IEEE
APSCON 2023
IEEE Applied Sensing Conference
Bengaluru, India // 23-25 January 2023

APSCON 2023 CONFERENCE PROGRAM

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IEEE Sensors Council
CELEBRATING 25 YEARS

TABLE OF CONTENTS

WELCOME TO THE FIRST APPLIED SENSING CONFERENCE (APSCON) 2023

On behalf of the organizing committee of the IEEE APSCON Conference, we are excited to welcome you to the City of Bengaluru, India. The IEEE APSCON Conference will be held on January 23 – 25, 2023 at the Conrad Bengaluru Hotel.

We are enthusiastic and excited about the first APSCON conference, which is the first major event of the 25th year of the constitution of IEEE Sensors Council. Formally constituted in June 1998, with presidents of 14 IEEE Societies signing the petition for its formation, today, the council serves its 26 IEEE member societies and the sensors community in the multi-disciplinary technical area of sensors, covering all aspects of sensors and sensing systems, from design to fabrication and applications. The council has seen numerous achievements over the years and has provided highly successful avenues for the sensors community to publish, gather and interact. These include the IEEE Sensors Journal, which is one of the world's largest journals in sensor engineering and technology, IEEE Sensors Letters, and the flagship IEEE Sensors Conference. In the recent years the council has spawned several new conferences including IEEE Inertial, IEEE FLEPS, IEEE Biosensors and industry focused events such as Sensors in Spotlight (SenSiS), and Sensor Interfaces Meeting (SIM). In addition, the council is co-sponsor of IEEE Internet of Things Journal, and IEEE Journal of Flexible Electronics (JFLEX), IEEE Journal of Indoor Positioning and Seamless Navigation (JISPIN), IEEE Transactions on AgriFood Electronics (TAFE) and more. IEEE Sensors Council also offers several other exciting education programs such as Summer Schools, Webinars, Distinguished Lecturer Program, and YouTube channel providing free access to a large number of conference presentations recorded over more than a decade. In addition, council has several vibrant Chapters around the world, and highly active diversity initiatives in the field of sensors through Women in Sensors and Young Professionals Programs. The 25 years of journey has been a remarkable one with outstanding successes and impact across the world . We hope to continue this path through your continued involvement and participation. Thank you!

The organizing committee, has been working hard to design this first applications focused conference on Sensors and sensing systems. The technical program committee and the track chairs have used high standards to ensure the quality of the papers selected for oral and poster presentation. In addition, we have planned several special focus and social programs, and recruited invited speakers from various backgrounds to enhance the attendees' experience. We hope IEEE APSCON conference will become the premier platform for researchers to share their latest research and findings on applications of sensors and sensing systems and will

provide a synergistic environment for building a community of researchers, practitioners, and students in the field.

The APSCON 2023 features four keynote speakers. Dr. Valérie Renaudin, Professor at the University Gustave Eiffel, France will present a talk entitled "Smart Processing with Wearable Devices: Shall We Consider the Human Influence?". Dr. Giorgio Metta, Scientific Director at the Istituto Italiano di Tecnologia (IIT), Italy will present a talk entitled "Peripersonal space and margin of safety around the body: learning visuo-tactile associations in a humanoid robot with artificial skin". Dr. Navakanta Bhat, Dean and Professor at the Indian Institute of Science, Bangalore will present a talk entitled "Towards Smart Bio-Chemical Sensing Platforms" and Dr. Cian Ó Mathúna, Head of Micro Nano Systems Center, at the Tyndall National Institute, Ireland will present a talk entitled "Micro Sensor Systems for the Future Internet of Everything (IoE)".

IEEE APSCON is also offered the authors of high-quality papers an opportunity to publish in IEEE Sensors Letters and also present their papers in conference as normal. This is part of IEEE Sensors Council's initiative started recently to enhance the interaction between its journal publications and conferences. APSCON 2023 Conference invited selected authors of high-quality papers to submit their final papers to IEEE Sensors Letters, which were further peer reviewed and the outcome decided prior to the APSCON conference. Out of a total of 16 such invitations, 10 papers were accepted to IEEE Sensors Letters Journal following a rigorous but expedited peer review process and will be presented by the authors at the conference. These papers will not be part of the conference proceedings but instead will be linked to IEEE Sensors Letters issue where they are published. The selected author invitations were based on the recommendation provided by the Technical Program Committee and Track Chairs who evaluated all submitted abstracts between September and October 2022. In addition, we have a session on invited papers from articles that have been published in IEEE Sensors Journal.

