ICST-2022 Program

January 16, 2022

Tutorial:

Sessions Chairs: Avik Santra, Infineon Technologies AG, Germany,
Biswarup Mukherjee, IIT Delhi, and
Boby George, IIT Madras, India

09:30AM-11:00AM:

Title: Deep Learning for Photoacoustic Tomography Image Reconstruction

Dr. Parag V. Chitnis, George Mason University, USA

11:30AM-1:00PM:

Title: AI-driven Sensing for Smart Buildings

Dr. Ashish Pandharipande, Eindhoven University of Technology, Nedherlands and
Dr. Avik Santra, Infineon Technologies, Germany

2:0PM-3:30PM

Title: Internet of Medical Things (IoMT): A Future Connected Healthcare System

Prof. Subhas Mukhopadhyay, Macquarie University, Australia

4:0PM-5:30PM

Title: Reinforcement Learning for Sensors and Sensing Applications

Dr. Lorenzo Servadei, Infineon Technologies, Germany

All timings are in Indian Standard Time (IST)

January 17, 2022

09:00AM –09:30AM: **Opening Ceremony**

Inauguration and welcome by Prof. Bhaskar Ramamurthi, Director, IIT Madras

09:30AM – 10:00AM: Coffee Break

10:00AM – 12:00PM: Session#1
Session Chair: Dr. S.Nagender Kumar, University of Hyderabad

10:00AM-10:20AM Graph Signal Processing based Product Inspection Using Polarization Imaging: Andrew Gigie (Tata Consultancy Services); Saurabh Sahu (Tata Consultancy Services); Achanna Anil Kumar (Tata Consultancy Services); Kriti Kumar (Tata Consultancy Services); Mariswamy Girish Chandra (Tata Consultancy Services); Tapas Chakravarty (Tata Consultancy Services)

10:20AM-10:40AM Real-time Object Detection and Tracking from Videos:
Madhurima Ghosh (St. Thomas' College of Engineering & Technology), Aousnik Gupta (St. Thomas' College of Engineering & Technology), Mehdi Hossain (St. Thomas' College of Engineering & Technology), Adrish Bose (St. Thomas' College of Engineering & Technology), Dipak Das (Defence Research & Development Organisation (DRDO) Chandipur, India); Manvendra Singh Chauhan (Defence Research & Development Organisation (DRDO) Chandipur, India)

10:40AM-11:00AM Deep Learning based Detection of Foot Lift Event using a Single Accelerometer for Accurate Firing of FES:
Bijit Basumatary (Indian Institute of Technology Ropar); Rajat Suvra Halder (Indian Institute of Technology Ropar); Ashish Sahani (Indian Institute of Technology Ropar)

11:00AM-11:20AM A NIRS based device for identification of acute ischemic stroke by using a novel organic dye in the human blood serum:
Raktim Bhattacharya (IIT Mandi); Dalchand Ahirwar (IIT Mandi); Bidisha Biswas (IIT Mandi); Gaurav Bhutani (IIT Mandi); Shubhajit Roy Chowdhury (IIT Mandi)

11:20AM-11:40AM The Development of a Portable IoT-Enabled Aqueous Sulphur Sensor:
Brady Shearan (Macquarie University)

11:40AM-12:00PM FEA analysis on the optimum placement of sensors for early detection of damage in concrete pavements:
Sakura Mukhopadhyay (Macquarie University); Mohsen Asadnia (Macquarie University)

12:00PM – 1:00PM: Lunch Break

1:00PM – 2:00PM: Keynote Session-1
Chair: Dr. Avik Santra, Infineon, Germany

Title: Future demands in automotive Radar:
Dr.-Ing. Juergen Dickmann, DAIMLER AG., Stuttgart, Germany

2:00PM – 2:30PM Coffee Break

2:30PM – 4:30PM: Session#2

Session Chairs: Dr. George Shaker University of Waterloo, Canada & Dr. Avik Santra, Infineon, Neubiberg

2:30PM-2:50PM Fusion of radar data domains for human activity recognition in assisted living:

Julien Le Kernec (University of Glasgow Glasgow, United Kingdom) ; Franscesco Fioranelli (TU Delft Delft, The Netherlands); Olivier Romain (CY university, Cergy-Pontoise, France); Alexandre Bordat (CY university, Cergy-Pontoise, France)

2:50PM-3:10PM Statistical Performance Analysis of Radar-Based Vital-Sign Processing Techniques:

Gabriel Beltrão (University of Luxembourg); Mohammad Alaee-Kerahroodi (University of Luxembourg); Udo Schroeder (IEE S.A., Luxembourg); Dimitri Tatarinov (IEE S.A., Luxembourg); Bhavani Shankar Mysore Ramarao (University of Luxembourg)

3:10PM-3:30PM An Overview of Vital Signs Monitoring Based on RADAR Technologies:

Shahrokh Hamidi (University of Waterloo); Safieddin Safavi-Naeini (University of Waterloo) ; George Shaker (University of Waterloo)

