Venkateswaran , Professor, Dept. of ECE

The IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2024, held from **April 14 to 19**, included a comprehensive program that highlighted advances in biomedical engineering and signal processing.

The conference featured a **series of plenary speeches** by notable professionals such as Seongwhan Lee, Bhaskar Rao, Daniel Lee, and Jitendra Malik. These sessions presented in-depth insights into the most recent research and technology advances in signal processing, as well as their applications in biomedical engineering.

In addition to plenary sessions, the conference featured a **number of workshops and tutorials on biomedical signal processing.** These workshops offered hands-on learning opportunities and in-depth talks about medical imaging, health informatics, and machine learning applications in healthcare.

The **industry workshops**, which included leading organizations such as **MathWorks** and **Meta**, enhanced the curriculum by demonstrating realistic implementations and real-world applications of signal processing technology in the biomedical area.

ICASSP '25 - HYDERABAD

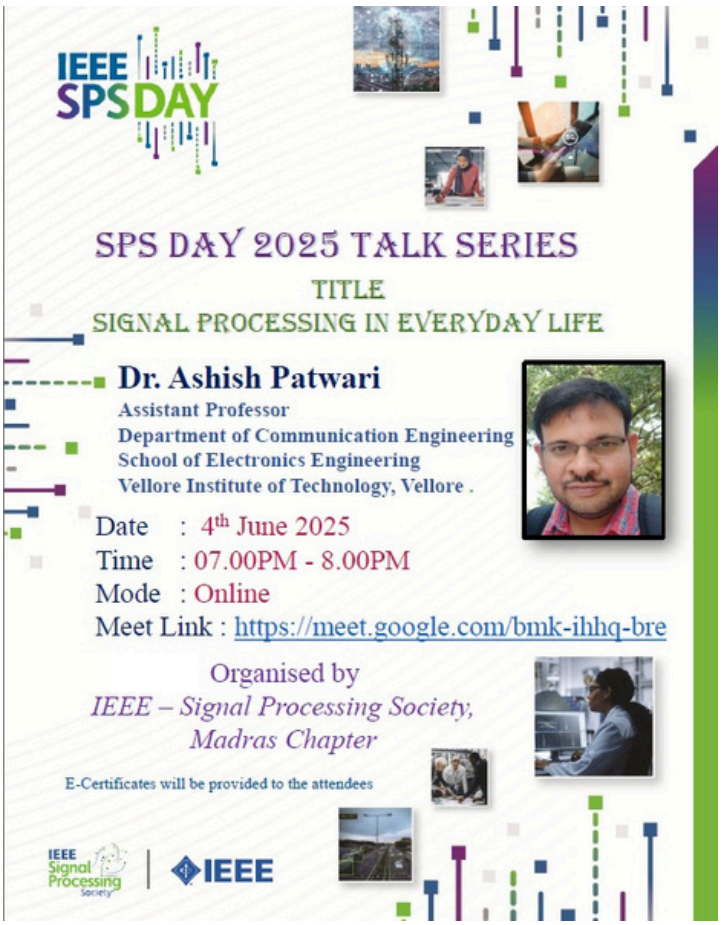
Dr. N. Venkateswaran , Professor, Dept. of ECE

The IEEE International Conference on Acoustics, Speech and Signal Processing (ICAASP) was held from **April 6 to 11, 2025.** Representing the IEEE SPS Madras Section, our esteemed chair **Dr. Venkateshwaran**, actively participated and **chaired a session** during the conference, contributing to the global exchange of ideas in signal processing.

SPS DAY TALK SERIES

In June 2025, the IEEE Signal Processing Society (SPS) Student Chapter hosted a virtual talk series highlighting key innovations in **signal processing, brain-computer interfaces, and intelligent communication.**

The series opened on June 2 with **Dr. Chandra Prakash from Sardar Vallabhbhai NIT**, addressing nearly 70 Biomedical Engineering students and faculty on **"Brain-Computer Interface" (BCI)**. He covered AI applications, machine learning types (supervised, unsupervised, reinforcement), and electrophysiology concepts with EEG and ECG brain signals—differentiating invasive, partially invasive, and non-invasive methods.



Dr. Prakash detailed BCI structure, human brain regions, and advanced neural networks like Recurrent Neural Networks (RNNs) and Long Short-Term Memory (LSTMs), illustrating practical applications from classification to machine translation. The session concluded with a lively Q&A.

