

NCC 2023 technical program (detailed version)

Date: 23-Feb-2023 (Thursday)

- 8 am -- 9 am: Registration in conference centre foyer
- Group photograph with the morning session tutorial/workshop speakers at 8:45 am in front of Conference Centre

Morning session (9:00 AM --12:00 noon) IST (Break of 15 minutes in between)

| Tutorial No. | Title | Speakers | Venue |
|--------------|--|---|-------------------|
| 1 | Zak OTFS: A New Paradigm for Integrated Communication and Radar Sensing | Prof. A. Chockalingam, IISc Bangalore and Prof. Saif Khan Mohammed, IIT Delhi | Conference room-1 |
| 2 | Digital Video 2023: Video Coding Landscape and intersection with Deep Learning | Mr. Shailesh Ramamurthy, Ittiam Systems | Conference room-2 |
| 3 | Cardio Vascular HealthCare | Prof. Samarendra Dandapat, IIT Guwahati | Conference room-3 |

Session Conveners: Prof. Sudarshan Mukherjee (Tutorial 1)
Prof. Kannan Karthik (Tutorial 2)
Prof. Manish Bhatt (Tutorial 3)

SDR Workshop (9:00 AM–12 noon) IST

09:00-09:45 Opening Session

09:45-11:00 Tech Session #1 Cyber-physical system

11:00-11:15 BREAK

11:15-12:15 Tech Session #2 Sustainable Data Driven Society

Workshop Chairs: Prof. Arzad Alam Kherani (IIT Bhilai) and Dr. Samar Shailendra (Intel)
Session Managers: Mr. Paban Bajor Barua and Mr. Syed Samimul Mazid (IIT Guwahati)
Venue: Seminar Room, EEE Dept

12 noon--12:30 pm: Industry Keynote Talk on 'Designing deep-space optical communication systems based on CCSDS and SDA standards' by Dr. Nanda Kishore Chavali, MathWorks

Session Convener: Prof. Shaik Rafi Ahamed
Venue: Conference room 4

1 pm—2 pm: Lunch

Date: 23-Feb-2023 (Thursday)

Afternoon session (2:00 PM--5:00 PM) IST (Break of 15 minutes in between)

| Tutorial No. | Title | Speakers | Venue |
|---------------------|--|--|-------------------|
| 4 | Data Efficient Cross-Domain Matching | Dr. Soma Biswas, IISc Bangalore | Conference room-1 |
| 5 | Semantics-aware Goal-Oriented Communications: Age of Information and Beyond (Virtual) | Dr. Nikolaos Pappas, Linköping University, Sweden | Conference room-3 |
| 6 | Federated Learning in Massive MIMO Networks: Convergence Analysis and Communication-Efficient Design (Virtual) | Mr. Mu Yuchen, Dr. Navneet Garg, Prof. Tharm Ratnarajah, University of Edinburgh, UK | Conference room-4 |

Session Conveners: Prof. Anirban Dasgupta (4)
Prof. Manoj B. R. (5)
Prof. Sarvendranath R. (6)

SDR Workshop-- (2:00 PM – 5:00 PM) IST

14:00-14:45 Tech Session #3 Defeat Digital divide

14:45-15:00 BREAK

15:00-16:15 Tech Session #4 Ubiquitous Intelligent Mobile Connected Society

16:15-16:45 Overview of ITU & oneM2M

16:45-17:00 Q&A/ Concluding Remarks

Workshop Chairs: Prof. Arzad Alam Kherani (IIT Bhilai) and Dr. Samar Shailendra (Intel)
Session Managers: Mr. Paban Bajor Barua and Mr. Syed Samimul Mazid (IIT Guwahati)
Venue: Seminar Room, EEE Dept.

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- **Group photograph with the afternoon session tutorial/workshop speakers at 5:15 pm in front of the Conference Centre**

Date: 24-Feb-2023 (Friday)

Morning Session

Regular Sessions: (8:15 AM – 9:45 AM) (4 papers x 3)

A1: Massive MIMO and Machine Learning

Session Chair: Prof. Chandra R. Murthy

Venue: Conference room-1

| Sr. No. | Paper Title | Authors | Time |
|----------------|--|---|------------------------|
| 1. | Comparative Study of Dynamic TDD with Full-Duplex in Cell-Free Massive MIMO Systems (Invited) | Anubhab Chowdhury; Chandra R. Murthy | 8:15 AM–8:45 AM |
| 2. | Multi-User mmWave Massive-MIMO Hybrid Beamforming: A Quantize Deep Learning Approach | Satish Kumar; Rajarshi Mahapatra; Anurag Singh | 8:45 AM–9:05 AM |
| 3. | Machine Learning Decoder for 5G NR PUCCH Format 0 | Anil Kumar Yerrapragada; Jeeva Keshav S; Ankit Gautam; Radha Krishna Ganti | 9:05 AM–9:25 AM |
| 4. | Power Allocation in a Cell-Free MIMO System Using Reinforcement Learning-Based Approach | Sucharita Chakraborty; Manoj B. R. | 9:25 AM–9:45 AM |

