



SPCOM 2026

International Conference on Signal Processing and Communications

July 16–18, 2026 · Indian Institute of Science, Bangalore

CONFERENCE BOOKLET

Plenary Talks · Invited Sessions · Tutorials · Paper Presentations



MESSAGE FROM THE GENERAL CHAIRS

On behalf of the organizing committee, we welcome you to the 16th edition of the International Conference on Signal Processing and Communications (SPCOM) at the Indian Institute of Science from July 16-18, 2026.

The first conference in the series was held in 1990, and it has been held every other year since 2010.

This time, we have an exciting technical program consisting of 2 plenary talks by Bruno Clerckx and Emil Björnson, 2 industry talks, 5 tutorials, and 12 paper sessions covering a wide range of topics from biomedical signal learning to 5G/6G signal processing and ISAC.

One of the unique features of SPCOM has been the large number of invited expert speakers, and this year we have four invited sessions on integrated sensing and communications, frontiers in communications, signal processing and networks, learning algorithms and their applications, and Indic language technologies.

SPCOM 2026 will also feature a panel discussion organized jointly with IEEE ComSoc and Signal Processing Society, along with an awards ceremony and a conference banquet to bring the community together.

Organizing such a large conference was only possible with the support of the entire organizing committee, which consists of the technical program chairs, tutorials chairs, plenary chair, invited sessions chair, finance chair, publicity chair, and publications chair.

We also thank IISc's student volunteers and the ECE department's technical assistants and staff for attending to every minor organizational detail.

We acknowledge the support of anonymous reviewers who helped review and select an excellent set of contributed papers, and we express our special thanks to the technical co-sponsors of the conference for their spontaneous and consistent support.

We also thank all the financial sponsors of the conference for their generous support, and IISc has been a pillar of institutional and financial support to SPCOM 2026.

We hope you have a productive and enjoyable SPCOM 2026!

General Co-chairs

K.V.S. Hari and Anindya Saha



With Gratitude to Our Esteemed Sponsors

PLATINUM SPONSORS



GOLD SPONSOR



SILVER SPONSORS



TECHNICAL CO-SPONSORS








International Conference on
Signal Processing and Communications

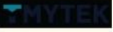
SPCOM 2026

July 16-18, 2026
Indian Institute of Science, Bangalore

PLATINUM SPONSORS







GOLD SPONSORS







SILVER SPONSORS









Program at a Glance

Time Slot	Day 1 — Thu 16 Jul	Day 2 — Fri 17 Jul	Day 3 — Sat 18 Jul
09:00 – 09:30	Registration <i>ECE Lobby</i>	—	—
09:30 – 11:00	Paper Sessions 111–113 <i>Venues: SP 1.20 · SP Building Side Foyer · ECE 1.07</i> <i>+ Invited Session 1 (ISAC)</i> <i>Venue: GJH</i>	Paper Sessions 211–213 <i>Venues: SP 1.20 · SP Building Side Foyer · ECE 1.07</i> <i>+ Invited Session 3 (Learning)</i> <i>Venue: GJH</i>	Tutorials T1, T2 <i>(2 parallel tracks)</i> <i>MP 20 · ECE 1.08</i>
11:00 – 11:30	Coffee Break <i>Faculty Hall</i>	Coffee Break <i>Faculty Hall</i>	Coffee Break <i>ECE HUT</i>
11:30 – 1:00 PM	Opening Ceremony <i>Plenary 1: Bruno Clerckx</i> <i>+ Industry Talk 1</i> <i>Faculty Hall</i>	Plenary 2: Emil Björnson <i>+ Industry Keynote 1</i> <i>Faculty Hall</i>	Tutorials T1, T2 <i>(continued)</i> <i>MP 20 · ECE 1.08</i>
1:00 – 2:30 PM	Lunch <i>Main Guest House</i>	Lunch <i>Main Guest House</i>	Lunch <i>Main Guest House</i>
2:30 – 4:00 PM	Paper Sessions 121–123 <i>Venues: SP 1.20 · SP Building Side Foyer · ECE 1.07</i> <i>+ Invited Session 2 (Frontiers)</i> <i>Venue: GJH</i>	Paper Sessions 221–223 <i>Venues: SP 1.20 · SP Building Side Foyer · ECE 1.07</i> <i>+ Invited Session 4 (Indic)</i> <i>Venue: GJH</i>	Tutorials T3, T4, T5 <i>(3 parallel tracks)</i> <i>ECE 1.08 · MP 20 · GJH</i>
4:00 – 4:30 PM	Coffee Break <i>ECE HUT</i>	Coffee Break <i>ECE HUT</i>	Coffee Break <i>ECE HUT</i>
4:30 – 6:00 PM	Best Paper Presentations <i>(2 parallel tracks)</i> <i>MP 20 · ECE 1.08</i>	Panel Discussion <i>Awards Ceremony</i> <i>GJH</i>	Tutorials T3, T4, T5 <i>(continued)</i> <i>ECE 1.08 · MP 20 · GJH</i>
7:30 – 9:30 PM	—	Conference Banquet <i>MGH Lawn</i>	—



Paper Presentation Sessions

Day 1 – Thursday, 16 July 2026

Venue	Session Slot 1 9:30 AM – 11:00 AM IST	Session Slot 2 2:30 PM – 4:00 PM IST
ECE 1.07	<u>Session 113</u> Wireless Network Performance Analysis <i>10 papers</i>	<u>Session 123</u> Biomedical Vision and Sensing <i>9 papers</i>
SP Building Side Foyer	<u>Session 112</u> Speech and Spoken Language Processing <i>12 papers</i>	<u>Session 122</u> Multimodal Learning and Prediction <i>12 papers</i>
SP 1.20 (TVS Lab)	<u>Session 111</u> Biomedical and Neural Signal Learning <i>16 papers</i>	<u>Session 121</u> 5G/6G Signal Processing and ISAC <i>15 papers</i>

Day 2 – Friday, 17 July 2026

Venue	Session Slot 1 9:30 AM – 11:00 AM IST	Session Slot 2 2:30 PM – 4:00 PM IST
ECE 1.07	<u>Session 213</u> Signal and Image Processing <i>12 papers</i>	<u>Session 223</u> Wireless Resource Optimization <i>12 papers</i>
SP Building Side Foyer	<u>Session 212</u> Secure and Terahertz Communication Systems <i>8 papers</i>	<u>Session 222</u> Vision and Sensor Analytics <i>12 papers</i>
SP 1.20 (TVS Lab)	<u>Session 211</u> Speech and Sensor Signal Processing <i>15 papers</i>	<u>Session 221</u> Communication Signal Processing and Coding <i>15 papers</i>



SECTION 2

Daily Schedules

Detailed programme for all three conference days

Day 1 • Thursday, 16 July 2026

Indian Institute of Science, Bangalore

09:00 – 09:30	Registration	ECE Lobby
09:30 – 11:00	<u>Interactive Presentations — Sessions 111, 112, 113</u>	SP 1.20 SP Building Side Foyer ECE 1.07
	<u>Invited Session 1: Integrated Sensing and Communications</u>	Golden Jubilee Hall (GJH)
11:00 – 11:30	Coffee Break	Faculty Hall
11:30 – 1:00 PM	<u>Opening Ceremony + Plenary Talk 1</u> Bruno Clerckx — "Analog Computing for Communications and Signal Processing" + Industry Talk 1	Faculty Hall
1:00 – 2:30 PM	Lunch	Main Guest House
2:30 – 4:00 PM	<u>Interactive Presentations — Sessions 121, 122, 123</u>	SP 1.20 SP Building Side Foyer ECE 1.07
	<u>Invited Session 2: Frontiers in Communications, SP, and Networks</u>	Golden Jubilee Hall (GJH)
4:00 – 4:30 PM	Coffee Break	ECE HUT
4:30 – 6:00 PM	Best Paper Presentations (2 parallel sessions)	MP 20 ECE 1.08



Day 2 · Friday, 17 July 2026

Indian Institute of Science, Bangalore

09:30 – 11:00	<u>Interactive Presentations — Sessions 211, 212, 213</u>	SP 1.20 SP Building Side Foyer ECE 1.07
	<u>Invited Session 3: Learning Algorithms and Their Applications</u>	Golden Jubilee Hall (GJH)
11:00 – 11:30	Coffee Break	Faculty Hall
11:30 – 1:00 PM	<u>Plenary Talk 2</u> Emil Björnson — "Near-Field Beamfocusing: From Theory to Practice" + Industry Keynote 1	Faculty Hall
1:00 – 2:30 PM	Lunch	Main Guest House
2:30 – 4:00 PM	<u>Interactive Presentations — Sessions 221, 222, 223</u>	SP 1.20 SP Building Side Foyer ECE 1.07
	<u>Invited Session 4: Indic Language Technologies</u>	Golden Jubilee Hall (GJH)
4:00 – 4:30 PM	Coffee Break	ECE HUT
4:30 – 5:00 PM	Panel Discussion (Industry) — IEEE ComSoc + SPS	Golden Jubilee Hall (GJH)
5:00 – 5:30 PM	Awards Ceremony	Golden Jubilee Hall (GJH)
7:30 – 9:30 PM	Conference Banquet	MGH Lawn



Day 3 · Saturday, 18 July 2026

Indian Institute of Science, Bangalore

09:30 – 11:00	<u>Tutorial T1: Mathematics of Large Models in ML</u>	MP 20
	<u>Tutorial T2: Planning a High-Performance CNPN with 5G/6G</u>	ECE 1.08
11:00 – 11:30	Coffee Break	ECE HUT
11:30 – 1:00 PM	<u>Tutorial T1 (continued): Mathematics of Large Models in ML</u>	MP 20
	<u>Tutorial T2 (continued): Planning a High-Performance CNPN with 5G/6G</u>	ECE 1.08
1:00 – 2:30 PM	Lunch	Main Guest House
2:30 – 4:00 PM	<u>Tutorial T3: Quantum Information Processing</u>	ECE 1.08
	<u>Tutorial T4: Revisiting 3D Vision in the Deep Learning Era</u>	MP 20
	<u>Tutorial T5: IT-PIR — Constraints and Relaxations</u>	Golden Jubilee Hall (GJH)
4:00 – 4:30 PM	Coffee Break	ECE HUT
4:30 – 6:00 PM	<u>Tutorial T3 (continued): Quantum Information Processing</u>	ECE 1.08
	<u>Tutorial T4 (continued): Revisiting 3D Vision</u>	MP 20
	<u>Tutorial T5 (continued): IT-PIR</u>	Golden Jubilee Hall (GJH)



SECTION 3

Plenary Talks

Distinguished keynote lectures by world-leading researchers

Plenary Talk 1

Analog Computing for Communications and Signal Processing

Thursday, 16 July 2026 · 11:30 AM – 1:00 PM IST · Faculty Hall

Prof. Bruno Clerckx

Imperial College London, UK

Title: *Analog Computing for Communications and Signal Processing*

Biography

Bruno Clerckx is Professor of Wireless Communications and Signal Processing and Head of the Communications and Signal Processing Group at Imperial College London. He previously served as CTO at Silicon Austria Labs and spent many years at Samsung Electronics contributing to 4G (LTE/LTE-A) standardization. He has authored two books on MIMO, over 300 research papers, and holds 80+ issued/pending patents — several adopted in 4G standards used by billions of devices. He is a Fellow of IEEE and IET, received the Blondel Medal 2021, the 2022 Adolphe Wetrems Prize, and the EURASIP Best Paper Award 2022.