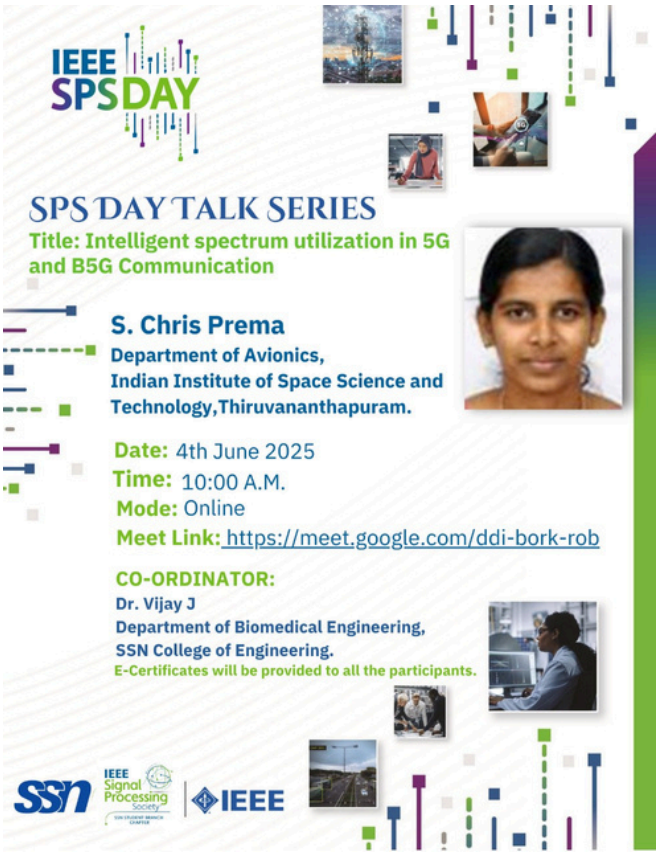
SPS DAY TALK SERIES

On June 4, two sessions complemented the series: Dr. Ashish Patwari of VIT Vellore engaged 25 BME and ECE students on “Signal Processing in Daily Life.”

His talk covered fundamentals such as sampling, aliasing, filtering, auto-correlation, FFTs, and adaptive filtering, highlighting biomedical applications like foetal signal extraction and reinforcing concepts through real-world examples.

Earlier that day, **Dr. S. Chris Prema from IIST Thiruvananthapuram addressed 65 BME attendees on “Intelligent Spectrum Utilization in 5G and Beyond.”**

He introduced Cognitive Radio (CR) systems—adaptive spectrum management through sensing, prediction, and modulation classification enhanced by machine learning. The talk included Device-to-Device communication (D2D), Non-Orthogonal Multiple Access (NOMA), Adaptive Modulation and Coding (AMC), and challenges like low signal-to-noise ratios and security issues, underscoring CR’s critical role in future wireless networks.



Collectively, these talks expanded interdisciplinary understanding and inspired participants by showcasing how signal processing and AI advance healthcare, communication, and emerging technologies.

ALUMNI TALK SERIES

The Department of Biomedical Engineering (BME), Sri Sivasubramaniya Nadar College of Engineering (SSN) conducted an exciting session under Alumni Talk Series titled **"Secret to 100% Scholarships for Higher Education"**, was organised by Augustine & Abirami, III Year BME. This interactive session, provided students with invaluable insights into securing full scholarships for pursuing higher education abroad.

RESEARCH INTERNSHIP EXPERIENCE OF MEMBERS

As final-year Biomedical Engineering students at SSN College of Engineering, my friend M. Krupa Sagar and I, Venkatesh M, are undertaking a research internship at **Delft University of Technology (TU Delft)**, Netherlands, from **February 25 to April 4, 2025.** Our work focuses on developing and refining an Upper Arm Prosthetic Simulator aimed at improving movement analysis, control mechanisms, and adaptability of upper limb prosthetics.

Guided by **Dr. Gerwin Smit and Dr. J. van Frankenhuyzen**, we are designing biomechanical simulation models to enhance real-time responsiveness of prosthetic devices. A major part of our approach involves integrating **3D printing using Fused Deposition Modeling (FDM)**, enabling rapid prototyping of prosthetic components.

