

Event 1: IEEE SPS Seasonal School Signal Processing in Medical Imaging: From Engineering to Clinical Diagnostics

Duration	21–25 July 2025
Venue	Velagapudi Ramakrishna Siddhartha School of Engineering, Siddhartha Academy of Higher Education (Deemed to be University), Vijayawada
Organized By	Department of Electronics and Communication Engineering
In Association With	IEEE Hyderabad Section and IEEE Signal Processing Society Hyderabad Chapter
Participants	74 Participants (53 Offline + 21 Online)

The Department of Electronics and Communication Engineering, Velagapudi Ramakrishna Siddhartha School of Engineering, Siddhartha Academy of Higher Education (Deemed to be University), successfully organized the prestigious IEEE Signal Processing Society (SPS) Seasonal School entitled “*Signal Processing in Medical Imaging: From Engineering to Clinical Diagnostics*” from 21st to 25th July 2025.

The five-day IEEE Seasonal School (S3P) was designed to bridge the gap between modern engineering techniques and clinical diagnostic applications. The programme focused on emerging research in medical imaging, biomedical signal processing, artificial intelligence, machine learning, deep learning, and healthcare technologies. Distinguished researchers from IITs, NITs, IIITs, AIIMS, medical institutions, and industry shared their expertise through keynote lectures, technical sessions, clinical discussions, and hands-on demonstrations.

The Seasonal School attracted undergraduate students, postgraduate students, research scholars, faculty members, and industry professionals from different institutions. The programme provided an outstanding platform for interdisciplinary learning by bringing together engineering researchers and medical practitioners to address real-world healthcare challenges through advanced signal processing techniques.

Objectives

The IEEE SPS Seasonal School was organized with the following objectives:

- To introduce participants to advanced signal processing techniques used in modern medical imaging applications.
- To expose participants to real-world clinical diagnostic challenges through interactions with medical professionals.
- To provide practical exposure to Artificial Intelligence, Machine Learning, FPGA, and software tools used in healthcare.
- To encourage interdisciplinary research between engineering and medical sciences.

- To create networking opportunities with eminent academicians, clinicians, IEEE volunteers, and researchers.
- To motivate students towards research, innovation, and professional development through IEEE activities.

Inaugural Session

The IEEE SPS Seasonal School commenced with an inaugural ceremony attended by distinguished dignitaries from Siddhartha Academy of Higher Education (Deemed to be University), IEEE Hyderabad Section, and IEEE Signal Processing Society Hyderabad Chapter.

The programme began with the lighting of the ceremonial lamp followed by the welcome address. The inaugural session emphasized the growing importance of interdisciplinary research in healthcare, highlighting the role of signal processing, artificial intelligence, and medical imaging in improving clinical diagnosis and patient care.

The inaugural ceremony was graced by:

- Dr. P. Venkateswara Rao
Honourable Vice Chancellor, Siddhartha Academy of Higher Education (Deemed to be University), Vijayawada.
- Dr. D. Venkata Rao
Professor & Head, Department of Electronics and Communication Engineering and Dean, School of Engineering.
- Mr. Mandaleeka G. P. L. Narayana
Chair, IEEE Hyderabad Section.
- Mr. Bala Prasad Peddigari
Vice Chair, IEEE Hyderabad Section.
- Mr. N. Venkatesh
Secretary, IEEE Hyderabad Section.
- Mr. Jasti Sreenivas
Treasurer, IEEE Hyderabad Section.
- Dr. Yarlagadda Padma Sai
Chair, IEEE SPS Hyderabad Chapter.
- Dr. Y. Vijayalata Reddy
Past Chair, IEEE Hyderabad Section.

The dignitaries appreciated the initiative taken by the Department of ECE in organizing an IEEE Seasonal School on a highly relevant and emerging interdisciplinary theme. They encouraged students and researchers to actively participate in IEEE activities, collaborate with researchers across disciplines, and contribute to technological innovations that positively impact society.

Day 1 – 21 July 2025

The first day of the Seasonal School introduced participants to the importance of integrating engineering concepts with medical diagnostics. The technical sessions focused on artificial intelligence, machine learning, and biomedical signal processing for healthcare applications.