The program consists of 14 Sessions covering various aspects of Sensor Applications and two special sessions. A total of 309 abstracts were submitted of which 205 have been accepted for presentation at the conference. These submissions will be presented during the conference, as 127 oral and 78 poster presentations. A total of 20 invited speakers are also included in the technical program. Submissions were from academia (95%), research facilities and government laboratories (2%), and industry (3%). The submitted papers came from all the regions of the world, with about 84% from Asia/Pacific, 10% from Europe, 4 % from North America, and about 2 % from Latin America and Middle East/Africa. Two Best Student Oral and Two Best Poster

presentation awards will be presented at the at the banquet on January 24th and at lunch on January 25th respectively. Accepted papers not published in IEEE Sensors Letters and IEEE Sensors Journal will be published in the Conference Proceedings and electronically archived in the IEEE Xplore digital library.

In the 25th anniversary year, IEEE Sensors Councils has decided to organize additional events focusing on Sustainable technologies and practices. As part of this initiative, we will be having a Panel discussion on the topic on Tuesday, January 24. The topic of this panel discussion is 'Sustainability Priorities in the Local & Global context'. The Social Event and Gala banquet dinner after the panel discussion also part of IEEE Sensors Council's 25th Anniversary celebrations. Additionally, the Women-in-Sensors and Young Professionals are organizing events such as Big Idea Pitch session, Sensors Standards Opportunity Session, and Young Professionals Panel discussion on Current and Future Trends in Applied Sensing. Further, there will be a live demo session in the morning session on January 25th. We also invite all attendees to join us in the reception in the evening of January 22, 2023.

IEEE APSCON 2023 conference welcomes everyone to participate in the multidisciplinary conversation in order to accelerate technologies advancing applications of sensors and sensing systems for benefiting and enriching the society at large. We sincerely thank all the organizing committee and technical committee members for volunteering and their hard work to organize this conference and the support from everyone involved.

We welcome everyone to Bengaluru India and look forward to seeing you all!

General Chairs: Anil Roy and Srinivas Tadigadapa

Technical Program Chairs: Ramgopal Rao and Chonggang Wang

IEEE APSCON 2023 ORGANIZING COMMITTEE

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Raghu Venkat, *Co-Founder and CTO, Actyv (USA)*

Sensors Standards Opportunities Co-Chairs

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Gerard Hayes, *Wireless Research Center (USA)*

Focused Session Co-Chairs

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Praveen Pankajakshan, *CropIn (India)*

Young Professionals Co-Chairs

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Amit Kumar, *BioAxis DNA Research Centre (P) Ltd (India)*

WiSE Co-Chairs

Saakshi Dhanekar, *IIT Jodhpur (India)*
Veda Sandeep Nagaraja, *Tyndall National Institute, University College Cork (Ireland)*

Live Demo Co-Chairs

Bishakh Bhattacharya, *IIT Kanpur (India)*
Svetlana Tatic-Lucic, *Lehigh University (USA)*

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Vinay Palaparthy, *DA-IICT Gandhinagar (India)*

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Hamida Hallil, *University of Bordeaux, Paris (France)*

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Khuushi, *Center for Nano Science and Engineering Indian Institute of Science, Bengaluru (India)*

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IEEE APSCON 2023 TRACK CHAIRS

Track 1: Sensing for Agriculture

Gondi Kondaiah Ananthasuresh, *IISc Bangalore (India)*
Yun-Wei Lin, *National Yang Ming Chiao Tung University (Taiwan)*

Track 2: Sensing for e-Mobility

B.K. Panigrahi, *IIT Delhi (India)*
Reza Malekian, *Malmö University (Sweden)*

Track 3: Joint Sensing, Communications and Localization

Sudip Misra, *Department of Computer Science & Engineering, IIT Kharagpur (India)*
Solmaz Kia, *UC Irvine (USA)*