We are also applying our background in signal processing and machine learning to improve the precision and efficiency of prosthetic simulations. By processing real-time data and employing intelligent algorithms, we aim to push prosthetic technology into a more modern, responsive, and user-friendly space. One of the most rewarding aspects of this internship is the collaboration with experts in TU Delft's Bio-Mechanical Engineering Department. We're involved in hands-on testing and validation, refining prototypes with direct feedback and insights.

This experience has allowed us to apply our skills in biomechanics, AI-driven control systems, and signal processing to tackle real-world healthcare challenges. It's a great example of how biomedical engineering thrives at the intersection of multiple disciplines—and how innovative technology can improve the quality of life for prosthetic users worldwide.

RESEARCH INTERNSHIP EXPERIENCE OF MEMBERS

As a final-year Biomedical Engineering student at SSN College of Engineering, I, Augustine Wisely Bezalel, am currently pursuing a research internship at the **University Medical Center Groningen (UMCG), Netherlands**, from **June 10 to August 8, 2025.** My work focuses on advancing neuroimaging-based biomarkers for understanding cognitive decline, with an emphasis on Peak Width of Skeletonized Mean Diffusivity (PSMD) as a diagnostic tool.

Guided by **Dr. Sofia Marcolini from UMCG's Neuroimaging and Cognitive Neuroscience group**, my research involves analyzing advanced MRI datasets to investigate microstructural brain changes associated with vascular conditions like atherosclerosis. By refining preprocessing pipelines in FSL, I aim to extract high-precision diffusion metrics to help predict and monitor cognitive impairments.

A key part of my work combines biomedical image processing with statistical and machine learning models to improve detection of subtle white matter changes. This integration of computational techniques and clinical imaging supports the translation of neuroimaging findings into practical tools.

During the internship, I also had the opportunity to connect with PhD students **Shuqi Wang and Tâm Johan from EPFL, Switzerland .** Their insights into computational neuroscience were truly eye-opening.

RESEARCH INTERNSHIP EXPERIENCE OF MEMBERS

As a final-year Biomedical Engineering student at SSN College of Engineering, I, Abirami T, pursued a research internship at **Carnegie Mellon University (CMU), USA,** during June–July 2025 in the Software and Societal Systems Department (S3D). My work focused on AI, biomedical signal processing, and human-centered design, with exposure to Multimodal Machine Learning, Brain-Computer Interfaces (BCIs), and Medical AI systems.

Under the guidance of Turing Award Laureate **Dr. Raj Reddy**, and mentored by **Dr. Sudershan Boovaraghavan**, I explored sensor fusion and cross-modal learning. With **Mr. Praveen Garimella**, I deepened my understanding of machine learning, while my collaboration with **Dr. Naveena Yanamala** involved translational AI research in women's health.

I participated in EEG-based BCI studies and an AR/VR-based cognitive performance study using the Meta Quest 4 headset to analyze stress responses in simulated environments such as public speaking. I also contributed to the development of AI-driven personalized health monitoring systems, with results to be featured in upcoming documentation.

RESEARCH INTERNSHIP EXPERIENCE OF MEMBERS

At the **National Institute of Ocean Technology (NIOT)**, I , Monish Final year at the Department of Electrical & Electronics Engineering worked on linking rugged marine instrumentation with modern computing power from the 2nd of June 2025 to 30th of June, 2025. My project involved integrating a **Campbell Scientific CR1000X Data Logger** with a Raspberry Pi 5 to enable real-time tracking of ocean conditions. It was a mix of coding, hardware interfacing, and fine-tuning communication protocols so the two systems could communicate flawlessly.

I learned how to handle instruments built to survive harsh marine environments, where reliability is non-negotiable. Calibrating sensors and cleaning raw data streams turned scattered numbers into a coherent story of the sea. The work exposed me to the collaborative environment of engineers, scientists, and technicians working toward a common goal. Beyond technical growth, it gave me a deeper appreciation for engineering that thrives under pressure where every design choice must balance out precision, robustness, and real-world conditions.