The first invited lecture was delivered by **Dr. Priyanka Kokil**, Indian Institute of Information Technology Design and Manufacturing (IIITDM), Kancheepuram, on “*Machine Learning in Ophthalmology*”. The session demonstrated how machine learning techniques assist in the early detection of eye diseases using retinal imaging and intelligent diagnostic systems.

The second technical lecture was delivered by **Dr. Kiran Kumar Gurralla**, National Institute of Technology Andhra Pradesh, on “*Signal Processing for Biomedical Engineering*”. The speaker discussed biomedical signal acquisition, preprocessing, feature extraction, and their applications in healthcare monitoring and diagnostic systems.

The inaugural day concluded with an interactive hands-on session by **Dr. A. Ravi Raja**, Siddhartha Academy of Higher Education (Deemed to be University), who demonstrated the practical implementation of Artificial Intelligence techniques for medical diagnostics. Participants gained hands-on experience in applying AI models to healthcare-related problems and interacted extensively with the resource person during the practical session.

Day 2 – 22 July 2025

The second day of the IEEE SPS Seasonal School focused on the application of artificial intelligence and deep learning techniques for medical image analysis and clinical diagnosis. The sessions combined theoretical concepts with practical demonstrations, enabling participants to understand the growing role of intelligent systems in healthcare.

The first technical session was delivered by **Dr. Rama Krishna Gorthi**, Professor, Indian Institute of Technology Tirupati (IIT Tirupati), on the topic “*Neural Networks and Deep Learning for Medical Image Classification*”. The lecture introduced participants to modern deep learning architectures used for disease detection and medical image classification. Various convolutional neural network models, transfer learning techniques, and their applications in radiology and pathology were discussed through practical case studies.

The second lecture was presented by **Dr. Anil Kumar Vuppala**, Associate Professor, International Institute of Information Technology Hyderabad (IIIT Hyderabad), on “*AI in Speech for Clinical Diagnosis*”. The speaker explained how speech processing techniques combined with artificial intelligence can assist in diagnosing neurological disorders, speech impairments, and respiratory diseases. Participants gained insights into speech feature extraction, classification techniques, and current research trends in clinical speech analytics.

The afternoon session was conducted by **Dr. T. V. Sainath Gupta**, Assistant Professor, Siddhartha Academy of Higher Education (Deemed to be University), on “*ML-based Pre-diagnostic Tool for Staging Fibrosis in NAFLD*”. This hands-on session demonstrated the implementation of machine learning models for liver fibrosis staging using medical data. Participants worked with datasets, explored preprocessing techniques, implemented classification algorithms, and evaluated model performance.

The sessions concluded with active interaction between participants and resource persons, where several research problems and practical applications of AI in healthcare were discussed.

Day 3 – 23 July 2025

The third day emphasized hardware implementation, FPGA technologies, medical imaging systems, and interdisciplinary research.

The first session was handled by **Dr. G. Kishore Kumar**, Assistant Professor, Siddhartha Academy of Higher Education (Deemed to be University), who conducted a practical session on *“FIR Filter Design and Implementation using Xilinx Vitis Model Composer”*. Participants designed digital filters and implemented them using FPGA-based development tools, gaining practical exposure to hardware realization of signal processing algorithms.

The second technical lecture was delivered by **Dr. Srinivasulu Jogi**, Assistant Professor, National Institute of Technology Tiruchirappalli (NIT Trichy), on *“Enhancing Healthcare Systems with FPGA Technology”*. The speaker explained the advantages of FPGA-based embedded systems in medical instrumentation, highlighting applications requiring high-speed, low-power, and real-time signal processing.

An interactive activity titled *“Sharing Research Insights”* was conducted by **Dr. D. Venkata Rao**, Professor and Head, Department of Electronics and Communication Engineering, Dean, School of Engineering, Siddhartha Academy of Higher Education (Deemed to be University). He encouraged participants to identify research gaps, formulate innovative research problems, and develop interdisciplinary collaborations aligned with emerging healthcare technologies.

The final lecture of the day was delivered by **Dr. Rajasekhar Rekapalli**, Associate Professor of Neurosurgery, All India Institute of Medical Sciences (AIIMS), Mangalagiri, on *“Imaging Adjuncts in Operative Neurosurgery”*. The speaker presented real clinical case studies demonstrating the importance of advanced imaging techniques during neurosurgical procedures. The session enabled participants to understand the practical challenges faced by clinicians and the role of engineering innovations in improving surgical precision and patient outcomes.