B1: Statistical Signal Processing

Session Chair: Prof. Kannan Karthik

Venue: Conference room-2

| Sr. No. | Paper Title | Authors | Time |
|----------------|---|---|------------------------|
| 1. | Variable Step-Size Zero Attractor LMS Based Channel Estimator for Millimeter Wave Hybrid MIMO System with Hardware Impairments | Vidya Bhasker Shukla; Vimal Bhatia | 8:15 AM–8:35 AM |

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|----|---|---|-----------------|
| 2. | Sniper Localization Using Acoustic Signal Processing Based on Time of Arrivals | Reddy Rakesh; Gyanajyoti Routray; Priyadarshini Dwivedi; Rajesh M Hegde | 8:35 AM–8:55 AM |
| 3. | PPG-Based End-To-End Framework for Cuffless Blood Pressure Estimation Using CNN-LSTM | Shresth Gupta; Anurag Singh; Abhishek Sharma | 8:55 AM–9:15 AM |
| 4. | Time-Frequency Domain Modified Vision Transformer Model for Detection of Atrial Fibrillation Using Multi-Lead ECG Signals | Haarika Manda; Shaswati Dash; Rajesh Tripathy, RKT | 9:15 AM–9:35 AM |

C1: Adaptation in Wireless Networks

Session Chair: Prof Rahul Vaze

Venue: Conference room-3

| Sr. No. | Paper Title | Authors | Time |
|---------|---|---|-----------------|
| 1. | Breaking the Unit Throughput Barrier in Random Access Protocol Based Distributed Systems (<i>Invited</i>) | Parikshit Hegde; Akshit Kumar; Rahul Vaze; Amira Alloum; Cedric Adjih | 8:15 AM–8:45 AM |
| 2. | Optimal Data Transfer over RIS-Assisted Edge Networks Using Coordinated 3D Beamforming | Shraddha Tripathi; Om Jee Pandey; Rajesh M Hegde | 8:45 AM–9:05 AM |
| 3. | A Heterogeneous Stacking Ensemble-Based Security Framework for Detecting Phishing Attacks | Basant Subba | 9:05 AM–9:25 AM |
| 4. | Rate Adaptation for Low Latency Real-Time Video Streaming | GD Raghava; Ashwin Colaco; Vishal Sevani; PreetamPatil; HimanshuTyagi | 9:25 AM–9:45 AM |

- **Group photograph with the plenary speaker at 9:50 am in front of the Auditorium**

10:00 AM —11:00 AM: Plenary Talk on “The Role of Link Quality Metrics in Cellular System Design, Analysis, and Simulations” by Prof. Neelesh B. Mehta, Indian Institute of Science, Bangalore, India

Session Convener: Prof. Salil Kashyap

Venue: Auditorium

11 AM —11:30 AM: Tea Break

Regular Sessions: (11:30 AM – 1 PM) (4 papers x 3)

A2: OTFS and Impairments

Session Chair: Prof. Amit Kumar Singh

Venue: Conference room-1

| Sr. No. | Paper Title | Authors | Time |
|----------------|---|--|----------------------------|
| 1. | On Performance of Wireless-Powered FD Relaying Network with Imperfect SIC and Hardware Impairments | Deepak Kumar; Praveen Kumar Singya; Vimal Bhatia | 11:30 AM–11:50 noon |
| 2. | Joint Compensation of TX/RX IQ Imbalance and Channel Parameters for OTFS Systems Under Timing Offset | Sapta Girish Babu Neelam; Pravas Ranjan Sahu | 11:50 AM–12:10 PM |
| 3. | Impact of Sinusoidal Co-Channel CW Interference on the Spectral Efficiency of OTFS Modulation | Muhammad Ubadah; Saif Khan Mohammed | 12:10 PM–12:30 PM |
| 4. | OTSM-SCMA: Analysis of Code-Domain NOMA Based Orthogonal Time Sequency Multiplexing Modulation | Anna Thomas; Nalluru Sangeeta; Kuntal Deka; Sanjeev Sharma; Alentattil Rajesh | 12:30 PM–12:50 PM |