RESEARCH INTERNSHIP EXPERIENCE OF MEMBERS

From **December 2024 to January 2025**, I, Augustine and Abirami Interned at the **Department of Neuroimaging and Interventional Radiology, NIMHANS**. We gained hands-on exposure to advanced clinical imaging modalities, including 3T CIMA and VIDA MRI scanners, PET, CT, hybrid MRI-PET/CT-PET systems, X-ray, and ultrasound, observing and participating in real-time diagnostic imaging workflows. Our work also involved the end-to-end processing of Echo Planar Spectroscopic Imaging (EPSI) datasets using the MIDAS Pipeline Toolkit, performing brain parcellation and region-specific masking with FSL and SPM to enable quantitative neuroimaging and metabolic analysis. This experience enriched our technical skills while bridging clinical practice with research-driven imaging analytics.

RESEARCH INTERNSHIP EXPERIENCE OF MEMBERS

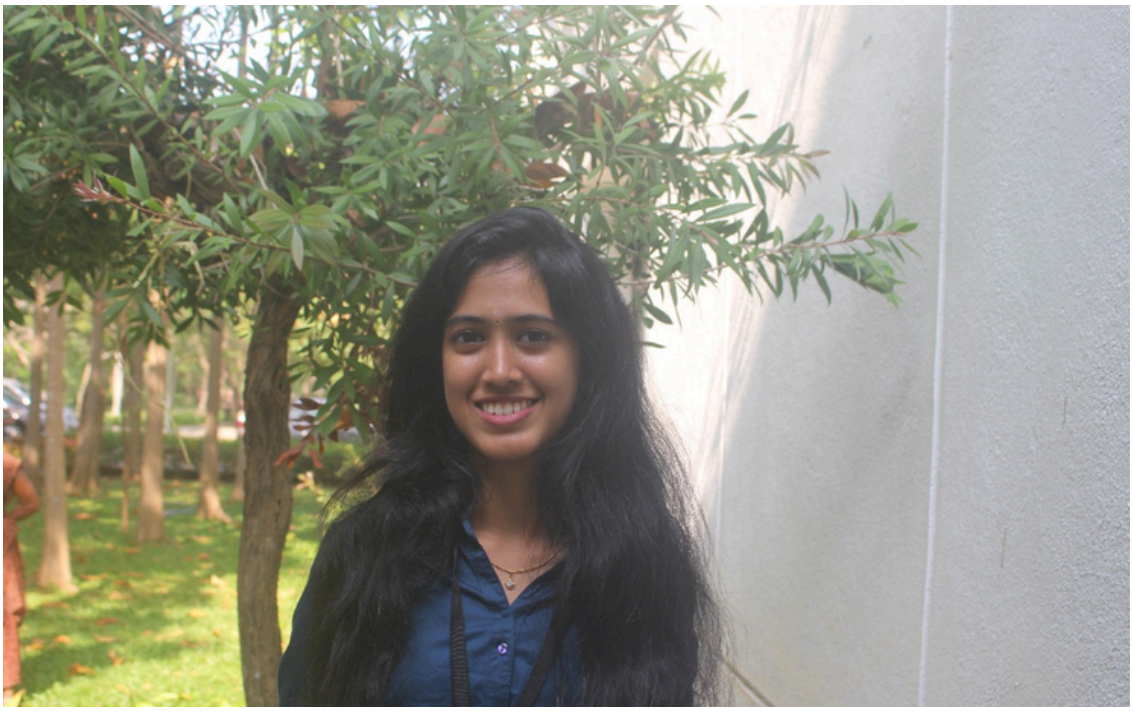
This summer, we **(Varsha Valliappan ,Rasi R , Maanasvini Anand - BME-III)** had a remarkable opportunity to deepen our understanding of biomedical signal processing through an enriching internship at **Madras Institute of Technology (MIT), Anna University**. Under the expert guidance of **Dr.Sabitha Ramakrishnan,** our team delved into cutting-edge research on physiological signal analysis for medical applications. We explored advanced machine learning and deep learning techniques to detect epileptic seizures from EEG signals, identify drowsiness, and classify gestures and activities from EMG signals.

A key highlight of our experience was the illuminating one-day lab visit to **Anna University**, where we had the privilege of meeting **Dr. S. Poonguzhali**, getting hands-on experience in retrieving signals and also the projects/patents they've been working on. Her insights and expertise provided invaluable context to our work, bridging the gap between theoretical knowledge and real-world application. This internship has not only honed our technical skills but also inspired us to pursue innovative solutions in the field of physiological signal processing.