Day 4 – 24 July 2025

The fourth day combined IEEE professional activities with advanced medical image processing techniques and practical programming sessions.

The day commenced with an interactive IEEE activity conducted by **Dr. Turimerla Pratap**, IEEE Student Branch Counsellor, Department of Electronics and Communication Engineering, Siddhartha Academy of Higher Education (Deemed to be University). The session introduced participants to the IEEE EPICS programme, highlighting community-oriented engineering projects and opportunities for students to contribute towards societal development through IEEE initiatives.

The keynote technical session was delivered by **Dr. Balasubramanyam Appina**, Assistant Professor, Indian Institute of Technology Indore (IIT Indore), on *“Subjective and Objective Image Quality Assessment Methods for Medical Image and Video Processing”*. The lecture discussed quantitative image quality metrics, perceptual assessment techniques, objective evaluation parameters, and their applications in medical diagnostics.

The afternoon hands-on session was conducted by **Dr. G. Surya Narayana**, Associate Professor, Siddhartha Academy of Higher Education (Deemed to be University), on *“Hands-On with NumPy: Exploring Medical Images as Arrays”*. Participants learned image manipulation using Python, matrix operations, histogram analysis, filtering techniques, and pixel-level processing using NumPy libraries.

The final lecture of the day was presented by **Dr. Devikanth Lanka**, Sibar Institute of Dental Sciences, Guntur, on “*Dental Imaging: From Engineering to Clinical Diagnosis*”. The speaker explained various dental imaging modalities and emphasized how engineering techniques contribute towards accurate diagnosis, treatment planning, and improved patient care.

Day 5 – 25 July 2025

The concluding day of the IEEE SPS Seasonal School focused on future healthcare technologies, medical imaging advancements, anatomy, and next-generation communication systems.

The first technical lecture was delivered by **Dr. V. Kalyan Chakravarthy**, Professor of Pathology, Dr. Pinnamaneni Siddhartha Institute of Medical Sciences and Research Foundation, on “*Emerging Trends in Medical Imaging and Patient Care*”. The speaker highlighted recent developments in pathology, digital diagnostics, precision medicine, and intelligent healthcare systems.

The second lecture was presented by **Dr. Kishore S**, Assistant Professor of Anatomy, All India Institute of Medical Sciences (AIIMS), Mangalagiri, on “*Imaging the Micro World: Lessons for Engineers from Human Anatomy*”. The session provided participants with valuable clinical insights into anatomical imaging and explained how engineering tools assist medical professionals in diagnosis and education.

The final technical session was delivered by **Prof. Kalpana Naidu**, Professor, National Institute of Technology Warangal, on “*5G-Enabled Communication Technologies for Advanced Healthcare Applications*”. The lecture discussed the role of next-generation wireless communication technologies in telemedicine, remote patient monitoring, intelligent hospitals, and future smart healthcare ecosystems.

Clinical Perspective Sessions

One of the distinguishing features of the IEEE SPS Seasonal School was the inclusion of dedicated clinical perspective sessions delivered by experienced medical professionals. These sessions enabled participants to understand the practical challenges encountered in hospitals and demonstrated how engineering innovations in signal processing, artificial intelligence, and medical imaging can significantly improve clinical decision making.

The interaction between clinicians and engineering researchers provided valuable insights into multidisciplinary research and emphasized the importance of collaborative efforts in developing intelligent healthcare solutions.

The following clinical experts shared their expertise during the programme:

- **Dr. Rajasekhar Rekapalli**, Associate Professor of Neurosurgery, AIIMS Mangalagiri, discussed the use of advanced imaging techniques in operative neurosurgery, highlighting the importance of real-time image guidance for improving surgical accuracy and patient safety.
- **Dr. V. Kalyan Chakravarthy**, Professor of Pathology, Dr. Pinnamaneni Siddhartha Institute of Medical Sciences and Research Foundation, explained recent developments in pathology-driven medical diagnostics and demonstrated how digital pathology is transforming modern healthcare.