Abstract

This talk introduces analog computing as an emerging paradigm for signal processing and wireless communications, addressing the limitations of conventional digital architectures in terms of energy efficiency, latency, and scalability. It explores how computations can be performed directly in the electromagnetic domain at microwave frequencies, leveraging signal interactions for extremely fast, parallel processing.

The talk covers analog computers that linearly process microwave signals — named microwave linear analog computers (MiLACs) — and their applications in signal processing and communications. We demonstrate that a MiLAC can efficiently compute the LMMSE estimator and matrix inversion, with complexity that grows quadratically in the matrix size. Applications in next-generation wireless communications showcase how MiLAC enables gigantic MIMO beamforming entirely in the analog domain, minimizing RF chains and reducing ZF complexity from cubic to quadratic in the number of antennas.



Plenary Talk 2

Near-Field Beamfocusing: From Theory to Practice

Friday, 17 July 2026 · 11:30 AM – 1:00 PM IST · Faculty Hall

Prof. Emil Björnson

KTH Royal Institute of Technology, Sweden

Title: *Near-Field Beamfocusing: From Theory to Practice*

Biography

Emil Björnson (Fellow, IEEE) is a Full Professor of Wireless Communication at KTH Royal Institute of Technology, Sweden, and Head of the Communication Systems division since 2024. He received his Ph.D. from KTH in 2011 and has held positions at SUPELEC in France and at Linköping University. He has authored four textbooks on multi-antenna communications and has received over 31,000 citations. He co-hosts the Wireless Future podcast and has received the 2018 and 2022 IEEE Marconi Prize Paper Awards in Wireless Communications.

Abstract

As the element count increases in antenna arrays and the carrier frequency rises, a new operating regime emerges: the radiative near-field, where wavefronts remain noticeably curved. The primary example is finite-depth beamfocusing, enabling signals to be focused into ellipsoidal regions confined in both angle and distance.

This talk covers theoretical properties of radiative near-field propagation, different ways to define the radiative near-field, beamfocusing, Bessel beams, and their relation to spatial frequencies. We examine which features have been experimentally validated and the hardware-related practical challenges these experiments reveal. Finally, we identify the most promising use cases for near-field effects to enhance communication, localization, and sensing in 6G systems.



SECTION 4

Invited Sessions

Four themed sessions featuring distinguished invited speakers

Invited Session 1: Integrated Sensing and Communications

Thursday, 16 July 2026 · 09:30 – 11:00 AM IST · Golden Jubilee Hall (GJH), ECE Department

Coordinator: Srikrishna Bhashyam

Shobha Sundar Ram

IIIT Delhi

Title: IEEE 802.11ad based ISAC Transceiver: Architecture, Algorithms, and Hardware Prototype

Biography

Professor in the Dept. of Electronics & Communications Engineering at IIIT Delhi (joined 2013). Previously with Baker Hughes Inc., USA (2009–2013). Research focuses on radar systems and electromagnetic sensor design. Associate Editor for IEEE T-AES and IEEE Transactions on Radar Systems.

Abstract

An ISAC system solution is presented where the IEEE 802.11ad communication protocol is embedded with auxiliary radar functionality to enable rapid beam alignment of communication beams without channel overhead. A complete architectural framework is presented alongside hardware prototype results comprising a 3D reconfigurable digital hardware radar signal processing architecture, an mmW analog front end, and over-the-air performance characterization.

Raj Kumar

Qualcomm, Bangalore

Title: Wireless Networks That See: Prototypes, Performance, and the Road to 6G ISAC

Biography

Received his Ph.D. from the University of Southern California. After a post-doc at EPFL, Switzerland, he has been with Qualcomm's Wireless R&D group in Bangalore since 2011, working on 3G–6G cellular systems, WiFi, WiGig, satellite communications, and advanced wireless sensing (ISAC) solutions.

Abstract

Wireless sensing is emerging as a key capability in next-generation networks, enabling device-free localization, activity monitoring, and digital twins. This talk highlights the standards evolution from 5G-Advanced toward 6G ISAC as a native platform capability, and presents real-world prototype results demonstrating accurate sensing across various scenarios.



Kumar Vijay Mishra

US DEVCOM Army Research Laboratory

Title: *Twisted Signals for ISAC via OAM Vortex Beams*

Biography

Senior Fellow at the US DEVCOM Army Research Laboratory and 2026 BEL Endowed Visiting Chair Professor in Radar Systems at IISc Bangalore. Chair of IEEE AESS ISAC Technical Working Group. Recipient of the IEEE AESS Harry Rowe Mimno Award (2026) and IEEE SPS Pierre-Simon Laplace Early Career Award (2024).

Abstract

Orbital angular momentum (OAM), arising from helical phase fronts, provides an additional degree of freedom for ISAC in automotive scenarios using a ULA with traveling-wave antennas to synthesize multiple Laguerre-Gaussian vortex beams. The system embeds communication data within radar waveforms and uses OAM-based mode-division multiplexing to separate sensing and communications functionalities.



Invited Session 2: Frontiers in Communications, Signal Processing, and Networks

Thursday, 16 July 2026 · 02:30 – 4:00 PM IST · Golden Jubilee Hall (GJH), ECE Department *Coordinator: Lalitha Vadlamani*

Manish K. Gupta

Kaushalya: The Skill University, Gujarat

Title: *DNA Data Storage: Current Approaches and Emerging Trends*

Biography

Director of Academics and Senior Professor at Kaushalya University. Ph.D. from IIT Kanpur (2000). Chairs the SNIA DNA Data Storage CODEC Working Group and contributes to JPEG DNA standards (ISO/IEC JTC1/SC29/WG1). Erdős number is 2.

Abstract

This talk surveys the current landscape of DNA data storage from a coding and communications perspective, describing the end-to-end pipeline and the channel impairments distinguishing DNA from classical storage channels. Progress in constrained codes, error-correcting codes, and codec design is reviewed, with open problems at the intersection of coding theory, synthetic biology, and sustainable computing.

Krishna Jagannathan

IIT Madras

Title: *Entanglement Certification via Bandit-Driven Measurements and SDP Duality*

Biography

Professor in the Department of Electrical Engineering at IIT Madras (joined 2011). Ph.D. from MIT (2010). Research interests include stochastic modeling of communication networks, information theory, and queuing theory.

Abstract

We address the problem of detecting entanglement in an unknown bipartite qubit state. Using bandit theory and SDP duality, we propose a two-stage pipeline: a rapid screening phase implementing a thresholding bandit routine, followed by a state reconstruction phase governed by spectral optimization and an SDP-based certification layer.

Venkat Padmanabhan

Microsoft Research India

Title: *AI-Powered Human Communication*

Biography

Managing Director of Microsoft Research India. B.Tech. from IIT Delhi; M.S. and Ph.D. from UC Berkeley. Fellow of INAE, IEEE, and ACM. Recipient of the Shanti Swarup Bhatnagar Prize (2016). Adjunct Professor at IISc.

Abstract

We focus on the human-machine first/last hop and ask how AI can help reimagine communication, considering proactive operation, implicit context, and state of knowledge — exploring these in the context of web browsing, video viewing, and software development.



Invited Session 3: Learning Algorithms and Their Applications

Friday, 17 July 2026 · 09:30 – 11:00 AM IST · Golden Jubilee Hall (GJH), ECE Department *Coordinator: Shubhada Agrawal*

Anand Deo

IIM Bangalore

Title: *Decision-Scaled Scenario Approach for Rare Chance-Constrained Optimization*

Biography

Assistant Professor in Decision Science at IIM Bangalore. Research focuses on reliable decision-making in the presence of extreme events, including chance-constrained optimization and distributionally robust problems. Won the 2024 I-SIM Best Publication award.

Abstract

We address chance-constrained optimization in the rare-event regime where constraint violations must be extremely unlikely. A new decision-scaling method relies exclusively on original data samples and a single scalar hyperparameter, leveraging large deviation principles under mild nonparametric assumptions.

Pranay Sharma

IIT Bombay (C-MInDS)

Title: *Achieving Benefits of Parallelization in Online Learning*

Biography

Assistant Professor at IIT Bombay's Center for Machine Intelligence and Data Science (C-MInDS). Previously, Research Scientist at Carnegie Mellon University. Ph.D. (2021) from Syracuse University. Research includes federated learning, stochastic optimization, and reinforcement learning.

Abstract

We integrate a stochastically extended adversary (SEA) into Online Federated Learning (OFL) and establish global network regret bounds of $O(\sqrt{T})$ for smooth convex losses and $O(\log T)$ for smooth strongly convex losses, identifying a regime in which network regret improves with parallelization.

Karthikeyan Shanmugam

Google DeepMind, India

Title: *Algorithms for Fine-Tuning Diffusion Models through Rewards*

Biography

Research Scientist at Google DeepMind India (since April 2022). Previously Research Staff Member and Herman Goldstine Postdoctoral Fellow at IBM Research, NY. Ph.D. from UT Austin (2016). IBM Corporate Technical Award 2021 for Trustworthy AI.