3:30PM-3:50PM A C-Band Intermodulation Radar System for Target Motion Discrimination:

Ashish Mishra (Texas Tech University); Changzhi Li (Texas Tech University)

3:50PM-4:10PM Application of Variational Mode Decomposition to FMCW Radar Interference Mitigation:

Thilina Balasooriya (Hamilton High School Chandler, USA); Prateek Nallabolu (Texas Tech University) ; Changzhi Li (Texas Tech University)

4:30PM – 5:00PM Coffee Break

5:00PM – 7:00PM Session#3

Session Chair: Prof. Dr. Octavian Adrian Postolache, Instituto de Telecomunicações, Lisbon, Portugal

5:00PM-5:20PM Lossy mode resonances supported by nanoparticle-based thin-films:

Ignacio Vitoria (Public University of Navarra, Institute of Smart Cities, Spain) ; Carlos Coronel (Public University of Navarra, Spain); Aritz Ozcariz (Public University of Navarra, Institute of Smart Cities, Spain); Carlos Ruiz Zamarreño (Public University of Navarra, Institute of Smart Cities, Spain); Ignacio R. Matias (Public University of Navarra, Institute of Smart Cities, Spain)

5:20PM-5:40PM Deep Learning-based Out-of-Distribution Detection and Recognition of Human Activities with IMU Sensors:

Niall Lyons (Infineon Technologies, Dublin, Ireland) ; Avik Santra (Infineon Technologies, Germany); Ashutosh Pandey (Infineon Technologies, Irvine, CA)

5:40PM-6:00PM A Simple, Linear Circuit for Measurement of Sub-pF Range of Capacitances Using a Double Differential Measurement Approach:

Mithun M.S. (National Institute of Technology Calicut); Abin Dany Mathew (National Institute of Technology Calicut); Hemanth Sankar P. (National Institute of Technology Calicut)

6:00PM-6:20PM Comparison of the Routing Algorithms based on Average Location Error and Accuracy in WSN:

P.Sakthi Shunmuga Sundaram (SRM Institute of Science and Technology, Kattankulathur, India); K. Vijayan (SRM Institute of Science and Technology, Kattankulathur, India)

6:20PM-6:40PM Vibration Measurement as Feedback from a Pneumatic Knife

Dmytro Romanov (Norwegian University of Life Sciences, Norway); Olga Korostynska (Oslo Metropolitan University Oslo, Norway); Alex Mason (Norwegian University of Life Sciences, Norway); Luis Eduardo Cordova-Lopez (Norwegian University of Life Sciences, Norway)

6:40PM-7:00PM Carbon Nanotubes-doped Tin Oxide-based Thin-film Sensors to detect Methane Gas:

Aniket Chakraborty (RV College of Engineering, India) and Anindya Nag (Technische Universität Dresden)

January 18, 2022

09:00AM–11:00AM: Session#4

Session Chair: Dr. Sanket Goel, BITS-Pilani, Hyderabad

9:00AM-9:20AM Development of an Acetone Sensor using rGO-ZnO Composite:

Fowzia Akhter (Macquarie University); Hasin Reza Siddiquei (Macquarie University); Subhas Mukhopadhyay (Macquarie University)

9:20AM-9:40AM Design and Development of an IoT enabled Sensor Node for Agricultural & Modelling Applications:

Brady Shearan (Macquarie University); Fowzia Akhter (Macquarie University); S.C. Mukhopadhyay (Macquarie University)

9:40AM-10:00AM Planar Capacitive Touch Sensors – A Comparative Study

Pamula Sreekeerthi (IIT Madras, India); Nitheesh M. Nair (IIT Madras, India); Garikapati Nagasarvari (IIT Madras, India); Parasuraman Swaminathan (IIT Madras, India)

10:00AM-10:20AM Application of Photoacoustic sensing in depicting viscosity information of the lubrication oil:

Abhijeet Gorey (TCS Research); Arijit Sinharay (TCS Research); C. Bhaumik (TCS Research); Tapas Chakravarty; Arpan Pal (TCS Research)

10:20AM-10:40AM IoT Enabled PoC Medical Diagnostic MEMS-Based Sensor Device for Kidney Healthcare

Sumedha Prabhu (Macquarie University) ; Subhas Mukhopadhyay (Macquarie University)

10:40AM-11:00AM Addressing Adversarial Machine Learning Attacks in Smart Healthcare Perspectives:

Arawinkumaar Selvakkumar (Queensland University of Technology); Shantanu Pal (Queensland University of Technology); Zahra Jadidi (Queensland University of Technology)

11:00AM – 11:30AM Coffee Break

11:30AM – 12:30PM Invited Talks

Chair: Prof. V. Jagadeesh Kumar, IIT Madras, India

11:30AM – 12:00PM

Title: Ultrasensitive Biosensors Operating in Complex Biological Fluids

Dr. Chirasree RoyChaudhuri, IIEST, Shibpur, India

12:00P – 12:30PM

Title: Drilling in the Fourth Industrial Revolution: Vision, Challenges and Opportunities