RESEARCH INTERNSHIP EXPERIENCE OF MEMBERS

I completed my 2-month summer internship at the **Biosensors Laboratory**, **Department of Applied mechanics and biomedical engineering, IIT Madras.** I worked for the **testing and validation of point of care digital readout devices using U-Bent Fibre optic sensors.** To add on to that, I also worked on characterizing a system for the detection of signals buried in noise using a lock-in amplifier setup. Furthermore, I also got the precious opportunity to demonstrate the working of the device to PG and PhD students from various colleges in lieu of a DHR workshop 'Biomolecules in healthcare'.

~Sharadha



ACHIEVEMENTS OF IEEE SPS SSN

1. The IEEE SPS has sanctioned **150 USD** as a **growth reward** to pose the various technical events.

2. A sum of **USD 4950 (RS.412038.00)** has been sanctioned by IEEE Signal Processing Society , USA **to organize AI-Based Medical System Design** for Biomedical signals.

3. **Dr. Vijay Jeyakumar,** Associate Professor in the Department of Biomedical Engineering (BME), along with his mentee **Ms. Eliane Loza**—Biomedical Engineering student and Academic Affairs Director, **AEIB PUCP 2025 at Pontificia Universidad Católica del Perú**—have received a grant of **USD 4,000** under the **Mentoring Experiences under Youth Representation (ME-UYR) programme** of IEEE SPS for their project titled **"AI-based Non-Contact Vital Monitoring for Improved Tele-Consultation."** As part of the programme, Ms. Eliane Loza visited the BME Department at SSN College of Engineering (SSNCE), where she spent a week collecting data, and during her visit, she also had the opportunity to interact with **the Principal and Dr. A. Kavitha**, Professor, on 15 April 2025.

4. **Dr. Vijay Jeyakumar,** Associate Professor in the Department of Biomedical Engineering (BME), faculty cooridinator of IEEE SPS SSN SB, received an outstanding **Intellectual Property Award** from **IEEE Madras section on 9/08/2025**

OUTSIDE WORLD INTERACTION OF SPS MEMBERS OF SSN

"

As a first year at the Department of Biomedical Engineering , I had the opportunity to apply and received a funding of **Rs.16,000** to work on the project titled **" Determination of Gamma radiation from Pallikaranai Dumpyard"**. The paper for this project was then submitted and accepted to be presented at **The 11th International Conference on High Level Environmental Radiation Areas (ICHLERA-11)** conducted at Sunway University at Kuala Lumpur, Malaysia.

~Augustine W Bezalel

As a freshman at SSN College of Engineering and an eager SPS member, I presented my first research paper titled **"A New Hybrid Model for Prediction of Drug-Target Interaction Using Deep Learning Techniques"** at **ICTEST 2025** in Kochi. This work combined LSTM, GRU, and attention-based RNN architectures to tackle challenges in drug discovery through improved computational biology methods. Presenting at this notable IEEE-sponsored conference changed my perspective, boosted my confidence, improved my technical and presentation skills, and motivated me to seek further research opportunities and future publications in artificial intelligence and healthcare innovations.

~ Aravindaa Krishnan M

OUTSIDE WORLD INTERACTION OF SPS MEMBERS OF SSN

"

.

I was selected to be a nominee for the **Young Achiever Award 2024-25** from The **Rotary International District 3233**. I submitted my paintings on a whim not expecting to actually be receiving the award. I am truly honored to receive the **Young Achiever Award 2024-25 from Rotary International District 3233** for my excellence in Painting & art. This recognition is a significant milestone in my artistic journey, and I am incredibly grateful for the encouragement and support from my parents, mentors, peers, and well-wishers.

The **NAVARATNA Conference** was an unforgettable experience, offering the opportunity to learn from some of the most distinguished leaders across various fields. I had the privilege of attending sessions featuring **Dr R. Narayanan, Chairman of ISRO - Indian Space Research Organization, and Soumya Swaminathan, Chief Scientist** at the World Health Organization, whose insights on innovation, dedication, and perseverance were truly inspiring.