Abstract

We show a general equivalence between the reward-rescaled, KL-regularized RL framework and acceptance-rejection sampling-based fine-tuning methods, leading to GRAFT and PGRAFT — which align the policy on rewards only at higher noise scales, exploiting a bias-variance trade-off in diffusion model fine-tuning.



Invited Session 4: Indic Language Technologies

Friday, 17 July 2026 · 02:30 – 4:00 PM IST · Golden Jubilee Hall (GJH), ECE Department *Coordinator: Prasanta Ghosh*

Hema A. Murthy

Shiv Nadar University (SNU)

Title: *Bhashini 2.0?*

Biography

Distinguished Professor at Shiv Nadar University. Previously Emeritus Professor at IIT Madras. Ph.D. from IIT Madras (1992). Research spans speech processing, synthesis, music information retrieval, and computational brain research.

Abstract

India has 1369 languages written in 25–66 scripts. Bhashini 1.0 built momentum for Indian language technologies, but adoption at the last mile is absent due to GPU/cloud requirements. Bhashini 2.0 must focus on decentralized, small-footprint systems running on CPUs, customizable by local entrepreneurs.

Kruthika KR

SandLogic

Title: *Building Robust Speech Systems for Indic Languages: From Dataset Curation to Real-World Deployment*

Biography

Founding Researcher at SandLogic. Co-author of Shakti LLM. Work focuses on speech AI, large language model architecture, and scalable deployment across cloud and on-device environments.

Abstract

A BiMamba-ASR architecture for Hindi speech recognition is introduced as an efficient alternative to transformer-based attention. Fine-tuned on a 366-hour multi-accent Hindi corpus from ARTPARK–IISc Project Vaani, achieving ~21% relative WER reduction on LAHAJA and a WER of 16.5% on a diverse real-world Hindi benchmark.

Sourav Bandyopadhyay

Shunyalabs Research Pvt. Ltd.

Title: *SAML: A Markup Language for Stuttering Annotation in Speech Corpora*

Biography

Co-founder and Chief Scientist of Shunyalabs Research Pvt. Ltd. and a Ph.D. Scholar at IIT Kharagpur. Holds 12 patents and 18 research publications.

Abstract

SAML (Stuttering Annotation Markup Language) is a transcript-level annotation system comprising a formal XML Schema that extends W3C SSML with 12 element types, a shorthand notation that reduces annotation effort by ~80%, and a Python converter with schema validation, enabling data pooling across stuttered speech datasets.



SECTION 5

Tutorials

Saturday, 18 July 2026 · Half-day and full-day sessions

T1: Mathematics of Large Models in Machine Learning

Saturday, 18 July 2026 · 09:30 AM – 1:00 PM IST (with coffee break) · MP 20

Parthe Pandit

Indian Institute of Technology, Bombay

About the Speaker

Parthe Pandit is the Thakur Family Chair Assistant Professor with the Centre for Machine Intelligence and Data Science (C-MInDS) at IIT Bombay. He was a Simons Postdoctoral Fellow at UCSD, and obtained his PhD in ECE and an MS in Statistics, both from UCLA, and his undergraduate degrees from IIT Bombay. He is a recipient of the Schmidt Sciences AI2050 Early Career Fellowship (2024) and the Jack K. Wolf ISIT Student Paper Award (2019).

Abstract

Modern machine learning involves design choices regarding the model's architecture, the training optimization procedures, and the amount of data. These choices interact in a complex manner. However, to build good ML systems, it is essential to understand their impact on system performance. Through this tutorial, we will build a framework to analyze some of these design choices.

We will focus on addressing issues arising out of the models being overparameterized and overfitted, which have challenged classical statistical learning theory based on uniform convergence and have demanded the development of a revised theory of statistical ML. While this is a fast-growing area with many new tools, we will focus on techniques based on spectral analysis of kernel methods and nonlinear statistical inverse problems in high dimensions. We will conclude by outlining some important open questions in the field.

T2: Planning and Designing a High Performance CNPN with 5G and Emerging 6G Technology

Saturday, 18 July 2026 · 09:30 AM – 1:00 PM IST (with coffee break) · ECE 1.08

Subhas Mondal

IOS-MCN, FISD, IISc Bangalore

About the Speaker

Subhas Mondal is a passionate, results-driven Telecommunications R&D leader with 34+ years of industry experience spanning 5G/6G systems, wireless access and transport networks, AI-enabled network automation, and standards development. Recognized as an Ex-Wipro Fellow and Chief Architect for 5G, IEEE SA BoG Member at Large, and IEEE Senior Member. He holds 37 unique patent applications with 15 patents granted.

Subhas currently serves as CTO for IOS-MCN, an IISc-anchored, multi-institute collaborative, open-source 5G networking platform. Prior to IISc, he led HFCL's 5G product R&D as Senior Vice President, developing multiple 5G Radio and Transport products. Before that, he served as Wipro Fellow and Chief Architect of 5G. He started his career at C-DOT, developing the Remote Switching Unit of the MAX-L class 5 switch. He holds an engineering degree in ECE from IIT Kharapur.

Abstract

Captive Non-Public Networks (CNPNS) are emerging as a critical enabler for enterprises and verticals demanding secure, high-performance connectivity tailored to their unique requirements. Leveraging 5G and paving the way toward 6G, CNPNs built on 3GPP specifications provide the foundation for diverse use cases spanning industrial automation, mission-critical communications, and advanced digital services for cyber-physical systems.



This tutorial will guide participants through the principles and practices of planning and designing a high-performance CNPN. Key topics include:

- 5G NR Radio Primer — OFDM basics, Frame structure, Numerology, Modulation, System Capacity
- Synchronization mechanisms in a 5G system
- System architecture of 3GPP-compliant 5G networks and their evolution toward 6G
- Capacity limits in coverage, throughput, and latency, and their impact on design
- Network dimensioning strategies based on application types and QoS requirements
- O-RAN 7.2 split architecture and associated design challenges
- Engineering a low latency network in TDD
- End-to-end call flows and their role in ensuring robust connectivity

By combining architectural insights with practical engineering considerations, the session will equip attendees with a structured approach to designing CNPNs that meet stringent performance demands while remaining aligned with evolving 3GPP and O-RAN standards.

T3: Quantum Information Processing: From Qubits to Translational Quantum Technologies

Saturday, 18 July 2026 · 02:30 – 6:00 PM IST (with coffee break) · ECE 1.08

CM Chandrashekhkar

IISc Bangalore

About the Speaker

Prof. C. M. Chandrashekar is an Associate Professor at the Indian Institute of Science (IISc), Bengaluru. Previously, he served as a Professor at The Institute of Mathematical Sciences (IMSc), Chennai. After pursuing advanced studies at the University of Oxford, UK, and at the Institute for Quantum Computing and the Perimeter Institute in Waterloo, Canada, he received his PhD in 2009. His research focuses on quantum information processing and quantum computation, with particular emphasis on developing quantum algorithms for simulating natural quantum phenomena and engineering entangled photon states for scalable quantum computation. His work spans theoretical studies, experimental investigations, and the development of translational quantum technologies for quantum information processing applications. He is also the Lead Principal Investigator of the Technology Group on Photonic Quantum Computation under the National Quantum Mission. His achievements have been recognized through honours, including the Rhodes Scholarship, the DST Ramanujan Fellowship, the Satish Dhawan Visiting Chair Professorship, and election as a Member of the National Academy of Sciences, India (NASI).

Abstract

Quantum Information Science, which lies at the heart of emerging quantum technologies, is emerging as an inherently interdisciplinary field. This tutorial provides an introduction to the principles of quantum information processing by introducing the mathematical formalism of quantum states, quantum evolution, measurement, and quantum correlations. These concepts provide the foundation for understanding how quantum mechanics enables information-processing capabilities beyond those achievable with classical systems. We then present the circuit model of quantum computation together with illustrative examples of quantum algorithms, quantum walks, and quantum communication protocols. Particular emphasis is placed on photonic implementations of quantum information processing, highlighting how quantum interference, superposition, and entanglement can be harnessed for scalable quantum technologies. The tutorial also introduces emerging applications such as quantum random number generation, quantum key distribution, quantum authentication, the quantum one-time pad, and other quantum cryptographic primitives, as well as advancements in quantum sensing and computing.



T4: Revisiting 3D Vision in the Deep Learning Era

Saturday, 18 July 2026 · 02:30 – 6:00 PM IST (with coffee break) · MP 20

Dr. Saket Anand

IIIT-Delhi

About the Speaker

Saket Anand is an Associate Professor at IIIT-Delhi. He completed his PhD from Rutgers University in 2013. His research interests span geometric computer vision, semi-supervised and unsupervised learning, and robust statistical methods for computer vision, with applications in wildlife conservation, road safety, autonomous driving, and remote sensing. He has served as Area Chair for IEEE CVPR 2026, ICCV 2025, and Program Co-Chair for IEEE WACV 2022.

Dr. Lokender Tiwari

BotLab Dynamics / Vayudh

About the Speaker

Lokender Tiwari is the Head of Computer Vision and AI at BotLab Dynamics, leading development of next-generation intelligent drones for defense applications. He completed his PhD from IIIT-Delhi. His research interests include 3D vision and spatial AI, autonomous driving and flying, sensor fusion and signal intelligence, neural physics-based simulation, and differentiable graphics. His work has been published at ECCV, CVPR, ICCV, ISMAR, and he reviews for CVPR, ICLR, ICML, ECCV, AAAI, TPAMI, and IJCV.

Abstract

Following the remarkable success of deep learning in visual recognition and related 2D vision tasks, there has been growing interest in developing deep learning models for 3D vision problems. In this tutorial, we will focus on multi-view geometry problems and study some traditional and modern learning-based solutions.

We will begin with a brief review of the fundamentals of image formation and camera geometry before formulating the related problems of 3D reconstruction, Structure-from-Motion (SfM), and Simultaneous Localization and Mapping (SLAM), followed by an overview of traditional computer vision solutions and their relevance today. We will then review key ideas driving learning-based solutions and introduce recently proposed models for 3D vision. We will conclude with practical considerations and open research questions. Prerequisites: undergraduate linear algebra and a working knowledge of PyTorch and deep learning models (CNNs and Transformers).