Track 4: Sensing for Smart and Connected Healthcare

Sri-Rajasekhar Kothapalli, *Penn State University (USA)*
Prosenjit Sen, *IISc (India)*

Track 5: Crowdsensing and Intelligent Sensing

Anuj Dhawan, *IIT Delhi (India)*
Shiv Govind Singh, *IIT Hyderabad (India)*

Track 6: Habitat and Environment Monitoring

Dipankar Bandyopadhyay, *IIT Guwahati (India)*
Ruidong Li, *Kanazawa University (Japan)*

Track 7: Sensing for Critical Infrastructure

Dipti Gupta, *IIT Bombay (India)*
Philip Pong, *New Jersey Institute of Technology (USA)*

Track 8: Internet of Senses

T K Bhattacharya, *IIT Kharagpur (India)*
Liang Zhou, *Nanjing University of Posts and Telecommunications (China)*

Track 9: Sensing for Industry 4.0

Vinay Jammu, *Physical-Digital Technologies at GE Digital (India)*
Paul (C.-P.) Chao, *National Yang Ming Chiao Tung University (Taiwan)*

Track 10: Sensing for Energy

K S Reddy, *IIT Madras (India)*
Moayad Aloqaily, *Mohamed Bin Zayed University of Artificial Intelligence (MBZUAI) (UAE)*

Track 11: Sensing in Security

P.J. Narayanan, *IIIT Hyderabad (India)*
Thomas Thundat, *University of Buffalo (USA)*
Danda Rawat, *Howard University (USA)*

Track 12: Sensing for Smart City and Village

Edith C. H. Ngai, *The University of Hong Kong (China)*
Maryam Shojaei, *IIT Bombay (India)*

Track 13: Sensing for Sports and Entertainment

Elena Bergamini, *University of Rome "Foro Italico" (Italy)*
Chih-Chieh Hung, *National Chung Hsing University (Taiwan)*

Track 14: Sensing for Education

JaeSeung Song, *Sejong University (South Korea)*
L.S. Shashidhara, IISER Pune & Ashoka University (India)

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EXHIBITORS


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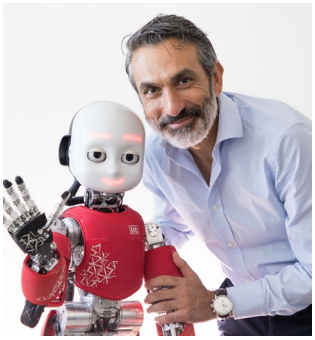
UCC
University College Cork, Ireland
Coláiste na hOllscoile Corcaigh

PLENARY SPEAKERS



Peripersonal Space and Margin of Safety Around the Body: Learning Visuo-Tactile Associations in a Humanoid Robot with Artificial Skin

Giorgio Metta, *Istituto Italiano di Tecnologia (IIT), Italy*

In this talk I discuss the development of a large area electronic skin and its application to create a biologically motivated model of peripersonal space in a humanoid robot. Guided by the present understanding of the neurophysiology of the fronto-parietal system, we developed a computational model inspired by the receptive fields of polymodal neurons identified, for example, in brain areas F4 and VIP. The experiments on the iCub humanoid robot show that the peripersonal space representation i) can be learned efficiently and in real-time via a simple interaction between the robot and the environment, ii) can lead to the generation of behaviors like avoidance and reaching, and iii) can contribute to the understanding the biological principle of motor equivalence. More specifically, with respect to i) the present model contributes to hypothesizing a learning mechanisms for peripersonal space. In relation to point ii) we show how a relatively simple controller can exploit the learned receptive fields to generate either avoidance or reaching of an incoming stimulus and for iii) we show how the robot can select arbitrary body parts as the controlled end-point of an avoidance or reaching movement.

PLENARY SPEAKERS (CONT.)