B2: Speech Signal Processing

Session Chair: Prof. S. R. M. Prasanna

Venue: Conference room-2

| Sr. No. | Paper Title | Authors | Time |
|---------|---|--|-------------------------|
| 1. | Challenges in Spoken Language Diarization in Code-Switched Scenario (<i>Invited</i>) | Jagabandhu Mishra; Mahadeva Prasanna | 11:30 AM–12:00 noon |
| 2. | Improved Epoch Based Prosody Modification by Zero Frequency Filtering of Gabor Filtered Telephonic Speech | Rama Rajeswari M; Govind D; Suryakanth Gangashetty; Akhilesh Kumar Dubey | 12:00 noon– 12:20 PM |
| 3. | Analysis and Classification of Electroglottography Signals for the Detection of Speech Disorders | Deepak Kumar; Preetam Kumar; Udit Satija | 12:20 PM–12:40 PM |
| 4. | Parturition Hindi Speech Dataset for Automatic Speech Recognition | Vansh Bansal; Thishyan Raj T; Nagarathna Ravi; Shubham Korde; Jaskaran Kalra; Sudha Murugesan; Ramkrishnan B; Aboli Gore; Vipul Arora | 12:40 PM–1:00 PM |

C2: Coding Theory

Session Chair: Prof. Vineeth Bala Sukumaran

Venue: Conference room-3

| Sr. No. | Paper Title | Authors | Time |
|---------|---|----------------------------|---------------------|
| 1. | On the Effect of Phase Error on Physical Layer Security of RIS-Aided NOMA Network | Yasin Khan; Ankit Dubey | 11:30 AM–11:50 noon |

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| 2. | On Secret Sharing Schemes from Nonlinear Codes | Deepak Agrawal; Smarajit Das; Srinivasan Krishanaswamy | 11:50 AM–12:10 PM |
| 3. | Quantum Network Coding and Distribution of Maximally Entangled States in Measurement-Based Quantum Computing | Cheeranjiv Pandey; Sanidhya Gupta; Rimon Ranjit Das; Ankur Raina | 12:10 PM–12:30 PM |
| 4. | On Secondary Structure Avoiding DNA Codes with Reversible and Reversible-Complement Constraints | Krishna Gopal Benerjee; Adrish Banerjee | 12:30 PM–12:50 PM |

1 pm —2 pm : Lunch

Date: 24-Feb-2023 (Friday)

Afternoon Session

2:30 PM —3:00 PM: Industry Keynote Talk by Rohde and Schwarz

Session Convener: Prof. Anirban Bhowal

Venue: Conference room 3

3:00 PM — 4:00 PM: Plenary Talk on "How much more bandwidth do we need in wireless?" by Prof. Emil Bjornson, KTH Royal Institute of Technology, Sweden (Virtual)

Session Convener: Prof. Harshan Jagadeesh

Venue: Conference room-2

Invited Talk Session-I (4:00 PM – 4:45 PM) –30 minutes presentation + 15 minutes (Q&A)

- **Invited Talk on " Networking and Communication road map for India: Challenges and opportunities for the next 5 years" by Prof. Debabrata Das, IIIT Bangalore**
Session Convener: Prof. Sonali Chouhan
Venue: Conference Room 1
- **Invited Talk on "Deep Neural Net based Generative Models" by Prof. Saikat Chatterjee, KTH Royal Institute of Technology, Sweden**
Session Convener: Prof. Neeraj Kumar Sharma
Venue: Conference room-2

- **Invited Talk on "Speech Processing : Interplay of Domain Knowledge, Amount of Data, and Applications" by Prof. S. R. M. Prasanna, IIT Dharwad**
Session Convener: Prof. Rishikesh Kulkarni
Venue: Conference room-4
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- **4:45 pm—5 pm: High Tea (in the Auditorium Foyer)**
- **5 pm onwards: Inaugural Ceremony (in the auditorium)**
- **Group photograph with the Chief Guest after the inauguration (inside the Auditorium)**

Date: 25-Feb-2023 (Saturday)

Morning Session

Regular Sessions: (8:30 AM – 9:50 AM) (4 papers x 3)

A3: Communication Theory-I

Session Chair: Prof. Preetam Kumar

Venue: Conference room 1

| Sr. No. | Paper Title | Authors | Time |
|---------|--|--|-----------------|
| 1. | Effect of Polarization on RF Signal Transmission over Two-Ray Channel | Srishti Sharma; Chirantan Ganguly; Swades De | 8:30 AM–8:50 AM |
| 2. | Bit Error Rate Analysis of Double IRS Assisted Communication System Under Transceiver Hardware Impairments | Chandan Kumar; Aman Kumar; Salil Kashyap | 8:50 AM–9:10 AM |
| 3. | Average BER Analysis of NOMA Systems Under TWDP Fading | Pawan Kumar; Kalpana Dhaka | 9:10 AM–9:30 AM |
| 4. | Receiver for Asynchronous Distributed Transmission over AWGN Channel | Arhum Ahmad; Sonalika Singh; Satyam Agarwal | 9:30 AM–9:50 AM |