T5: Information-theoretic Private Information Retrieval (IT-PIR): Constraints and Relaxations

Saturday, 18 July 2026 · 02:30 – 6:00 PM IST (with coffee break) · Golden Jubilee Hall (GJH)

Prasad Krishnan

IIIT Hyderabad

About the Speaker

Prasad Krishnan is a faculty member at the Signal Processing and Communications Research Center, IIIT Hyderabad. He received the B.E. degree from the College of Engineering, Anna University, in 2007, and the Ph.D. degree from the Dept. of Electrical Communication Engineering, Indian Institute of Science, Bangalore, in 2014. His research has been supported by grants from SERB/ANRF and Qualcomm. His current research interests include Algebraic Coding Theory, Private Information Retrieval, and information-theoretic limits of DNA data storage.

Abstract

In Private Information Retrieval, a client seeks to download a desired file privately from a library stored in a distributed fashion across multiple databases (or servers). Characterization of the capacity (i.e., the largest possible rate) of PIR under perfect information-theoretic privacy, for various typical distributed storage settings, has been the primary focus of the last decade in IT-PIR.

This session will present results regarding some recent shades of IT-PIR, including PIR under relaxed notions of privacy, PIR under special storage schemes, with constraints on required file sub-packetization, etc. These explorations lead to newer questions that are often simple to state, but perhaps not so simple to solve.



SECTION 6

Paper Presentation Sessions

Full papers — 16–17 July 2026 · Interactive parallel sessions

DAY 1 · THURSDAY, 16 JULY 2026

Paper Presentation Sessions · Indian Institute of Science, Bangalore

Session 111: Biomedical and Neural Signal Learning

9:30 AM – 11:00 AM IST

Venue: SP 1.20 (TVS Lab)

- 111.1** **Uncertainty-Aware Structural Attention Features for Hallucination Detection in LLMs**
 Lokesh RLN (*National Institute of Technology*); Mokshagna Ch (*National Institute of Technology*); Dinesh K (*National Institute of Technology*); Pagadala Usha (*National Institute of Technology*)
- 111.2** **WASSL-EGR : Wavelet Attention and State-Space Learning for Robust EMG-based Gesture Recognition**
 Mainak Ghosh (*National Institute of Technology, Rourkela*); Anup Nandy (*National Institute of Technology, Rourkela*)
- 111.3** **ProactiveGuard: IoT-Driven Fall Detection and RAG-Based Caregiver Assistance for Alzheimer's Patients**
 Naman Omar (*Indian Institute of Information Technology Kottayam*); Vengadeswaran S (*Indian Institute of Information Technology Kottayam*); Mohamedsipli M (*Indian Institute of Information Technology Kottayam*)
- 111.4** **IF-EWT-based framework for classification of motor imagery EEG signals**
 Ram Bilas Pachori (*IIT Indore*); Krishnakant Sharma (*Indian Institute of Technology Indore*)
- 111.5** **Unified Adaptive Quantization and Representation-Aware Caching for Diffusion Models**
 Deepanshi Sharma (*Indian Institute of Technology Mandi*); Rudra Pratap (*Indian Institute of Technology Mandi*); Shivam Jaiswal (*Indian Institute of Technology Mandi*); Parimala Kancharla (*Indian Institute of Technology Mandi*)
- 111.6** **Shared Neural Dynamics Between Overt and Inner Speech: An EEG Signal Analysis**
 Kumar Kaustubh (*HCL Tech*); Aastha Kachhi (*HCL Tech*); Ashish Issac (*HCL Tech*); Ajay Kumar Sharma (*HCL Tech*)
- 111.7** **Decoding Silent Reading: A Novel EEG-to-Text Method**
 Noah Thomas (*Rajagiri School of Engineering and Technology*); K J Theophene Xavier Lynn (*Rajagiri School of Engineering and Technology*); Natasha Mary George (*Rajagiri School of Engineering and Technology*); Sara Shelly (*Rajagiri School of Engineering and Technology*); Divya James (*Rajagiri School of Engineering and Technology*); Jyoti Nigam (*Indian Institute of Technology Mandi*)
- 111.8** **EEG-based Functional Connectivity During Sleep As A Biomarker for Disorders of Consciousness**
 Shailja Babu (*NITR*); Anusha A S (*National Institute of Technology Rourkela*)
- 111.9** **EventF2S: Asynchronous and Sparse Spiking AER Framework using Neuromorphic-Friendly Algorithm**
 Lakshmi Annamalai (*Indian Institute of Science, Bengaluru*); Chetan Singh Thakur (*Indian Institute of Science*)



111.10 Learning Neuromuscular Phase Transitions in Yoga Postures from Multi-Muscle EMG Signals Using Deep Temporal Latent Representations

Suvitti Suvitti (*Indian Institute of Technology, Hyderabad*); Kousik Sarathy Sridharan (*Indian Institute of Technology, Hyderabad*); Mohan Raghavan (*Indian Institute of Technology, Hyderabad*)

111.11 fNIRS contains usable stimulus information much earlier than the canonical HRF peak

Suranjita Ganguly (*Indian Institute of Technology, Hyderabad*); Malaaika Mihir Chhaya (*Indian Institute of Technology, Hyderabad*); Kousik Sarathy Sridharan (*Indian Institute of Technology Hyderabad*)

111.12 ECG-CaRE: An Interpretable and Edge-Deployable Framework for Arrhythmia Classification Competitive with Deep Models

Atin Mukherjee (*National Institute of Technology Durgapur*); Nilanjan Biswas (*National Institute of Technology Durgapur*); Suman Samui (*National Institute of Technology Durgapur*)

111.13 Spoken Response-Based Automatic Screening of Suicidal Risk Among Adolescents

Rohan Kumar Gupta (*SRM Institute Of Science and Technology*)

111.14 Multimodal Signal Analysis of Simulated Microgravity on Cerebral-Systemic Hemodynamics and Cardiac Autonomic Regulation

Ishan Basu (*IIT Kharagpur*); Debanjan Das (*IIT Kharagpur*)

111.15 Multimodal Speaker Separation in Audio-Visual Scene using Spherical Microphone Array

Jayesh Upadhyay (*Indian Institute of Technology Kanpur*); Priyadarshini Dwivedi (*IIT Kanpur*); Gyanajyoti Routray (*SRM University, Amaravati*); Rajesh M. Hegde (*Indian Institute of Technology, Kanpur*)

111.16 Breaking the Pair: Evaluating Dyadic Interaction via Speaker Switching

Nishchay Nilabh (*Indian Institute of Technology Guwahati*); Neeraj Sharma (*Indian Institute of Technology Guwahati*)

Session 112: Speech and Spoken Language Processing

9:30 AM – 11:00 AM IST

Venue: SP Building Side Foyer

112.1 Voice Conversion-Driven Speaker Anti-Spoofing Framework Using Attention-Based Seq2Seq Modeling

Govind Khandelwal (*IIT Jammu*); Rantu Buragohain (*Indian Institute of Technology Jammu*); Karan Nathwani (*Indian Institute of Technology, Jammu*)

112.2 Pronunciation based Intelligibility Assessment of Dysarthric Speech

Komal Bharti (*Thapar Institute of Engineering & Technology*); Ashita Batra (*Indian Institute of Technology Guwahati*); Pradip K Das (*IIT Guwahati*); Hemant A. Patil (*Dhirubhai Ambani University, Gandhinagar*)

112.3 A Comparative Study of Pre-trained Speech Encoders and Training Objectives for Large-Scale Indic Spoken Language Identification

Agneeth Basu (*ARTPARK*); Pavan Kumar J (*ARTPARK*); Sujith P (*ARTPARK*); Visruth Sanka (*ARTPARK*); Nihar Desai (*ARTPARK*); Prasanta Ghosh (*Indian Institute of Science*)

112.4 Adapting Whisper Models using LoHA for Robust Recognition of Children's Speech

Ankita Ankita (*National Institute of Technology Patna*); Syed Shahnawazuddin (*National Institute of Technology Patna*)

112.5 S-Transform Features for Automatic Classification of Phonation Types

Doondi Bala Saraswathi Aluru (*Koneru Lakshmaiah Education Foundation*); DVNSL Praharshitha (*Koneru Lakshmaiah Education Foundation*); Kandi Aditri Shreeya (*Koneru Lakshmaiah Education Foundation*); Purva



Sharma (Koneru Lakshmaiah Education Foundation); Gurugubelli Krishna (Samsung Research and Development Institute)

112.6 **RG-RCT: Real-Governed Representation-Calibrated Training for Low-Resource Medical ASR**

Sri Charan Devarakonda (International Institute Of Information Technology, Hyderabad); Ravi Sastry Kolluru (International Institute of Information Technology, Hyderabad); Srihari Bandurupalli (International Institute of Information Technology Hyderabad); Bhavana Akkiraju (IIIT Hyderabad); Anil Kumar Vuppala (International Institute of Information Technology Hyderabad)

112.7 **ResGDS-HLF: Residual Gumbel Dimension Selection with Hierarchical Layer Fusion for Stuttering Event Classification**

Pragya Khanna (International Institute of Information technology hyderabad); Swathi Sambangi (Vallurupalli Nageswara Rao Vignana Jyothi Institute of Engineering & Technology); Vijaya Saraswathi R (Vallurupalli Nageswara Rao Vignana Jyothi Institute of Engineering & Technology); Vasavi Ravuri (Vallurupalli Nageswara Rao Vignana Jyothi Institute of Engineering & Technology); Anil Kumar Vuppala (International Institute of Information Technology Hyderabad)

112.8 **Architectural Control of Phonetic Invariance via Additive U-Net Multi-Task Learning**

Vikram Lakkavalli (IIITB); Neelam Sinha (CBR, IISc)

112.9 **MRAN-UNet: Physics-Informed Harmonic Frequency Attention for Multilingual Speech Enhancement**

Satya Prasad Gaddamedi (Indian Institute of Technology Kharagpur); Debolina Pramanik (IIT Kharagpur); Puja Bharati (Indian Institute of Technology Kharagpur); Sabyasachi Chandra (IIT Kharagpur); Shyamal Kumar Das Mandal (Indian Institute of Technology Kharagpur); Nirmalya Ghosh (Indian Institute of Technology Kharagpur); Satya Prasad Gaddamedi (KL College of Engineering)