- **Dr. Kishore S**, Assistant Professor of Anatomy, AIIMS Mangalagiri, provided an insightful lecture on anatomical imaging, illustrating how engineering concepts assist clinicians in understanding complex anatomical structures and improving medical education.
- **Dr. Devikanth Lanka**, Sibar Institute of Dental Sciences, Guntur, discussed modern dental imaging techniques and explained the importance of image-guided diagnosis in oral healthcare.

The clinical sessions received excellent feedback from participants as they successfully connected theoretical engineering concepts with real-world medical practice, encouraging interdisciplinary research and innovation.

Hands-on Learning Experience

A major attraction of the IEEE SPS Seasonal School was its extensive hands-on training programme. Unlike conventional workshops, the Seasonal School emphasized practical implementation of engineering concepts, allowing participants to apply theoretical knowledge through software and hardware-based exercises.

Participants gained practical exposure to:

- Artificial Intelligence based diagnostic model development.
- Machine Learning techniques for medical image analysis.
- FPGA implementation using Xilinx Vitis Model Composer.
- FIR filter design and realization.
- NumPy-based medical image manipulation and visualization.
- Medical image preprocessing, enhancement, and analysis.
- AI-assisted healthcare applications for disease diagnosis.
- Clinical data interpretation and biomedical signal analysis.

The practical sessions significantly enhanced participants' programming, analytical, and research skills while providing valuable experience with modern engineering tools used in healthcare applications.

Valedictory Session

The IEEE SPS Seasonal School concluded with a grand valedictory session and certificate distribution ceremony. The valedictory function was graced by distinguished academicians and medical professionals who appreciated the successful organization of the five-day programme and its multidisciplinary approach towards healthcare innovation.

The valedictory session was presided over by

- **Prof. Kalpana Naidu**, Professor, National Institute of Technology Warangal.

- **Dr. Kishore S**, Assistant Professor, AIIMS Mangalagiri.

The dignitaries congratulated all participants for their enthusiastic involvement throughout the programme and encouraged them to continue their research journey by actively participating in IEEE activities, publishing quality research, and collaborating with experts from multiple disciplines.

Certificates were distributed to all registered participants in recognition of their successful completion of the IEEE SPS Seasonal School.

Outcome and Impact

The IEEE SPS Seasonal School proved to be one of the flagship technical events organized by the IEEE Student Branch (STB64285) during the academic year. The programme successfully established an interdisciplinary learning environment where engineering students, research scholars, faculty members, clinicians, and IEEE professionals collaborated to address real-world healthcare challenges through advanced signal processing techniques.

Participants acquired comprehensive knowledge of modern medical imaging, biomedical signal processing, artificial intelligence, deep learning, FPGA technologies, healthcare communication systems, and clinical diagnostic methodologies. The practical demonstrations and hands-on sessions enabled participants to strengthen their implementation skills while the keynote lectures inspired them to explore emerging research areas in biomedical engineering.

The Seasonal School also provided an excellent networking platform where participants interacted directly with experts from IITs, NITs, IIITs, AIIMS, medical institutions, and the IEEE Hyderabad Section. The event motivated young researchers to pursue interdisciplinary research and actively contribute to IEEE technical activities at national and international levels.

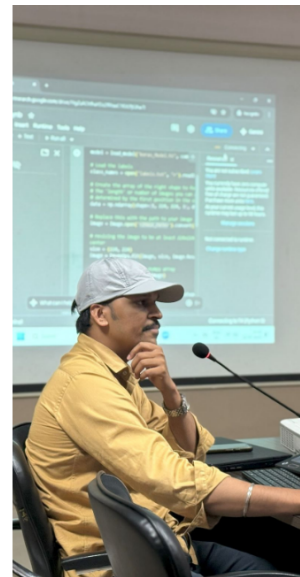
Participation Summary

- Offline Participants : 53
- Online Participants : 21
- Total Participants : 74
- Duration : Five Days
- Mode : Hybrid (Offline and Online)

Acknowledgements

The organizing committee expresses its sincere gratitude to the IEEE Hyderabad Section and the IEEE Signal Processing Society Hyderabad Chapter for their continuous encouragement and generous support in conducting the IEEE SPS Seasonal School. The Department of Electronics and Communication Engineering gratefully acknowledges the support extended by the management of Siddhartha Academy of Higher Education (Deemed to be University) for providing excellent infrastructure and organizational assistance. Special appreciation is extended to all distinguished speakers from IITs, NITs, IIITs, AIIMS, medical institutions, and industry for sharing their expertise and inspiring participants through highly interactive technical sessions.