B3: Biomedical Signal Processing-I

Session Chair: Prof. Manish Bhatt

Venue: Conference room-3

| Sr. No. | Paper Title | Authors | Time |
|---------|---|---------------------------------|-----------------|
| 1. | 2-Stage Convolutional Neural Network for Breast Cancer Detection from Ultrasound Images | Sagar Deep Deb; Rajib Kumar Jha | 8:30 AM–8:50 AM |

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| 2. | Does Spatial Location of the Electrodes in EEG Matter for Tracking the Brain States? | Raghav Dev; Sandeep Kumar; Tapan Gandhi | 8:50 AM–9:10 AM |
| 3. | Tensor-Domain Machine Learning Based Cardiac Diseases Detection Using 12-Lead ECG | Chhaviraj Chauhan; Rajesh Tripathy, RKT; Monika Agrawal | 9:10 AM–9:30 AM |
| 4. | Radio Tomographic Imaging with Input Sensor Location Uncertainty | Abhijit Mishra; Upendra Sahoo; Subrata Maiti | 9:30 AM–9:50 AM |

C3: Next Generation Networks

Session Chair: Prof. Arghyadip Roy

Venue: Conference room-4

| Sr. No. | Paper Title | Authors | Time |
|---------|---|---|-----------------|
| 1. | On the Optimal Tradeoff of Age of Information and Transmission Power for Point-To-Point Links | Sudarsanan Krishnan; Vineeth Bala Sukumaran; Chandra R Murthy | 8:30 AM–8:50 AM |
| 2. | Localization of Nanomachine with Correlated Observations in Biological Nanonetworks | Ajit Kumar; Sudhir Kumar | 8:50 AM–9:10 AM |
| 3. | Information Loss Minimization in FANET-Aided Rechargeable IoT Networks Using Q-Learning | Aditya Singh; Yash Dixit; Rajesh M Hegde | 9:10 AM–9:30 AM |
| 4. | Study on Machine Learning Models for IPv6 Address Lookup in Large Block Lists | Nitin Kumar Radke; Shailendra Singh Tomar; Alpana Rajan | 9:30 AM–9:50 AM |

Invited Talks Session-II (8:15 am –9:45 am) (30 minutes for presentation + 15 minutes for Q&A)

Venue: Conference room-2

Session Convener: Prof. Brijesh Kumbhani

1. Invited Talk on "Information Freshness for Networked Autonomy" by Dr. Rajat Talak, Research Scientist, MIT, USA (Virtual)
2. Invited Talk on " Machine Learning for Visible Light Communication: Opportunities, System Design and Future Challenges" by Prof. Himal A. Suraweera, University of Peradeniya, Sri Lanka (Virtual)

10:00 AM —11:00 AM: Plenary Talk on " Using local weak limit techniques to study large sparse networks" by Prof. Venkat Anantharam, University of California Berkeley, USA (Virtual)

Session Convener: Prof. Tony Jacob

Venue: Conference room--2

11 AM —11:15 AM: Tea Break

Regular Sessions: (11:15 AM – 1 PM) (4 papers x 3)

A4: Information Theoretic Aspects of Communication Systems

Session Chair: Prof. K. Giridhar

Venue: Conference room-1

| Sr. No. | Paper Title | Authors | Time |
|---------|--|--|-------------------|
| 1. | Frequency Projection: A Review and Its Application in Channel Modelling (<i>Invited</i>) | C Ramanathan; Sairaj Yeshwant Desai; Shilajeet Banerjee; K Giridhar | 11:15 AM–11:45 AM |
| 2. | Zero-Error Communication with an Influencer | Ankur A. Kulkarni; Reema Deori | 11:45 AM–12:05 PM |

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| 3. | On Age of Information for Remote Control of Markov Decision Processes over Multiple Access Channels | Minha Mubarak; Vineeth Bala Sukumaran | 12:05 PM–12:25 PM |
| 4. | A Novel Shared-Aperture Dual-Band (n78/n257) Reconfigurable Antenna for 5G Mobile Terminals | Suchitra Tiwari; Amit Kumar Singh; Ankit Dubey | 12:25 PM –12:45 PM |
| 5. | Communication-Constrained Distributed Mean Estimation of Log-Concave Distributions | Ritesh Kumar; Shashank Vatedka | 12:45 PM–1:05 PM |