112.10 **Are Speech Language Models More Noise Robust for Zero Shot Children's Speech Recognition**

Arindam Das (National Institute of Technology Sikkim); Abhijit Sinha (National Institute of Technology Sikkim); Hemant Kumar Kathania (National Institute of Technology Sikkim)

112.11 **Speech-to-Speech Translation Evaluation: A Systematic Analysis and Multi-Dimensional Metrics**

Lalaram Arya (IIT Dharwad); Mrinmoy Bhattacharjee (Indian Institute of Technology Jammu); S.R. Mahadeva Prasanna (IIT Dharwad)

112.12 **Neuro-Symbolic ASR for Dysarthric Speech via Articulatory-Constrained Posterior Reshaping**

Nidish S R (Amrita Vishwa Vidyapeetham Coimbatore); Sriman Rakshan (Amrita Vishwa Vidyapeetham); Lalithkishore J (Amrita Vishwa Vidyapeetham); Gowtham Kumaresan (Amrita Vishwa Vidyapeetham); Jyothish Lal (Amrita Vishwa Vidyapeetham)

Session 113: Wireless Network Performance Analysis

9:30 AM – 11:00 AM IST

Venue: ECE 1.07

113.1 **SINR Analysis of an IRS-Assisted MU-MISO System**

Lakshmi Jayalal (IIT Madras); Shashank Shekhar (PSG iTech); Sheetal Kalyani (Indian Institute of Technology Madras)



113.2 Caching Performance under Constraints on Cache Updates

Chinmaya Venkatesh (*Indian Institute of Technology, Madras*); Avhishek Chatterjee (*Indian Institute of Technology, Madras*); Sharayu Moharir (*Indian Institute of Technology, Bombay*)

113.3 Version Age in Multi-Process Gossip Networks under Distributed Sensing

Anuj Meena (*Indian Institute of Technology Kharagpur*); Amitalok Budkuley (*IIT Kharagpur*)

113.4 Statistical Fidelity, Computational Cost, and Moment-Matched Surrogates for FSO Turbulence Channels

Dhairya Kansal (*BITS Pilani, Rajasthan*); Akhil Misra (*BITS Pilani, Rajasthan*); Sainath Bitragunta (*BITS Pilani, Rajasthan*)

113.5 On minimization of average Aol for static age-threshold irregular repetition slotted ALOHA

Minha Mubarak (*IIST*); Vineeth Bala Sukumaran (*IIST*)

113.6 Enhancing FSO Links Using Multi-HAPS and Opportunistic Relay Selection over IGGG Channels

Aishanee Chatterjee (*Indian Institute of Technology (IIT) Indore*); Prashant Sharma (*Indian Institute of Technology (IIT) Indore*); Swaminathan R. (*Indian Institute of Technology (IIT) Indore*)

113.7 Optimizing Least Squares Channel Estimation using Deep Learning in 5G NR PUSCH

Peddinti T N Mrunalini (*C-DOT*); Moyella Saikumarreddy (*C-DOT*); Pradeep Goutam (*C-DOT*); Naru Pradeep (*C-DOT*)

113.8 Latency-Control Tradeoffs in Communication-Control Co-Designed Networks

Songita Das (*Indian Institute of Technology, Delhi*); Gourab Ghatak (*INDIAN INSTITUTE OF TECHNOLOGY DELHI*); Chen Quan (*Delft University of Technology*); Geethu Joseph (*Delft University of Technology*)

113.9 Mobility Aware CSI Reliability in PASS Assisted Highway V2I Systems

Ura Modi (*Ahmedabad University*); Dhaval Patel (*Ahmedabad University*)

113.10 Delay and Throughput Analysis of Prioritized EDCA in Latency-Sensitive Wi-Fi 8 Networks

Mahith Chintada (*Indian Institute of Technology Mandi*); Sreelakshmi Manjunath (*IIT Mandi*)

Session 121: 5G/6G Signal Processing and ISAC

2:30 PM – 4:00 PM IST

Venue: SP 1.20 (TVS Lab)

121.1 Low Complexity FPGA Implementation of 2x2 MIMO-OTSM Transceiver for 6G Communications

Sapta Girish Neelam (*IIT Bhubaneswar*)

121.2 Bayesian Multi-Snapshot Learning for Sparse Doubly-Selective CSI Estimation in DCO-OTFS VLC Systems

Shubham Saxena (*Indian Institute of Technology, Kanpur*); Suraj Srivastava (*Indian Institute of Technology Jodhpur*); Aditya K. Jagannatham (*IIT Kanpur*)

121.3 Joint Recovery of Two Carriers from One-bit Sampled Signals

Aparna Agrawal (*Indian Institute of Technology Bombay*); Kumar Appaiah (*Indian Institute of Technology, Bombay*); Sibi Raj B Pillai (*Indian Institute of Technology Bombay*)



- 121.4 Robust URLLC Link Adaptation via Statistical Modeling of Time-Varying SINR Deviations**
 Shubham Baranwal (*Indian Institute of Technology, Delhi*); Ugrasen Singh (*IIT-ISM Dhanbad*); Manav Bhatnagar (*IIT Delhi*)
- 121.5 Real-Time Ephemeris Update Mechanism for Effective Doppler and Timing Pre-Compensation in 5G NR-NTN gNB**
 Akula Chinna Veeresh (*C-DOT*)
- 121.6 DMRS-Driven Deep Learning Network for Doppler Estimation in 5G NR-NTN**
 Ipsita Sannigrahi (*CDOT*); Sathish Nallamolu (*CDOT*); Pradeep Goutam (*CDOT*); Naru Pradeep (*CDOT*)
- 121.7 Differential Cross-Attention based Network for Robust Modulation Classification in OTFS Systems**
 Tonmoy Rajkhowa (*IIT (BHU) Varanasi*); Sanjeev Sharma (*IIT BHU*); Kuntal Deka (*Indian Institute of Technology, Guwahati*); Tharmalingam Ratnarajah (*San Diego State University, San Diego, CA 92182-1309, USA*)
- 121.8 RCoD-AoANet: Residual Covariance Denoising for AoA Estimation in ISAC-OTFS Vehicular Systems**
 Vidyaresh Swamy (*BITS Pilani*); Kanwardeep Singh Gahlot (*BITS Pilani*); Sandeep Joshi (*BITS Pilani*)
- 121.9 Learning-Based Delay, Doppler, and Angle Estimation Using Quantized DDAE for OFDM Bistatic ISAC**
 Shiv Shankar (*Indian Institute of Technology - Madras*); Radhakrishna Ganti (*Indian Institute of Technology Madras (IIT Madras)*); Klutto Milleth J (*Center of Excellence in Wireless Technology (CEWiT) IIT Madras*)
- 121.10 On the Joint Impact of UAV Orientation Instability and Phase Errors in UAV-Aided RIS Systems**
 Sourosmitta Das (*Indian Institute of Technology (IIT) Indore*); Manojkumar B. Kokare (*Indian Institute of Technology Indore*); Prashant Sharma (*Indian Institute of Technology Indore*); Swaminathan R. (*Indian Institute of Technology (IIT) Indore*); Sumit Gautam (*Indian Institute of Technology (IIT) Indore*); Saptarshi Ghosh (*IIT Indore*)
- 121.11 SRS-Based CSI Quality Assessment and Selection for MU-MIMO Precoding in 5G NR**
 Lalit Bharti (*IIT Hyderabad*); Adarsh Ravi (*Indian Institute of Technology Patna*); Hamza Bouchebbah (*Rakuten Mobile, Inc.*); Krishnan Venkataraghavan (*Rakuten Mobile, Inc.*); Seshashayi Thalluri (*Rakuten Mobile, Inc.*); Preetam Kumar (*Indian Institute of Technology Patna*)
- 121.12 Dual-Stream CNN--LSTM Fusion for Pilot-Assisted Automatic Modulation Classification in OTFS Systems**
 Dhruvil Mali (*Sardar Vallabhbhai National Institute of Technology, Surat*); Kamal Captain (*Sardar Vallabhbhai National Institute of Technology*); Dayshaun kakadiya (*Sardar Vallabhbhai National Institute of Technology, Surat*); Arvind Chandak (*Sardar Vallabhbhai National Institute of Technology, Surat*)
- 121.13 Cross-Generation TDD Sensing for 6G ISAC: A Feasibility Study with Legacy LTE and NR Infrastructure**
 Anindya Saha (*Tejas Networks*)
- 121.14 SNF-PRP: A Covert Integrating Sensing and Communications Framework**
 Dhruvil Bhatt (*Manipal Institute of Technology*); Vidushi Kumar (*Manipal Institute of Technology*)
- 121.15 Low-Latency Deep Learning Based Doppler Velocity Estimation for Integrated Sensing and Communication**
 Samarth Sharma Bhardwaj (*IIT Kanpur*); Aakanksha Tewari (*IIITD*); Syed Asrar Ul Haq (*IIITD*); Sumit J Darak (*IIITD*)