~Abirami T

OUTSIDE WORLD INTERACTION OF SPS MEMBERS OF SSN

- **TEDx NapierBridge Crew Selection**

  I was recently selected to be a part of the TEDx NapierBridge Countdown 2025 crew after successfully clearing interviews and selection rounds. I am looking forward to contributing to the team and being part of this event. You can find more details about TEDx NapierBridge at *https://www.youtube.com/watch?v=doNHOpeczUU*

SISEA Internship and Project

During my SISEA program internship at **MIT**, I collaborated with a team from Thyagaraja College, Madurai, on a project titled **"A Comprehensive Deep Learning Pipeline for Automated Dental Caries Segmentation and Evaluation."** We performed a comparative analysis of six deep learning models for detecting and segmenting dental caries. The project demonstrated the effectiveness of the DeepLabv3+ with ResNet model, highlighting my experience in applying AI to medical imaging.

International Conference Paper Presentation

I had the honor of presenting my research paper at the international conference **"Confluences in Language and Literature Pedagogies."** The event was organized by the Department of English at Sri Sivasubramaniya Nadar (SSN) College of Engineering. This experience provided me with a valuable opportunity to share my research in a professional setting.

~Leelasri B

OUTSIDE WORLD INTERACTION OF SPS MEMBERS OF SSN

My aspiration to pursue a master's degree began in 11th grade and led me to research programs extensively, focusing on Germany, the Netherlands, Sweden, and Finland for their strong research ecosystems and global opportunities. Taking a gap year allowed me to prepare my applications, secure recommendations, and craft my statement of purpose without pressure. I ultimately chose TU Delft for its global reputation, ranking 11th in engineering, and the Netherlands' thriving biomedical landscape.

I began my professional journey at Flynet Technologies, a startup creating an XR-based educational platform for medical students. As an HCI intern, I improved interaction design and refined learning content to enhance user engagement. Later, as a Product Research Strategist, I worked across both technical and strategic aspects, from developing immersive modules to aligning product features with market needs.

This year at Flynet was both a professional launchpad and a personal growth experience, equipping me with adaptability, problem-solving skills, and the confidence to navigate diverse challenges, qualities I am eager to bring into my master's studies.

~Thrisha

OPPORTUNITIES AT SPS

1. *IEEE SPS Scholarship Program*

The IEEE Signal Processing Society (SPS) Scholarship Program is a prestigious opportunity for students pursuing signal processing education. It awards up to **US$7,000** for up to three years of consecutive support, helping students advance their academic and research goals in the field.

- **Application Period:** Opens March 1 and closes June 30 annually.
- **Notification Date:** Applicants are typically informed by September 30.
- **Eligibility**: Must be an SPS member at the time of application.
- **Additional Opportunities:** SPS members may also qualify for broader IEEE scholarships and fellowships, such as the IEEE Life Members Graduate Study Fellowship in Electrical Engineering.

2.Signal Processing Mentorship Academy (SigMA) Program

The **IEEE SPS SigMA Program** pairs undergraduate or graduate student members with experienced mentors from different institutions (often different countries) for a nine-month collaborative research project, aiming for a joint publication and presentation at ICASSP.

- **Application Period Mentors:** Apply by 14 September 2025
- **Project Proposals:** Submit by 2 November 2025
- **Notification:** Projects start January 2026.
- **Eligibility:** Must be an IEEE SPS member in good standing. Mentor–mentee pairs must be from different institutions. One proposal per participant.
- **Benefits:** Travel funding to attend ICASSP and optionally visit mentor's lab. Joint publication and presentation opportunities

EVENTS OF IEEE SPS SSN (2025-2026)

Event	Event Date/Period
Inauguration of IEEE SPS SSN SB	13/10/2025
Monopoly event	Last week of August 2025
AI-Based Medical System Design for Biomedical Signals Workshop	First week of September
SPS Cup Hackathon	October, 2025
IEEE Day	Second week of October, 2025
Seasonal School	Third week of September, 2025
Government Schools Outreach program	November, 2025
MathWorks Workshop	First week of Februrary, 2026
SPS Day	Last week of May 2026

EVENT CALENDAR OF IEEE SPS(2025-2026)