B4: Machine Learning for Image Processing

Session Chair: Prof. Rajib Kumar Jha

Venue: Conference room-3

| Sr. No. | Paper Title | Authors | Time |
|---------|--|---|----------------------|
| 1. | Learning 6DoF Grasp-Poses in Occluded Scenes Using RGB and 3D Point Cloud Modalities | Abhay D Mathur; Sachin Bhadang; Prem Raj; Tushar Sandhan; Laxmidhar Behera | 11:15 AM–11:35 AM |
| 2. | Robust Manipulation Parameter Estimation Scheme for Post-JPEG Compressed Images Using CNN | Vijayakumar Kadha; Santos Ku Das | 11:35 AM–11:55 AM |
| 3. | A Novel Embedding Architecture and Score Level Fusion Scheme for Occluded Image Acquisition in Ear Biometrics System | Archishman Biswas; Goutham A P; Saket Pateriya; DivyangSuresh bhai Jadav; Satish Mulleti; Vikram M. Gadre | 11:55 AM–12:15 PM |
| 4. | A Lightweight Deep Residual Attention Network for Single Image Super Resolution | Inderjeet; Jyotindra Singh Sahambi | 12:15 PM–12:35 PM |

A5: Communication Theory-II

Session Chair: Prof. Prabhat Kumar Sharma

Venue: Conference room 4

| Sr. No. | Paper Title | Authors | Time |
|----------------|---|--|-------------------|
| 1. | A BBL-Net Based OFDM Signal Detection in the Presence of RF Impairments | Shubham Anand; Amit Kumar Singh; Preetam Kumar | 11:15 AM–11:35 AM |
| 2. | Opportunistic Beamforming Based Hybrid Analog-Digital Multi-User mmWave Communications: Design and Analysis | Kanchan Verma; Chandra R Murthy | 11:35 AM–11:55 AM |
| 3. | Short Packet Communication over 2-User Non-Orthogonal Multiple Access Channel with Confidential Message | Uppalapati Somalatha; Parthajit Mohapatra | 11:55 AM–12:15 PM |
| 4. | On the Performance of Generalized Spatial-Index Modulation Based Orthogonal Time Frequency Space System | Km Deepika Rajpoot; P. Maheswaran | 12:15 PM–12:35 PM |

Invited Talk Session III (11:30 am–1 pm)

Session Convener: Prof. Kalpana Dhaka

Venue: Conference room 2

1. Invited Talk on "Compression with Random Access" by Dr. Shashank Vatedka, Assistant Professor, IIT Hyderabad, India
2. Invited Talk on 'Facing to Information Aging for 6G'by Dr. Jemin Lee, Associate Professor, Sungkyunkwan University, South Korea (Virtual)

1 pm – 2 pm: Lunch

Date: 25-Feb-2023 (Saturday)

Afternoon Session

Group photograph with the plenary speaker at 1:50 pm in front of the Administration Building

2:00 PM — 3:00 PM: Plenary Talk on "5G Networks, Applications, and Security – Opportunities and Challenges " by Dr. Ashutosh Dutta, John Hopkins University, USA

Session Convener: Prof. Shaik Rafi Ahamed

Venue: Auditorium

3:00 PM – 4:30 PM: DoT Session

Conveners: Prof. Ratnajit Bhattacharjee and Prof. Preetam Kumar

Venue: Auditorium

4:30 PM —4:45 PM: Tea Break

Invited Talks Session IV: (4:45 PM – 7:00 PM)

Session Convener: Prof. Ranjan Kumar Mallik, Venue: Conference room-2

- 1. Invited Talk on "An Erasure Queue-Channel With Feedback: Optimal Transmission Control to Maximize Capacity" by Dr. Krishna Jagannathan, Associate Professor, IIT Madras, India**
 - 2. Invited Talk on "Analysis of bundling OTT (video) content with internet service in an ISP market " by Dr. Pooja Vyavahare, Assistant Professor, IIT Tirupati, India**
 - 3. Invited Talk on " Reconfigurable intelligent surfaces and holographic MIMO transceivers: Current status and future directions" by Dr. George C. Alexandropoulos, Assistant Professor, National and Kapodistrian University of Athens, Greece (Virtual)**
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Invited Talks Session V (Theme: Underwater Communications): (4:45 PM – 7:00 PM)

Session Convener: Prof. Sam Darshi, IIT Ropar, Venue: Conference room-4

- 1. Invited Talk on 'Underwater Communication Sensor Networks' by Prof. P. R. Sahu, IIT Bhubaneswar**
- 2. Invited Talk on "Application of Digital Holography Microscopy in the studies of Micro-planktons and Micro-particles in Waterbodies" by Dr. Rishikesh Kulkarni, IIT Guwahati, India**
- 3. Invited Talk on "Underwater Optical Wireless Communication- A Brief Overview and the Emerging Trends " by Dr. Anirban Bhowal, IIIT Naya Raipur, India**

7 pm – 8 pm: Cultural program (in the auditorium)

8 pm onwards: Banquet dinner (Lawn next to the auditorium)

Date: 26-Feb-2023 (Sunday)

Morning Session

8:15 AM —9:15 AM: Plenary Talk on “Performance Bounds for Policy-Based Average Reward Reinforcement Learning Algorithms” by Prof. R. Srikant, University of Illinois Urbana-Champaign, USA (Virtual)