Session 122: Multimodal Learning and Prediction

2:30 PM – 4:00 PM IST

Venue: SP Building Side Foyer

- 122.1 AgentBook: Enabling Fine-Grained Editability in Visual Narratives via Page-Centric Agent Coordination**
Ayushman Sarkar (*Birbhum Institute of Engineering and Technology*); Zhenyu Yu (*Lincoln University College*)
- 122.2 Spectral Decoupling in Attention Heads: Tracking the Onset of Memorization in Vision Transformers**
Dibyajyoti Jena (*IIT Delhi*); Sumantra Dutta Roy (*IIT Delhi*); Vinayak Abrol (*IIIT Delhi*)
- 122.3 Do Latent Representations of Deep Visual Architectures Follow the Population Manifold Hypothesis of the Primate AIT Cortex?**
Ankit Sharma (*Indian Institute of Technology Hyderabad*); Sumohana Channappayya (*Indian Institute of Technology Hyderabad*)
- 122.4 AVT-PAC: A Pipeline For Multimodal Action Prediction and Captioning**
Athira Krishnan R (*Indian Institute of Technology Hyderabad*); Ambarish Parthasarathy (*Indian Institute of Technology*); Sucharitha Devarakonda (*Indian Institute of Technology Hyderabad*); Lakshmi Sai Rithika Srikurmam (*Indian Institute of technology Hyderabad*); Swapna M (*RCI, DRDO*); JV Satyanarayana (*RCI, DRDO*); Sumohana Channappayya (*Indian Institute of technology Hyderabad*)
- 122.5 Character-aware Subtitling through Improved Alignment and Diverse Priors**
Adhiraj Deshmukh (*CVIT, IIIT Hyderabad*); Makarand Tapaswi (*CVIT, IIIT Hyderabad*); Vineet Gandhi (*CVIT, IIIT Hyderabad*)
- 122.6 Task-Adaptive FFN Editing for Continual Blind Image Quality Assessment**
Satish Maurya (*Indian Institute of Technology Mandi*); Parimala Kancharla (*Indian Institute of Technology Mandi*)
- 122.7 EchoVision: A Decoupled Audio-Visual Retrieval Framework for Video Question Answering**
Subhajit Sarkar (*National Institute of Technology Durgapur*); Joyita Chakraborty (*LTIMindTree Ltd., India*); Sagnik Nandi (*KIIT University, Bhubaneswar*); Suman Samui (*NIT Durgapur*); Subrata Nandi (*National Institute of Technology Durgapur*)
- 122.8 Towards an Efficient and Unified Strategy for Video Understanding Applications**
Rahul Kumar (*Indian Institute of Technology, Hyderabad*); Sumohana Channappayya (*Indian Institute of Technology, Hyderabad*)
- 122.9 Bidirectional Convolutional-GRU Integrated GAN for Unpaired Low-Light Image Enhancement**
Palak Deb Patra (*NatWest Group*); Santosh Panda (*UPES Dehradun*); Manoj Kumar Bishwal (*Siemens*); Pankaj Kumar Sa (*NIT Rourkela*)
- 122.10 Getting Uncertainty Right: Local Calibration for Wind Power Forecasting**
Manush Sanchela (*Dhirubhai Ambani University*); Vrishin Rajpurohit (*Dhirubhai Ambani University, Gandhinagar*); Pritam Anand (*Dhirubhai Ambani University, Gandhinagar*)
- 122.11 Microstate temporal dynamics predict valence but not arousal in tactile stimulation**
Suranjita Ganguly (*Indian Institute of Technology Hyderabad*); Mohan Raghavan (*Indian Institute of Technology Hyderabad*); Kousik Sarathy Sridharan (*Indian Institute of Technology Hyderabad*)
- 122.12 VGGT-Based COLMAP-Free Initialization for Sparse-View 3D Gaussian Splatting**
Shreeya Venkatraman (*Shiv Nadar University*); Yuvaraj Raj Krishna (*Shiv Nadar University*); Jiji C V (*Shiv Nadar University*)



International Conference on
Signal Processing and Communications

SPCOM 2026

July 16-18, 2026
Indian Institute of Science, Bangalore

TECHNICAL CO-SPONSORS

IEEE Bangalore Chapter
IEEE ComSoc Bangalore Chapter
IEEE Signal Processing Society

PLATINUM SPONSORS

VVDN
MARVELL
DigiRoad
MYTEK

GOLD SPONSORS

ARTS
amazon
TEXAS INSTRUMENTS

SILVER SPONSORS

TEJAS NETWORKS
ART PARK



Session 123: Biomedical Vision and Sensing

2:30 PM – 4:00 PM IST

Venue: ECE 1.07

- 123.1 A Slice-Based Deep Network for Brain Age Prediction From MRI**
Amisha Rath (Indian Institute of Technology Kharagpur); Sanjay Ghosh (Indian Institute of Technology Kharagpur)
- 123.2 cAAE-EchoGAN: A Conditional Adversarial Autoencoder Framework for Joint Echocardiographic Image and Segmentation Mask Generation**
Shivani Singh (IIITA); Ashutosh Singh (IIITA); Shanti Chandra (IIITA)
- 123.3 Scale-aware Economy-Accuracy Trade-off in Contactless Palmprint Recognition Using 14-Tap Q-Shift DTCWT and Layer-Wise Attention**
Divyang Jadav (IIT Bombay and SVKM's NMIMS Navi-Mumbai); Siddhant Dongare (Indian Institute of Technology Bombay); Inderjeet Inderjeet (Indian Institute of Technology Bombay); Saket Pateriya (IIT B); Deekshant Kumar (Indian Institute of Technology Bombay); Hemant Goklani (IIIT Surat); Vikram Gadre (Indian Institute of Technology Bombay)
- 123.4 DFANet: Dual-Branch Feature Fusion with Multi-Attention Decoding for Colonoscopy Polyp Segmentation**
Srinija Kokkanti (CBIT-Chaitanya Bharathi Institute of Technology); Harshini Mamidi (CBIT-Chaitanya Bharathi Institute of Technology); Srikanth Panigrahi (CBIT-Chaitanya Bharathi Institute of Technology)
- 123.5 Swin-DSA-Net: A Dual-Stage Attention Guided Swin Transformer Network with Multi-scale Refinement for Skin Lesion Segmentation**
Nitin Yadav (IIT Guwahati); Bibek Goswami (Indian Institute of Technology, Guwahati); Marjana Bhuyan (Vellore Institute of Technology); M.K. Bhuyan (IIT Guwahati)
- 123.6 A 3D Channel-Guided Layer Attention Network for Layer-Specific Structural Biomarker Analysis in Optical Coherence Tomography**
Mane Pooja (IIT Guwahati); Manish Bhatt (IIT Guwahati); Samarendra Dandapat (Indian Institute of Technology Guwahati)
- 123.7 SmartVitals-BP : Contactless Blood Pressure Estimation from Facial Videos via Multi-Scale Temporal Modeling and Metadata Fusion**
Srinivas Routhu (Chosun University); Aradhana Mishra (CureBay Bhubaneswar); Anoushka Panigrahi (Curebay); Sanjay Swain (Curebay)
- 123.8 SwinNetraGF: A Gated Attention Fusion Transformer for Retinal Disease Classification**
Anish Kumar Vishwakarma (UPES, Dehradun); Preity Preity (National Institute of Technology Patna); Rakesh Ranjan (UPES, Dehradun)
- 123.9 A Multiscale Wavelet-Graph Spectral Approach for Cardiovascular Risk Assessment Using Retinal Fundus Images**
S Shri Vatssan (National Institute of Technology, Puducherry); Malaya Kumar Nath (National Institute of Technology, Puducherry)



DAY 2

FRIDAY, 17 JULY 2026

Paper Presentation Sessions · Indian Institute of Science, Bangalore

Session 211: Speech and Sensor Signal Processing

9:30 AM – 11:00 AM IST

Venue: SP 1.20 (TVS Lab)

- 211.1 RASE: A Recursive-Adaptive Spectral Enhancer for Multilingual Indian Language Speech Enhancement**
 Satya Prasad Gaddamedi (*Indian Institute of Technology Kharagpur*); Debolina Pramanik (*Indian Institute of Technology Kharagpur*); Puja Bharati (*Indian Institute of Technology Kharagpur*); Sabyasachi Chandra (*Indian Institute of Technology Kharagpur*); Shyamal Kumar Das Mandal (*Indian Institute of Technology Kharagpur*); Nirmalya Ghosh (*Indian Institute of Technology Kharagpur*); Satya Prasad Gaddamedi (*KL College of Engineering*)
- 211.2 Tracking Phonetic Transitions in Self-Supervised Speech Representations**
 Kumar Kaustubh (*HCL Tech*); Aastha Kachhi (*HCL Tech*); Ashish Issac (*HCL Tech*); Ajay Kumar Sharma (*HCL Tech*)
- 211.3 Overcoming NAWEs Fixed-Window Constraints For Spoken Term Detection And Localization**
 Ramesh Gundluru (*Indian Institute of Technology Hyderabad*); Sreekanth Sankala (*Indian Institute of Technology Hyderabad*); Venkatesh Parvathala (*Indian Institute of Technology Hyderabad*); Sri Rama Murty Kodukula (*Indian Institute of Technology Hyderabad*)
- 211.4 Semi-Supervised FFT-Spectral Representation Learning for Earthquake Detection in Distributed Fiber Optic Sensing Systems**
 Deepika Sasi (*National Institute of Technology Puducherry*); Sundaresan Sabapathy (*Amrita Vishwa Vidyapeetham*); Thomas Joseph (*National Institute of Technology Puducherry*)
- 211.5 Direction of arrival estimation using subspace based iterative orthogonal projection**
 Praveen Babu Choppala (*Andhra University of Engineering*); Mohammad Sajida Khan (*Andhra University of Engineering*); Swarnim Rishal (*Andhra University of Engineering*)
- 211.6 Real-Time Correction of Named Entities in Speech Transcriptions: A Lightweight Approach**
 Kiranmayi Gandikota (*Samsung Research*); Anunay Katore (*Samsung Research*); Chandan Kumar Pandey (*Samsung Research*); Mayank Kumar Tyagi (*Samsung Research*); Subhadarshi Panda (*Samsung Research*); Rahul Kumar (*Samsung Research*); Mohamed Asfak R (*Samsung Research*)
- 211.7 Perceiver encoder for automatic speech recognition**
 Kaustubh Kulkarni (*Symbiosis Center for medical image analysis*); Venkateswarlu Gonuguntla (*Symbiosis Center for medical image analysis*)
- 211.8 Phoneme-Preserving Mamba-Based Frontend for Noise-Robust Automatic Speech Recognition**
 Reshma K R (*International Institute of Information Technology, Hyderabad*); Anil Kumar Vuppala (*International Institute of Information Technology Hyderabad*)
- 211.9 Spoken Language Diarization using Source-Domain Aggregative Weakly-Supervised Language Labels**
 Spandan Dey (*Samsung Research Institute Bangalore, India*); HIRAK MONDAL (*Samsung Research Institute Bangalore, India*); Anmol Jain (*Samsung Research Institute Bangalore, India*); Shirish Kumar (*Samsung Research*)



Institute Bangalore, India); Premjeet Singh (Samsung Research Institute Bangalore, India); Suyash Pandya (Samsung Research Institute Bangalore, India)

211.10 Exploiting Compressed Eigencomponent Transformation in DNN Framework for Passive SONAR Self-noise Cancellation

Pawan Kumar (*Indian Institute of Technology, Jammu*); Karan Nathwani (*Indian Institute of Technology, Jammu*)