Towards Smart Bio-Chemical Sensing Platforms

Navakanta Bhat, *Indian Institute of Science, Bangalore*

Multiplexed sensing platforms will be the key enablers of smart electronic systems of the future. Such platforms will require the integration of miniaturized sensor arrays at the system/chip level, using heterogeneous technologies. While we have made substantial progress in vision, tactile and auditory sensing applications, an equivalent of Moore's law is missing in biological and chemical sensing applications. With phenomenal advances in semiconductor nanotechnology and printed/flexible electronics, the stage is now set for a new wave of sensor systems to be equipped with massive sensory functions, specifically with biological and chemical sensor arrays. In this talk, I will present two case studies from our research: (i) Biosensor systems for point of care diagnostics : the story of managing the sensing of multiple analytes in blood and urine with an eventual goal to realize "Lab on Palm" (ii) Gas sensor systems for environmental monitoring, breath analysis and hazardous gas leakage detection, with an eventual goal to realize the "Electronic Nose" With this backdrop, I will end my talk with some thoughts on future challenges in achieving highly complex and intelligent nanoscale sensory systems.

Micro Sensor Systems for the Future Internet of Everything (IoE)

Cian Ó Mathúna, *Tyndall National Institute, Ireland*

The Internet of Everything (IoE) has been described as "the networked connections between devices, people, processes and data" and it has been widely predicted that, by 2025, the IoE will exceed 100 billion connected devices, each attached to at least 10 sensors collecting data. This is anticipated to result in a one trillion-sensor economy driving a digital revolution in data with market reports estimating that the IoE will generate alsmot $20 trillion of newly created value. This digital transformation, the beginning of which we are already experiencing, is expected to dramatically enhance the health and well-being of the global population as well as the sustainability of our planet, encompassing both our built and natural environments. This vision of the IoE has the potential to enhance the management of our core local and global infrastructures and ecosystems and enable personal health, and well-being as well as global sustainability encompassing food production, air and water quality, energy, communications, transport and security. This talk will present some of the state-of-the-art research being undertaken at Tyndall National Institute, University College Cork, Ireland in the "making and powering of the smart things" that will make up this future Internet of Everything. These smart things, or intelligent autonomous wireless sensor nodes, typically comprise multiple sensors, signal and data processing, some form of actuation, wireless communication and a power source. To illustrate the range of technologies that need to be considered, a number of representative case studies will be presented that address applications including precision agriculture and environmental monitoring, bio-pharma processing, medical devices addressing in-the-body diagnostics and therapeutics, wearable electronics for health and well-being as well as interfacing with robotics in advanced manufacturing. The need for energy harvesting or scavenging platforms will also be presented as an alternative, or complimentary technology to batteries. The concept of sustainable or compostable electronics will be introduced as a future direction for consideration, Finally, the talk will introduce opportunities and challenges of using Artificial Intelligence to enable intelligence at the "Edge of the Edge" of the IOE.

Smart Processing with Wearable Devices: Shall We Consider the Human Influence?

Valérie Renaudin, *University Gustave Eiffel, France*

Wearable devices embed inertial sensors whose records are processed for navigation instructions, health assessment, sports training or change in mobility behaviour. The applications are processing inertial or telecommunication signals sensed in our clothes, shoes and glasses. Complex methods, more and more based on artificial intelligence, are developed to process these data but they sometimes forget that human behaviour defies the developed methods. Defining the minimum performance requirements for a targeted application, calibrating embedded sensors and accounting for the hardware constraints of the wearables are classical R&D steps. The influence that humans can have on the quality of measurements (signal attenuation by the human body, change of behaviour, ageing, etc.) is however often forgotten. In this presentation, we will analyse the observability of gait parameters and navigation data with signals sensed by devices worn on different body parts (upper/lower body). We will also observe the human gait variation for the same person in different kinematic contexts (visually impaired people guided by a cane or a dog). The analysis will be supported by a theoretical and experimental approach with inertial signals and GNSS phase and pseudo-ranges data collected by pedestrians.