Session Convener: Prof. Arghyadip Roy

Venue: Conference room-2

Regular Sessions: (9:30 AM – 11 AM) (4 papers x 3)

A6: Antenna Design

Session Chair: Prof. Mahima Arrawatia

Venue: Conference room-1

| Sr. No. | Paper Title | Authors | Time |
|----------------|---|---|---------------------------|
| 1. | Compact Printed Super Wideband MIMO Antenna with Polarization Diversity | Abhishek Kumar Chaudhary; Murli Manohar | 9:30 AM–9:50 AM |
| 2. | Pattern and Frequency Re-Configurability with Liquid DRAs: Bi-Directional and Uni-Directional Radiation Patterns | Utpal Kumar Sarma; Rakesh Singh Kshetrimayum | 9:50 AM --10:10 AM |
| 3. | Millimeter Wave MPA Using Metamaterial-Substrate Antenna Array for Gain Enhancement | Pranjalee Mishra; Rishitha Komatineni; Kishore Kulat | 10:10 AM–10:30 AM |

B5: Audio Signal Processing

Session Chair: Prof. P. K. Bora

Venue: Conference room-3

| Sr. No. | Paper Title | Authors | Time |
|----------------|--|---|--------------------------|
| 1. | A Non-Linear Source-Filter Based Vocoder with Prosody Control | Pamisetty Giridhar; Gundluru Ramesh; Kodukula Sri Rama Murty | 9:30 AM–9:50 AM |
| 2. | Long-Term Temporal Audio Source Localization Using SH-CRNN | Priyadarshini Dwivedi; Siddesh Bharat Hazare; Gyanajyoti Routray; Rajesh M Hegde | 9:50 AM–10:10 AM |
| 3. | Investigation of Data Augmentation Techniques for Bi-LSTM Based Direct Speech to Speech Translation | Lalaram Arya; Ayush Agarwal; Mahadeva Prasanna | 10:10 AM–10:30 AM |
| 4. | Improved Vehicle Sub-Type Classification for Acoustic Traffic Monitoring | MohdAshhad; Umang Goenka; Aaryan Jagetia; Parwin Akhtari; Sooraj K. Ambat; Mary Samuel | 10:30 AM–10:50 AM |

B6: Advanced Communication and Signal Processing Techniques

Session Chair: Prof. Ribhu

Venue: Conference room-4

| Sr. No. | Paper Title | Authors | Time |
|----------------|---|--|--------------------------|
| 1. | Meditative State Classification Using Neuronal Multi-IMF Band Power and Complexity Features | Swati Singh; Kurusetti Vinay Gupta; Tharun Reddy; Laxmidhar Behera; Suvendu Samanta | 9:30 AM–9:50 AM |
| 2. | Adversarial Robustness via Class Partitioning | Raj Gaurav Tiwari; Andrew Thangaraj | 9:50 AM–10:10 AM |
| 3. | A Fast Dictionary Learning Algorithm for CSI Feedback in Massive MIMO FDD Systems | Pavan Kumar Gadamsetty; K. V. S. Hari | 10:10 AM–10:30 AM |
| 4. | ConvPlant-Net: A Convolutional Neural Network Based Architecture for Leaf Disease Detection in Smart Agriculture | Rajib Kumar Jha; Sudhir Kumar; Sagar Deep Deb | 10:30 AM–10:50 AM |

Invited Talk Session-VI (9:30 AM –11AM)

Session Convener: Prof. Sarvendranath R.

Venue: Conference room-2

1. Invited Talk on "Graph-aware Neural Networks " by Dr. Sundeep Prabhakar Chepuri, IISc Bangalore
2. Invited Talk on " Towards Emergent Semantic Communications using Neuro-Symbolic Causal Reasoning and Signaling Game " by Dr. Christo K. Thomas, Virginia Tech, USA (virtual)

11 AM —11:30 AM: Tea Break

Regular Sessions: (11:30 AM – 1 PM) (4 papers x 3)

A7: Multiple Access Techniques

Session Chair: Prof. P. R. Sahu

Venue: Conference room 1

| Sr. No. | Paper Title | Authors | Time |
|----------------|--|--|-------------------------------|
| 1. | A Two-Tier Deep Neural Network Detector for Two-User Rate-Splitting Multiple Access Systems | Spoorthy K R; Soumya B Hudalimath; Sriveda Medatati; Sinchana V; Anagha K Kowshik; Sanjeev Gurugopinath | 11:30 AM--11:50 AM |
| 2. | Ergodic Sum Rate Analysis of STAR-RIS-Aided NOMA Network with Imperfect SIC | Amit Kumar Pandey; Ankur Bansal | 11:50 AM--12:10 PM |
| 3. | Hybrid Decode- and Amplify-And-Forward Protocol for NOMA-Enabled Power Line Communication | Roopesh Ramesh; Sanjeev Gurugopinath | 12:10 PM--12:30 PM |
| 4. | RIS-Assisted User Pairing NOMA System for THz Communications | M. Hemanta Kumar; Sanjeev Sharma; Kuntal Deka; Mohit Sharma | 12:30 PM--12:50 PM |