Dr.Chinthaka Gooneratne, Saudi Aramco, Saudi Arabia

12:30PM– 1:30PM Lunch Break

1:30PM – 2:30PM Keynote Session -2

Chair: Prof. Joyanta Kumar Roy, Eureka Foundation Kokata, India

Title: Wide industrial acceptance of FBG sensors: challenges and opportunities:

Prof. Tong Sun OBE FREng, City University London, UK

2:30PM – 4:30PM Session#5

Session Chair: Prof.Tarikul Islam, Jamia Milia Islamia, India

2:30PM-2:50PM CdS-SnO2 nanocomposite sensor for room temperature detection of NO2 gas
Ajay Kumar Sao (University of Delhi); Jatinder Pal Singh (University of Delhi); Babita Sharma (University of Delhi); Sandeep Munjal (Indian Institutes of Technology Delhi) ; Anjali Sharma (University of Delhi); Monika Tomar (University of Delhi); Arijit Chowdhuri (Acharya Narendra Dev College, University of Delhi)

2:50PM-3:10PM Epileptic Seizure Detection Using Continuous Wavelet Transform and Deep Neural Networks
Rahul Shukla (IIT Ropar) ; Balendra (IIT Ropar) ; Gaurav G (Indian Institute of Technology Roorkee); Ashish Kumar Sahani (IIT Ropar); Gagandeep Singh (Dayanand Medical College and Hospital Ludhiana)

3:10PM-3:30PM Filament Supply Thermal Control for FFF/FDM 3D Printing Technology
Martin Ralchev (Technical University of Sofia); Valentin Mateev (Technical University of Sofia) ; Iliana Marinova (Technical University of Sofia)

3:30PM-3:50PM Electric Arc Discharge Power Estimation by CNN Image Classification
Martin Ralchev (Technical University of Sofia); Valentin Mateev (Technical University of Sofia) ; Iliana Marinova (Technical University of Sofia)

3:50PM-4:10PM Design of a microwave planar device for humidity detection
Durga Nand Mahaseth (Jamia Millia Islamia); Tarikul Islam (Jamia Millia Islamia) ; Upendra Mittal (SSPL, DRDO)

4:10PM-4:30PM UV Laser-induced Graphene Electrode for Supercapacitor and Electrochemical Sensing Applications:
Kalpana Settu (National Taipei University); Jang-Zern Tsai (National Taipei University); Yu-Chi Cheng (National Taipei University); Yu-Min Du (National Taipei University)

4:30PM – 5:00PM Coffee Break

5:00PM – 7:00PM Session#6

Session Chair: Prof. Sandeep Pirbhulal, Norwegian Computing Center, Norway

5:00PM-5:20PM Methods Tested to Optimize the Performance of WEBGL Applications
Muhammad Aamir (Huanggang Normal University); Guan Yurong (Nanjing University of Science and Technology); Ziaur Rahman (Huanggang Normal University); Zaheer Ahmed Dayo (Huanggang Normal University); Muhammad Ishfaq (Huanggang Normal University)

5:20PM-5:40PM A Compact Wideband Planar Monopole Antenna with Defected Ground Structure for Modern Radar Sensing Systems.:
Zaheer Ahmed Dayo (Huanggang Normal University) ; Muhammad Aamir (Huanggang Normal University) ; Permanand Soothar (Nanjing University of Science and Technology); Shoaib Ahmed Dayo (University of Salerno); Imran A. Khoso (Nanjing University of Aeronautics and Astronautics); Zihua Hu (Huanggang Normal University); Guan Yurong (Huanggang Normal University)

5:40PM-6:00PM A Simple, Drift Compensated Method For Estimation of Isometric Force Using Sonomyography:
Anne Tryphosa Kamatham (Indian Institute of Technology Delhi) ; Meena Alzamani (George Mason University); Allison Dockum (George Mason University); Siddhartha Sikdar (George Mason University); Biswarup Mukherjee (Indian Institute of Technology Delhi)

6:00PM-6:20PM A Linear Process Analysis and Sensor Applications of a Pilot Water Treatment Plant:
Waqas Afridi (Macquarie University); Subhas Mukhopadhyay (Macquarie University)

6:20PM-6:40PM Development and Simulation of the Moisture Model in Breather for Transformer Condition Monitoring
Priti Kumari (Jamia Millia Islamia); Shailesh Kumar (Thapar Institute of Engineering and Technology) ; Tarikul Islam (Jamia Millia Islamia)

6:40PM-7:00PM A Lightweight Security Scheme for Failure Detection in Microservices Edge Network
Ali Sodhro (Kristianstad University); Abdullah Lakhan (BBSUL) ; Sandeep Pirbhulal (Norwegian Computing Center); Habtamu Abie (Norwegian Computing Center)

7PM – 7:15PM Closing Ceremony