PAPERS TO BE PUBLISHED IN IEEE SENSORS LETTERS

1014: Multi-Level Fusion of Multi-Spectral Images to Detect the Artificially Ripened Banana
Narayan Vetrekar{1}, Raghavendra Ramachandra{2}, Rajendra Gad{1}
{1}Goa University, India; {2}Norwegian University of Science and Technology, Norway

1193: Experimental Investigation of Leaf Wetness Sensing Properties of MoS2 Nanoflowers Based Flexible Leaf Wetness Sensor
Priyanka Khaparde, Kamlesh S Patle, Yash Agrawal, Anil Roy, Vinay S Palaparthy
Dhirubhai Ambani Institute of Information and Communication Technology, India
[Early Access Link] https://ieeexplore.ieee.org/document/9984823

1131: Sensing System Assisted Novel PID Controller for Electric Vehicles
Dayarnab Baidya, Shreya Dhopte, Mitradip Bhattacharjee
Indian Institute of Science Education and Research, Bhopal, India
[Early Access Link] https://ieeexplore.ieee.org/document/10007051

1128: PEDOT:PSS Based Disposable Humidity Sensor for Skin Moisture Monitoring
Ajay Beniwal{2}, Ravinder Dahiya{1}
{1}Northeastern University, United States; {2}University of Glasgow, United Kingdom

1231: Characterizing the Dynamics of Surface Electromyography Signals in Muscle Fatigue Through Visibility Motif Networks
Navaneethakrishna Makaram{1}, Ramakrishnan Swaminathan{2}
{1}Boston Childrens Hospital, United States; {2}Indian Institute of Technology Madras, India

1108: Effect of Rapid Thermal Annealing on Material, Electrical and Sensing Characteristics of Ag-Doped CaTiO3-CuO Thin Film Carbon Dioxide Gas Sensors
Rudraswamy S B{2}, Shwetha H R{3}, Navakanta Bhat{1}
{1}Indian Institute of Science, India; {2}Jagadguru Sri Shivarathreeshwara Science and Technology University, India; {3}Jawaharlal Nehru National College of Engineering, India
[Early Access Link] https://ieeexplore.ieee.org/document/9999024

1155: Tracking Moored Vessel Movement in Multiple DOF Using Active Sensing Methods
Robin Kerstens{2}, Wouter Jansen{2}, Gauthier de Borrekens{2}, Stefaan Ides{1}, Jan Steckel{2}
{1}Port of Antwerp-Bruges, Belgium; {2}University of Antwerp, Belgium

1141: Distributed Fiber-Optic Calorimetric Dosimeter
Aleksey Tregubov, Victor Prikhodko, Alexander Alekseyev, Sergey Novikov, Galina Tertyshnikova, Andrey Zhukov
Ulyanovsk State University, Russia
[Early Access Link] https://ieeexplore.ieee.org/document/9970302

PAPERS TO BE PUBLISHED IN IEEE SENSORS LETTERS (CONT.)

1088: Acoustic Based Machine Anomaly Detection Using Beamforming and Sequential Transform Learning
Saurabh Sahu{2}, Kriti Kumar{2}, Angshul Majumdar{1}, A Anil Kumar{2}, M Girish Chandra{2}
{1}Indraprastha Institute of Information Technology Delhi, India; {2}Tata Consultancy Services, India

[Early Access Link] **https://ieeexplore.ieee.org/document/10014437**

1144: Spectroscopic Studies and Numerical Modelling on Nanoparticle Based Toxic Heavy Metal Sensor for the Development of a Low Cost Prototype in Field Use
Nivedita Pan{2}, Ria Ghosh{2}, Debdatta Mukherjee{6}, Neha Bhattacharyya{5}, Lopamudra Roy{5}, Amrita Banerjee{1}, Soumendra Singh{2}, R. T. Goswami{4}, Mala Mitra{3}, Arpita Chattopadhyay{4}, Samir Kumar Pal{2}
{1}Jadavpur University, India; {2}S.N.Bose National Centre for basic Sciences, India; {3}Sister Nivedita University, India; {4}Techno International, India; {5}University of Calcutta, India; {6}University of Kalyani, India

INVITED PRESENTATIONS OF IEEE SENSORS JOURNAL AND IEEE SENSORS LETTERS PUBLISHED PAPERS

1321: **A Fingerprinting Based Audio-Seismic Systems for Human Target Localization in an Outdoor Environment Using Regression**
Priyankar Choudhary, Neeraj Goel, Mukesh Saini
Indian Institute of Technology Ropar, India