B7: Signal Processing for Security and Compression

Session Chair: Prof. K. S. Rama Murty

Venue: Conference room-3

| Sr. No. | Paper Title | Authors | Time |
|---------|--|--|--------------------|
| 1. | A Random-Key Based Second-Level Encryption for Reversible Data Hiding in Encrypted Images | Vaibhav Reddy; Shaiju Panchikkil; Manikandan Vazhora Malayil | 11:30 AM--11:50 AM |
| 2. | Feature Space Perturbation for Transferable Adversarial Examples in Image Forensics Networks | Rijuban Rangslang; Prabin Kumar Bora | 11:50 AM--12:10 PM |
| 3. | Limitations of the Perceptual Deadband Approach for Haptic Data Compression | Mohan Chhabaria; HemanthGattu; Amit Bhardwaj | 12:10 PM--12:30 PM |

A8: RF, Photonics and Optical Communications

Session Chair: Prof. Ashwini Sawant

Venue: Conference room-4

| Sr. No. | Paper Title | Authors | Time |
|---------|---|---|--------------------|
| 1. | RF Metasurface Based 'Add-Ons' for Boosting Signal-To-Noise Ratio of 1.5T MRI Scans | Jegyasu Gupta; Priyanka Das; Tanmay Bhowmik; Ratnajit Bhattacharjee; Debabrata Sikdar | 11:30 AM--11:50 AM |

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| 2. | Photonic Generation of Multiband V and Cross Chirps Using a Dual-Drive Mach Zehnder Modulator | Rajveer Dhawan; Reena Parihar; Amol Choudhary | 11:50 AM--12:10 PM |
| 3. | Optically Controlled Digital Metasurface for Radar Cross-Section Reduction | Chandresh Dhote; Anamika Singh | 12:10 PM--12:30 PM |
| 4. | Modeling of Channel Asymmetry in HAP-Based Optical Wireless Communications | Neha Tiwari; Swades De; Selvamuthu Dharmaraja | 12:30 PM--12:50 PM |

Invited Talk Session-VII (11:30 AM–1 PM)

Session Convener: Prof. Sarvendranath R.

Venue: Conference room-2

3. Invited Talk on 'A SIC-Free Approach for Rate-Splitting Multiple Access Systems' by Dr. Daniel B. da Costa, Principal Researcher, Technology Innovation Institute, UAE (Virtual)
4. Invited Talk on 'Distributed Joint Radar-Communications' by Prof. Bhavani Shankar, Université du Luxembourg, Luxembourg

1 pm – 2 pm: Lunch

Date: 26-Feb-2023 (Sunday)

Afternoon Session

2:00 PM — 3:00 PM: Plenary Talk on "Model Based Deep Learning: Applications to Imaging and Communications " by Prof. Yonina C. Eldar, Weizmann Institute of Science, Israel (Virtual)

Session Convener: Prof. Arun B. Alosious

Venue: Conference room-2

3:00 PM —3:30 PM: Industry Keynote Talk on “Challenges and Trade-offs in Integrated Transceiver Architectures for High Performance 5G Wireless Base Stations” by Mr. Gunturi Sarma, Texas Instruments

Session Convener: Prof. Debanga Raj Neog

Venue: Conference room--4

3:30 PM —4:00 PM: Tea Break

4:00 PM – 5:30 PM: Women in Engineering (30 minutes presentation + 15 minutes Q&A)

Session Convener: Prof. Kalpana Dhaka and Prof. Hemangee K. Kapoor

Venue: Conference room: 2

- **Invited Talk on 'Audio representation learning using graphs' by Dr. Tanaya Guha, University of Glasgow, Scotland (Virtual)**
 - **Invited Talk by Dr. Mahima Arrawatia, IIT Guwahati**
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Regular Sessions: (4:00 PM – 5:30 PM) (4 papers x 3)