Event	Event Date/Period
New Zealand Central North/South Chapter Event	10/08/2025
Northeast Brazil SPS Chapter Event	11/08/2025
Digital Camera Signal Processing, New South Wales Chapter	17/08/2025
Call for Proposals: 2026 Signal Processing Cup	17/08/2025
Plenary Talk by Dr. Piotr Żelasko	27/08/2025
Plenary Talk by Dr. Musa Furkan Keskin	28/08/2025
14th Int'l Symposium on Image and Signal Processing and Analysis (ISPA)	25/08/2025
Major Symposium in Albuquerque, NM	31/08/2025–05/09/2025
Call for Nominations: TMI Best Paper Award	01/09/2025
Türkiye Chapter: Generative Multi-Agent Q-Learning	02/09/2025
Plenary Talk by Dr. Ayush Bhandari	04/09/2025
Call for Mentors, SPS SigMA Program	14/09/2025
Call for Papers: ICASSP 2026	17/09/2025
ICASSP 2026, Barcelona, Spain	04/05/2026–08/05/2026

A SINCERE GRATITUDE TO THE IEEE SPS SSN 2024–2025 TEAM

"The strength of the team is each member. The strength of each member is the team."
— Phil Jackson

As we step into a new academic year, how can we forget to acknowledge the office bearers and the committee members of the Signal Processing Society?

So yes! Let us pause and extend our heartfelt gratitude and sincere appreciation to the outgoing office bearers and core committee members for their outstanding service, leadership, and unwavering commitment throughout the past year.

Your dedication, vision, and collaborative spirit have played a pivotal role in driving our mission forward and achieving the milestones we are proud of today. Your efforts never went unnoticed. You upheld the values of professionalism, teamwork, and integrity in all that you did.

Each of you brought not just your skills and experience to the table, but also a sense of unity, purpose, and perseverance that inspired everyone around you. You have left a legacy which we are privileged to carry forward.

The office bearers – Their planning and flawless efforts need no mention – from hands-on workshops, webinars, hackathons and other events. Each event was planned and executed meticulously with relevance to the needs of both students and faculty. They had a spirit of oneness, a mind of research, and a heart pounding to promote the wellness of society.

The event management team – behind every successful event, these people work silently for smooth functioning.

The photography team – they capture precious moments, freezing memories in time.

A SINCERE GRATITUDE TO THE IEEE SPS SSN 2024–2025 TEAM

The social media team – they ensure each event's information reaches the student community.

The content and editorial team – they rule the world of grammar and precision.

The design team – the creative side of our committee, whose imagination knows no boundaries.

The web development team – they code and debug all night to ensure a good user experience.

Your ability to adapt to changing circumstances, take decisive action, and maintain a positive environment has left a lasting impact. From strategic planning to meticulous execution, every initiative under your guidance was marked by thoughtful preparation and a commitment to excellence.

As we now welcome a new team to take the reins, we do so with gratitude for the strong foundation you have laid. We hope to make you proud as we continue the journey you began and take SPS to greater heights.

Once again, thank you for your hard work, your passion, and your invaluable contributions. We wish you the very best in your future endeavors and hope you will remain connected in the journey ahead.

With sincere gratitude,

Office bearers and Committee members
IEEE SPS SSN 2025–2026

BID ADIEU TO THE OFFICE BEARERS & CORE COMMITTEE OF '24 - '25

Shri Thrisha
BME '24
Ex-Chair

Venkatesh M
BME '25
Chair

Jothisa K
BME '25
Vice Chair

Karthick Siva R
BME '25
Secretary

Swaati S
BME '25
Treasurer

Jeya Marshalin M
BME '25
Joint Secretary

Jesse Samuel Stephen R
BME '25
Core Committee
Co-Ordinator

Jeevan J
BME '25
Webmaster

BID ADIEU TO THE OFFICE BEARERS & CORE COMMITTEE OF '24 - '25

Venkatesan S
BME '26
Design

Monish Kumar S
EEE '26
Design

Bharathi K
EEE '26
Event Management

Pradeep K M
CSE '26
Event Management

Priyadarshini Sivaraja
BME '26
Photography & Video

Sharadha G
BME '26
Photography & Video

Rachel Tania
ECE '26
Social Media & Marketing

Rupadarshini R
ECE '26
Social Media & Marketing

EDITORS OF THIS NEWSLETTER

Aravindaa Krishnan
BME'28

Aadarsh Ram VK
BME'28

Priscilla Christy
BME'28

Anish Kumar
BME'28

Yuva S
BME'28

Anindhitha A
BME'27

Signal Surge - 2025 Edition