211.11 Impact of Localization Errors on Deep Learning Models for Wideband Spectrum Monitoring

Aman Kumar (*Indian Institute of Technology Hyderabad*); Jay Vikrant (*IIT Hyderabad*); Sundar Vanka (*IIT Hyderabad*); Sumohana Channappayya (*IIT Hyderabad*)

211.12 QMOS: Qwen-based MOS Prediction for TTS

Ravi Sastry Kolluru (*International Institute of Information Technology, Hyderabad*); Sri Charan Devarakonda (*International Institute Of Information Technology, Hyderabad*); Radhe Shyam Salopanthula (*IIIT Hyderabad*); Anil Kumar Vuppala (*International Institute of Information Technology Hyderabad*)

211.13 Validating Smartphone-Based 3D Head Models for Precision EEG Source Localization

Suranjita Ganguly (*IIT Hyderabad*); Malaika Mihir Chhaya (*IIT Hyderabad*); Ankita Jain (*Indian Institute of Technology Hyderabad*); Aditya Koppula (*ESIC Medical College and Hospital Hyderabad*); Mohan Raghavan (*IIT Hyderabad*); Kousik Sarathy Sridharan (*Indian Institute of Technology Hyderabad*)

211.14 Audio-Based Urgency Detection with SHAP-Enhanced Feature Refinement

Ankit Dighe (*SPIT*); Sanika Gadkari (*SPIT*)

211.15 Leveraging Deep Bayesian Inference for Efficient Multiple Source Localization with Spherical Harmonics

Priyadarshini Dwivedi (*Indian Institute of Technology, Kanpur*); Gyanajyoti Routray (*SRM University AP Amaravati*); Rajesh M. Hegde (*IIT Kanpur*)

Session 212: Secure and Terahertz Communication Systems

9:30 AM – 11:00 AM IST

Venue: SP Building Side Foyer

212.1 Variational Bayes Estimation for Affine-Precoded Superimposed Pilots in Partially Connected Dual-Wideband Tera-Hertz MU-MIMO Systems

Abhisha Garg (*Indian Institute of Technology, Kanpur*); Suraj Srivastava (*Indian Institute of Technology Jodhpur*); Aditya Jagannatham (*IIT Kanpur*)

212.2 Improving the Cheater Identification Capability of Threshold Secret Sharing Schemes

Tanmoy Mandal (*IIT Guwahati*); Srinivasan Krishnaswamy (*Indian Institute of Technology Guwahati*); Ratnajit Bhattacharjee (*IIT Guwahati*)

212.3 Finite-Key Analysis of Phase-Matching QKD Type Protocol over a Satellite Channel under Atmospheric Turbulence

Pranav Surapuraju (*indian institute of information technology sri city*); Lokendra Chouhan (*indian institute of information technology sri city*)

212.4 End-to-End Post-Processing for CV-QKD with Heterodyne Detection: ADC Modelling, Amplitude Sifting, Tri-Mode NB-LDPC Decoding, and Selective Privacy Amplification

Mohammad Sikander sheikh (*iitjammu*); Rohit Chaurasiya (*IIT Jammu*)

212.5 EM-based Model for RIS-aided Channel and its Achievable DoF

Nobhendu Chowdhury (*IIIT Hyderabad*); Praful Mankar (*IIIT Hyderabad*)



212.7 Terahertz Topological Valley Photonic Crystals with Polymer-Filled Bearded Interface for Robust Waveguiding in 6G Applications

Dibaskar Biswas (*Indian Institute of Technology Guwahati*); Tushar Shah (*Indian Institute of Technology Guwahati*); Sourodipto Das (*Indian Institute of Technology Guwahati*); Amit Baran Dey (*IIT Guwahati*); Ashish Kumar Chowdhary (*Indian Institute of Technology Roorkee*); Debabrata Sikdar (*IIT Guwahati*)

212.8 Topologically Protected Supercoupling in Cavity-Integrated Photonic Structure for Terahertz Communication

Tushar Shah (*IIT, Guwahati*); Dibaskar Biswas (*Indian Institute of Technology Guwahati*); Lokesh Sharma (*IIT Guwahati*); Sourodipto Das (*Indian Institute of Technology Guwahati*); Ashish Kumar Chowdhary (*Indian Institute of Technology, Roorkee*); Debabrata Sikdar (*IIT Guwahati*)

Session 213: Signal and Image Processing

9:30 AM – 11:00 AM IST

Venue: ECE 1.07

213.1 Convolution Based Fast Lossless Compression Algorithm for Color Filter Arrays

Chiranjeev Bhaya (*Samsung R&D Institute India, Bangalore*); Manish Kumar (*Samsung R&D Institute India, Bangalore*); Chandra Mohan Velpula (*Samsung R&D Institute India, Bangalore*); Praveen Bangre Prabhakar Rao (*Samsung R&D Institute India, Bangalore*)

213.2 Modelling Bandlimited Signals in Self-Dual Differential Equations

Abhijat Bharadwaj (*Indian Institute of Technology Bombay*); Animesh Kumar (*Indian Institute of Technology, Bombay*); Shaileshram Sivakumar (*IIT Bombay*); Advay Bapat (*Indian Institute of Technology Bombay*); Vikram Gadre (*IIT Bombay*); Shrikant Sharma (*Indian Institute of Technology Bombay*); P. Radhakrishna (*LRDE Bengaluru*); Ram Bilas Pachori (*Indian Institute of Technology Indore*)

213.3 Hierarchical Convolution Spatial Propagation Networks for Depth Completion

Praveen Ramesh (*Samsung R&D Institute India -- Bangalore*); Vikas Gowda (*Samsung R&D Institute India -- Bangalore*); Kunal A Kathare (*Samsung R&D Institute India -- Bangalore*); Basavaraja Shanthappa Vandrotti (*Samsung R&D Institute India -- Bangalore*); Jooyoung Kim (*Samsung Electronics, Seoul, South Korea*); Ankit Dhiman (*Samsung R&D Institute India -- Bangalore*)

213.4 Bilevel Learning of Task-Adapted Regularizers

Aryan Saha (*IIT Kharagpur*); Subhadip Mukherjee (*IIT Kharagpur*)

213.5 Consecutive Support Matching Induced Parameter Tuning Accelerates Momentum Iterative Hard Thresholding

Samrat Mukhopadhyay (*IIT (ISM) Dhanbad*); Debasmita Mukherjee (*Techno Bengal Institute of Technology*)

213.6 Physics-Guided Residual-Aware Consensus Equilibrium for SAR Image Despeckling

Satyakam Baraha (*Sri Sivasubramaniya Nadar College of Engineering, Chennai*); Abhijit Mishra (*Vellore Institute of Technology, Chennai*); Ajit Kumar Sahoo (*NIT Rourkela*)

213.7 Consistency is Key to Image Denoising

Oindrila Halder (*Indian Institute of Science, Bengaluru*); Saptarshi Mandal (*Indian Institute of Science, Bengaluru*); Chandra Sekhar Seelamantula (*Indian Institute of Science*)



- 213.8 Accelerating Quaternion Low-Rank Approximation for Color Images via Complex Embedding**
Akshadha A (Cochin University of Science and Technology); Devika Rani J (Amrita Vishwa Vidyapeetham, Kollam-690525, India); Sooraj K. Ambat (Naval Physical and Oceanographic Laboratory (NPOL), DRDO, Kochi-682021, India)
- 213.9 Hard Thresholding Based LMS Algorithm for Adaptive Graph Signal Recovery**
Rachita Mohanty (Dhirubhai Amabni University); Rajib Lochan Das (Dhirubhai Ambani University (Formerly DA-IIT), Gandhinagar)
- 213.10 Mixing Time Bounds for Asymmetric Random Walks on Hypercubes, Cycles, and Tori Using Coupling**
Mrudula Mahindrakar (Indian Institute of Technology Madras); Hrushikesh Kant (Indian Institute of Technology Madras); Avhishek Chatterjee (Indian Institute of Technology-Madras)
- 213.11 A Small-World Network Based Framework for Texture Classification**
Shubham Dwivedi (Indian Institute of Technology Kanpur); Keerthika Kadagala (Indian Institute of Technology Kanpur); Om Jee Pandey (Indian Institute of Technology (BHU) Varanasi); Rajesh M. Hegde (Indian Institute of Technology Kanpur)
- 213.12 Power Series Based Iterative Algorithms for Distributed Sparse Recovery**
Shashank S (Indian Institute of Technology Kharagpur); Ketan Atul Bapat (IIT Kharagpur); Mrityunjay Chakraborty (IIT Kharagpur)

Session 221: Communication Signal Processing and Coding

2:30 PM – 4:00 PM IST | Venue: SP 1.20 (TVS Lab)

- 221.1 Hardware-Efficient FPGA Implementation of OTSM Transceiver for High-Mobility 6G Communications**
Vishnupriya P V (Bharat Electronics Limited); Sapta Girish Neelam (IIT Bhubaneswar)
- 221.2 Iteratively reweighted algorithms for robust sparse recovery with $\ell_p(0 < p < 1)$ -norm minimization**
Shweta Bharti (IIT(ISM)); Samrat Mukhopadhyay (IIT (ISM) Dhanbad); Govind Murmu (IIT (ISM) Dhanbad)
- 221.3 Coded SumComp: Linear Coding over Integer Rings for Improved SumComp Performance**
Vaishnavi Anekar (IIT Hyderabad); Anjana A M (IIT Hyderabad)
- 221.4 A Novel Tunable Window for Signal Processing Applications**
Debanjan Bhattacharjee (Indian Institute of Technology, Goa); Sujit Kumar Sahoo (Indian Institute of Technology Goa)
- 221.5 PYNQ-Based Modular Architecture for Real-Time Stream-Cipher Video Encryption at the Edge**
Vanukuru Hari Rohit (ADRIN); D. Sreekiran (ADRIN); Raghavendra Kune (ADRIN); D. Mallikharjuna Rao (ADRIN); Novaline Jacob (ADRIN)
- 221.6 GSM-Based Non-Orthogonal Multiple Access: Design and Evaluation**
Surjeet Kumar (Indian Institute of Technology Delhi); Ashish Kant Shukla (SR University Warangal, Telangana); Manav R Bhatnagar (IIT Delhi)