A9: Communication Theory-III

Session Chair: Prof. Prof. Kuntal Deka

Venue: Conference room 1

| Sr. No. | Paper Title | Authors | Time |
|----------------|--|--|------------------------|
| 1. | Hovering UAV-Based FSO Communications with DF Relaying: A Performance Analysis | Deepshikha Singh; Cheguri Sai Srikar Reddy; Swaminathan Ramabadran | 4:00 PM–4:20 PM |
| 2. | On the Performance of Communication in a Vehicular Network with Platooned Traffic | Rangesh P; Kaushlendra Pandey; Abhishek K Gupta | 4:20 PM–4:40 PM |
| 3. | Performance Analysis of Smart Grid Network with Energy Harvesting over Mixed RF/PLC Channel | Hemanta Kumar Sahu; Ashish Kumar Padhan; Dontamsetti Satya Ganesh; Pravas Ranjan Sahu | 4:40 PM–5:00 PM |

B8: Biomedical Signal Processing - II

Session Chair: Prof. Jyotindra Singh Sahambi

Venue: Conference room-3

| Sr. No. | Paper Title | Authors | Time |
|---------|---|--|-----------------|
| 1. | Alternating Sequential and Residual Networks for Skin Cancer Detection from Biomedical Images | Nitish Kumar; Tushar Sandhan | 4:00 PM–4:20 PM |
| 2. | Stationary Wavelet Transform Based Detection of Aortic Stenosis Using Seismocardiogram Signal | Moirangthem James Singh; Samarjeet Das; L N Sharma; Samarendra Dandapat | 4:20 PM–4:40 PM |
| 3. | Effective WBC Segmentation Using Hybrid Loss | Arjun Abhishek; Rajib Kumar Jha; Ruchi Sinha; Kamlesh Jha | 4:40 PM–5:00 PM |

A10: Next Generation Communication Systems

Session Chair: Prof. Ribhu

Venue: Conference room-4

| Sr. No. | Paper Title | Authors | Time |
|---------|--|--|-----------------|
| 1. | Machine Learning Based Power Control for a Secondary Cell-Free Network | Rimalapudi Sarvendranath; Kalpeswar Paul | 4:00 PM–4:20 PM |
| 2. | Analysis of THz Wireless Systems in Rician Fading | SwarnimaKhadanga; Sudharsan Parthasarathy; Satya Kumar Vankayala; Seungil Yoon | 4:20 PM–4:40 PM |

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| 3. | Outage Probability Analysis of Hard-Switching Based Mixed FSO/IRS-Aided RF Communication | Soumen Mondal; Anirban Bhowal; Salil Kashyap; Rakesh Singh Kshetrimayum; Moumita Patra | 4:40 PM–5:00 PM |
| 4. | Wavelength-Dependent Performance of Spatial Light Modulator-Based OAM Beam Generator and Detector | Abhishek Mani Shukla; Sumanta Gupta | 5:00 PM–5:20 PM |

4:00 PM–5:30 PM: Graduate Student Day

Conveners: Prof. Manish Bhatt and Prof. Anirban Dasgupta

Venue: Conference Center Foyer

| Serial No. | Author(s) | Affiliation | Title |
|-------------------|-----------------------|-----------------------|---|
| 1. | Nishant Gupta | IIT Ropar | On-Demand Coverage in UAV-Assisted Communication System |
| 2. | Deepak Agrawal | IIT Guwahati | Nonlinear Secret Sharing Schemes based on Z₄ Linear Codes |
| 3. | Parthiban A | IIIT Bangalore | Novel Resource Allocation Algorithms to Maximize Sum Spectral Efficiency in Hybrid IBFD Networks for 5G And Beyond |

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|-----|---|--------------|--|
| 4. | Santosh K. Singh, Abhay K. Sah, Satya K. Vankayala, S. Parthasarathy, U. Godavarti, and S. Yoon | IIT Roorkee | Beam-combining in 5G Open-RAN Systems |
| 5. | Sagar Deep Deb, Rajib Kumar Jha | IIT Patna | Modified Double U-Net Architecture for Medical Image Segmentation |
| 6. | Chandan Kumar | IIT Guwahati | On Feasibility of Wireless Energy Transfer Using Intelligent Reflecting Surface |
| 7. | Anand Jee, Shankar Prakriya | IIT Delhi | A CDRT NOMA Framework for Low Outage and High Link Reliability Applications |
| 8. | J. Deeraaj Kumar, Parthajit Mohapatra, Nikolaos Pappas | IIT Tirupati | Short Packet Communication over a Two-user Z Interference Channel with Rayleigh Fading |
| 9. | E. Venkata Pothan, Salil Kashyap | IIT Guwahati | Massive MIMO Enabled Opportunistic Spectrum Access Under Incomplete And/Or Imperfect Channel Knowledge |
| 10. | Vinjamoori Vikas, A Rajesh, Kuntal Deka, Sanjeev Sharma | IIT Guwahati | A Comprehensive Technique to Design SCMA Codebooks |

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|-----|--|---------------|---|
| 11. | PamisettyGiridhar, Sri Rama Murty Kodukula | IIT Hyderabad | Prosody-TTS: An end-to-end speech synthesis system with prosody control |
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