Event Photographs





Event 2: A Battle of Brains, Bytes, and Python Python Quiz Competition

Occasion	IEEE Day Celebration 2025
Dates	13–16 October 2025
Venue	ECE Conference Hall
Faculty Coordinator	Dr. Turimerla Pratap
Participants	56 Registered Students (12 Finalists)

As part of the IEEE Day celebrations, the IEEE Student Branch (STB64285), Department of Electronics and Communication Engineering, organized a technical competition titled “*A Battle of Brains, Bytes, and Python*” to encourage students to strengthen their programming, analytical, and logical reasoning skills using Python.

The competition was conducted in three stages. The first round consisted of an online preliminary quiz covering Python fundamentals, syntax, and logical reasoning. The shortlisted participants advanced to the second round, where they solved hands-on programming problems designed to assess their coding skills and problem-solving abilities. The competition concluded with an exciting rapid-fire and debugging round that tested participants’ ability to solve programming challenges under time constraints.

The event witnessed enthusiastic participation from students across various departments and successfully promoted technical learning, innovation, and healthy competition. Participants demonstrated excellent programming skills while gaining valuable experience in algorithmic thinking and debugging techniques.

Prize Winners

- **First Prize (4,000):** N. Satheesh (ECE)
- **Second Prize (2,000):** G. Niharika (CSE)
- **Third Prize (1,000):** Lakshmi Bhuvana (CSE)

A total prize amount of **7,000** was distributed to the winners during the IEEE Day celebrations. The event concluded with the felicitation of winners and appreciation of all participants, volunteers, and faculty members for making the competition a grand success.



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**Department of
Electronics and Communication Engineering**



IEEE

FOR THE WINNERS
OF PYTHON QUIZ

A BATTLE OF BRAINS, BYTES, AND PYTHON

FIRST



N. SATHEESH (ECE)

SECOND

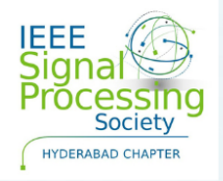


G. NIHARIKA (CSE)

THIRD



LAKSHMI BHUVANA (CSE)






Event 3: IEEE Xtreme 19.0 24-Hour Global Programming Competition

Competition	IEEE Xtreme 19.0
Organized By	IEEE Computer Society
Event Type	24-Hour Global Programming Competition
IEEE Student Branch	STB64285
Faculty Proctor	Dr. Turimerla Pratap
Institutional Participation	11 Student Teams

The IEEE Student Branch (STB64285), Department of Electronics and Communication Engineering, encouraged student members to participate in **IEEE Xtreme 19.0**, the world's largest global programming competition organized annually by the IEEE Computer Society. The competition brings together thousands of IEEE Student Members from universities across the world to solve complex programming and algorithmic challenges continuously over a period of 24 hours.

IEEE Xtreme provides an excellent platform for students to demonstrate their programming proficiency, logical reasoning, teamwork, and problem-solving abilities while competing against participants from different countries. The contest exposes students to real-world coding problems that require efficient algorithms, data structures, and optimization techniques under strict time constraints.

To promote participation, the IEEE Student Branch organized awareness sessions and guided eligible IEEE student members through the team formation and registration process. Dr. Turimerla Pratap served as the official IEEE Xtreme Team Proctor and coordinated all institutional activities related to the competition.

A total of **11 student teams** successfully represented the IEEE Student Branch (STB64285) in the prestigious IEEE Xtreme 19.0 Global Programming Competition. The participating teams were:

- InnovativeCoders
- RiseAndShine
- ElectroNauts
- OSCILLONAUTS
- Defenders
- TRIOTECH
- Risers

- Technovians
- FrequencyWala
- Infinityloop
- THECODEBLOODED

Participation in IEEE Xtreme significantly enhanced students' competitive programming skills, algorithmic thinking, software development practices, and collaborative problem-solving abilities. The event also motivated students to actively participate in future IEEE international competitions and strengthened the global presence of the IEEE Student Branch (STB64285).