- 221.7 Enhancing Power Efficiency in MIMO DFT-s-OFDM: A Relative Study of $\pi/2$ -BPSK with Tone Reservation**
Abhinaba Dey (*Lekha Wireless*); Sreenath Ramanath (*Lekha Wireless*)
- 221.8 Molecular Communication with Finite-Length Transmitter in Time Dependent Diffusive Channel**
Neha Bhusari (*VNIT, Nagpur*); Avinash G. Keskar (*Vnit Nagpur*); Nikhil Sharma (*MCTE, Indore*); Prabhat Kumar Sharma (*VNIT Nagpur*)
- 221.9 Generalized Partial Full-Pilot Zero-Forcing Combining for Distributed Massive MIMO**
Mohd Saif Ali Khan (*Indian Institute of Technology Mandi*); Karthik RM (*Ericsson India Private Limited*); Samar Agnihotri (*IIT Mandi*)
- 221.10 Signal Space Decoupled Stream Splitting for Low Latency Downlink MIMO WBANs**
Gunjit Arora (*Indian Institute of Technology Roorkee*); Satya Kumar Vankayala (*Samsung R&D Institute*); Manoj Thomas (*Samsung R&D Institute*)
- 221.11 Low Complexity Digital Predistortion for Power Amplifiers Using Incremental PCA**
Girish Tripathi (*Tejas Networks*); Anindya Saha (*Tejas Networks*)
- 221.12 Rank--Deficit Hybrid Adaptive Fulcrum Decoder for Low--Complexity Network Coding**
Sovanjyoti Giri (*National Institute of Technology Tiruchirappalli*); Satya Prakash (*National Institute of Technology Tiruchirappalli*)
- 221.13 Evolutionary Optimization for Quantized RIS Phase Shift Design in MIMO Systems: Hyperparameter Analysis and SNR Performance**
Amit Shrivastava (*Koneru Lakshmaiah Education Foundation, Hyderabad*); Manish Kumar (*Dhirubhai Ambani University*); Kunwar Pritiraj Rajput (*University of Luxembourg*)
- 221.14 Deep Unfolded AMP for Short Block-Length SPARC over AWGN Channels**
Sai Dinesh Kancharana (*Indian Institute of Technology Madras*); Sandeep VSV (*Indian Institute of Technology Madras (IIT Madras)*); Arun Pachai Kannu (*Indian Institute of Technology Madras*)
- 221.15 Detection in Ambient Backscatter Communication System with Multi-Antenna Tag-Reader Pair with Correlated Ambient Source Signal**
Anuranjan Jha (*IIT Mandi*); Adarsh Patel (*IIT Mandi*)
- 221.16 Regularized Multi-Measurement Sparse Decomposition for Time-Domain Ambisonics Upscaling**
Gyanajyoti Routray (*SRM University AP Amaravati*); Priyadarshini Dwivedi (*Indian Institute of Technology, Kanpur*); Rajesh M. Hegde (*IIT Kanpur*)

Session 222: Vision and Sensor Analytics

2:30 PM – 4:00 PM IST | Venue: SP Building Side Foyer

- 222.1 Signal-driven Shipwreck Segmentation and Probabilistic Uncertainty Estimation with Sidescan Sonar for Autonomous Underwater Navigation**
Lakshmi Annamalai (*Defence Research and Development Organization*)
- 222.2 Vision-Powered Cleaning Mode Detection in Robot Vacuum Cleaners Using a Novel Smart Home Dataset**
Sanket Gharatkar (*Samsung Research Institute Bangalore*); Suhel Khan (*Samsung Research Institute Bangalore*); Nagaraj Yendeti (*Samsung Research Institute Bangalore*)



- 222.3 NuSegFormer: Enhanced Cell Nuclei Segmentation Using a Hybrid UNet--Vision Transformer with Gated Multi-Head Attention**
 Aditi Damodar (*Koneru Lakshmaiah Education Foundation*); Hitesh Tekchandani (*Koneru Lakshmaiah Education Foundation*); Praveen Kumar Shukla (*Manipal University Jaipur*); Anish Kumar Vishwakarma (*UPES, Dehradun*)
- 222.4 On the Optimal Number of Grids for Differentially Private Non-Interactive K-Means Clustering**
 Gokularam Muthukrishnan (*Center of Data for Public Good, Indian Institute of Science, Bengaluru*); Anshoo Tandon (*Center of Data for Public Good, Indian Institute of Science, Bengaluru*)
- 222.5 Are Wavelets More Reliable? Comparing The Topology of Image Generator Metrics**
 Manas Patil (*Indian Institute of Technology Bombay*); Amit Tiwari (*IIT Bombay*); Abhijat Bharadwaj (*Indian Institute of Technology Bombay*); Vikram Gadre (*IIT Bombay*)
- 222.6 Domain-Adaptive Self-Supervised Pretraining for Bacterial Flagellar Motor Detection in Cryo-Electron Tomography**
 Adavi Jayanth (*KL University Hyderabad*); Madhu Oruganti (*KL UNIVERSITY HYDERABAD*)
- 222.7 Enhancing Road Safety through Real-Time Unsupervised Anomaly Detection in Crash Barriers**
 Divya Varshney (*Indian Institute of Technology Roorkee*); Avnish Panwar (*Indian Institute of Technology Roorkee*); Indrajit Ghosh (*IIT Roorkee*)
- 222.8 Multi-Sensor Alignment for Weather Simulations**
 Samsad Alam (*Indian Institute of Science, Bengaluru*); Devyani Lambhate (*Indian Institute of Science, Bengaluru*); Aditya Mohan (*Indian Institute of Science*); Vishal Kumar (*Indian Institute of Science*); Vaibhav Katewa (*Indian Institute of Science*)
- 222.9 SIADS: Innovation-Based Anomaly Detection in Streaming Communication Graphs**
 Tanish Verma (*IIT Dharwad*)
- 222.10 LS-PolypSeg: A Parameter-Efficient LoRA-Enhanced SAM3 Framework for Polyp Segmentation**
 Sanjana Jhansi Ganji (*Chaitanya Bharathi Institute of Technology*); Srikanth Panigrahi (*Chaitanya Bharathi Institute of Technology*); Kaushal Sambanna (*Chaitanya Bharathi Institute of Technology*); Srinivas Rao Routhu (*Curebay*)
- 222.11 Tube Loss-based Detection of Anomalies in Electricity Consumption Time Series Data**
 Shruti Mehta (*Dhirubhai Ambani University*); Pritam Anand (*Dhirubhai Ambani University, Gandhinagar*); Yash Vasavada (*Dhirubhai Ambani University*)
- 222.12 Learning What to Trust: Confidence-Aware Curriculum Distillation for TinyML Vision**
 Satarupa Das (*National Institute of Technology, Durgapur*); Soumen Garai (*National Institute of Technology Durgapur*); Rajrup Saha (*NIT Durgapur*); Soumya Chatterjee (*National Institute of Technology Durgapur*); Suman Samui (*NIT Durgapur*)

Session 223: Wireless Resource Optimization

2:30 PM – 4:00 PM IST | Venue: ECE 1.07

- 223.1 Mobile Base Station Optimal Tour in Wide Area IoT Sensor Networks**
 Sachin Kadam (*MNNIT*)



- 223.2 Robust Deep Reinforcement Learning for Task Scheduling in MEC-Enabled IoT Networks**
Vikky Masih (IITG); Arghyadip Roy (IITG)
- 223.3 DPAS: Demand-Pressure Adaptive Slicing for Real-Time 6G Network Resource Management**
Jaynil Panjwani (Indian Institute of Information Technology, Sricity); Neha Agrawal (Indian Institute of Information Technology, Sricity)
- 223.4 Ergodic Throughput in Coordinated Multi-point Downlink under Distributed Power Constraints**
mahesh nagulapalli (IIT Bombay); Mahendra Pratap Singh (IIT Bombay); Anil Kumar (INSA, INRIA, Lyon, France); Sibi Raj B. Pillai (IIT Bombay)
- 223.5 Mobility-Aware Offloading with SINR Prediction and Selective Replication in Fog-IoT Networks**
Rajasekhar Dasari (IIITDM Kancheepuram); Satyajit Mohapatra (IIITDM Kancheepuram); Sanjeet Kumar Nayak (IIITDM Kancheepuram)
- 223.6 Decoding-Order-Aware Secrecy Rate Maximization in IRS-Assisted Untrusted NOMA Under Imperfect SIC**
Ankit Kumar (Indian Institute of Technology Jammu); Kaneez Khatoon (Indian Institute of Technology Jammu); Deepak Mishra (University of New South Wales); Ravikant Saini (Indian Institute of Technology Jammu)
- 223.7 Reinforcement Learning-Based Decode and Forward UAV Relay Trajectory Optimization**
aniket Subbanwar (VNIT Nagpur); Ojas Joshi (VNIT Nagpur); Amit Agarwal (NIT Nagpur)
- 223.8 Measurement-Based Energy-Efficiency Optimization for On-demand Data Rate Provisioning in 5G RAN**
Ramagiddaiah Eediga (Indian Institute of Science); Preethi G V (Indian Institute of Science); Anand S V R (Indian Institute of Science); Chandra R. Murthy (Indian Institute of Science); Ryan Husbands (British Telecom)
- 223.9 Efficient Sampling for Pure Exploration Problems**
Dhinesh Chandran G (IIT Madras); Srinivas Reddy Kota (Indian Institute of Technology-Kharagpur); Srikrishna Bhashyam (IIT Madras)
- 223.10 Link Adaptation Using Joint-Thompson Sampling**
Vignatha Vinjam (IIT Hyderabad); Manjunath Kolavennu (IIT Hyderabad); Myna Vajha (IIT Hyderabad); Karthik Periyapattana Narayanaprasad (IIT Hyderabad)
- 223.11 Adaptive Scheduling for Low-Latency Coordination in Wi-Fi 8 Multi-AP Networks**
Hiya Shah (Ahmedabad University)
- 223.12 Robust Base Station Placement in Agricultural IoT via Bayesian Optimization**
Gourav Prateek Sharma (National Institute of Technology Kurukshetra); Durgesh Singh (Thapar Institute of Engineering and Technology); James Gross (KTH Royal Institute of Technology)