1310: **Molecular Imprinting with Polyaniline on ENIG Finish PCB Electrodes for Electrochemical Detection of Melamine**
Ruchira Nandeshwar, Madhumita P. Date
Indian Institute of Technology Bombay, India

1315: **Cortical Source Domain Based Motor Imagery and Motor Execution Framework for Enhanced Brain Computer Interface Applications**
Lalan Kumar, Amita Giri, Tapan K. Gandhi
Indian Institute of Technology Delhi, India

1311: **Ammonia Sensing Performance of RGO-Based Chemiresistive Gas Sensor Decorated with Exfoliated MoSe2 Nanosheets**
Ravindra Jha{1}, Aman Nanda{2}, Navakanta Bhat{2}
{1}CSIR-Central Electronics Engineering Research Institute, India; {2}Indian Institute of Science, India

1317: **Potential of Impedance Spectroscopy Towards Quantified Analysis of Gas Sensors: a Tutorial**
Koushik Dutta
Indian Institute of Information Technology, Design and Manufacturing, Jabalpur, India

1318: **A VLSI-Based Hybrid ECG Compression Scheme for Wearable Sensor Node**
Jitumani Sarma, Rakesh Biswas
Indian Institute of Information Technology Guwahati, India

1305: **Laser-Assisted Gaussian Microstructure Patterned PDMS Encapsulated Ti3 C2Tx (MXene)-Based Pressure Sensor for Object and Touch Detection**
Parikshit Sahatiya, Vivek Adepu, Krutarth Kamath, Venkat Mattela
Birla Institute of Technology and Science, Pilani, India

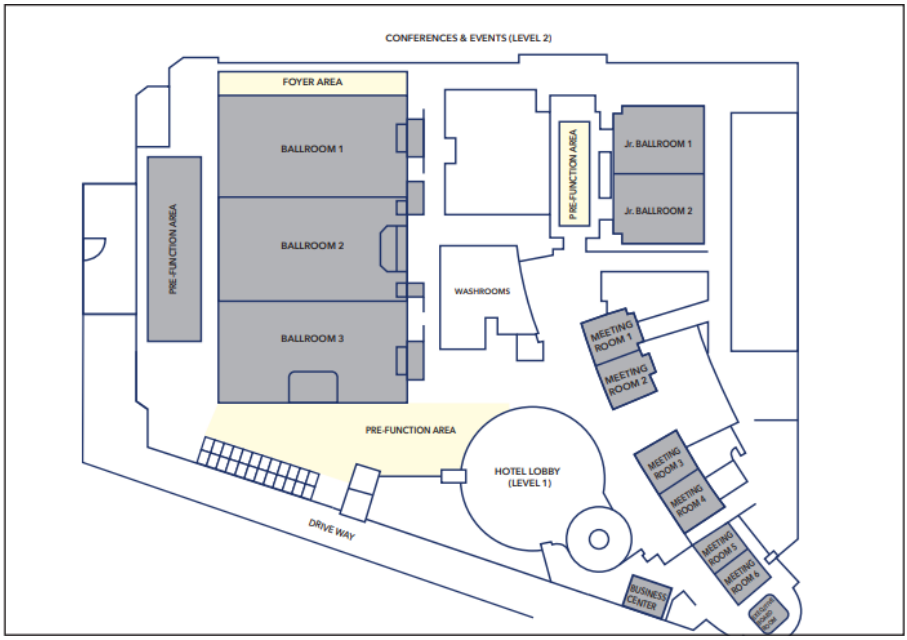
1322: **The Machine Learnings Leading the Cuffless PPG Blood Pressure Sensors Into the Next Stage**
Duc Huy Nguyen, Paul C.-P. Chao, Chih-Cheng Wu
National Yang Ming Chiao Tung University, Taiwan

INVITED PRESENTATIONS OF IEEE SENSORS JOURNAL AND IEEE SENSORS LETTERS PUBLISHED PAPERS (CONT.)

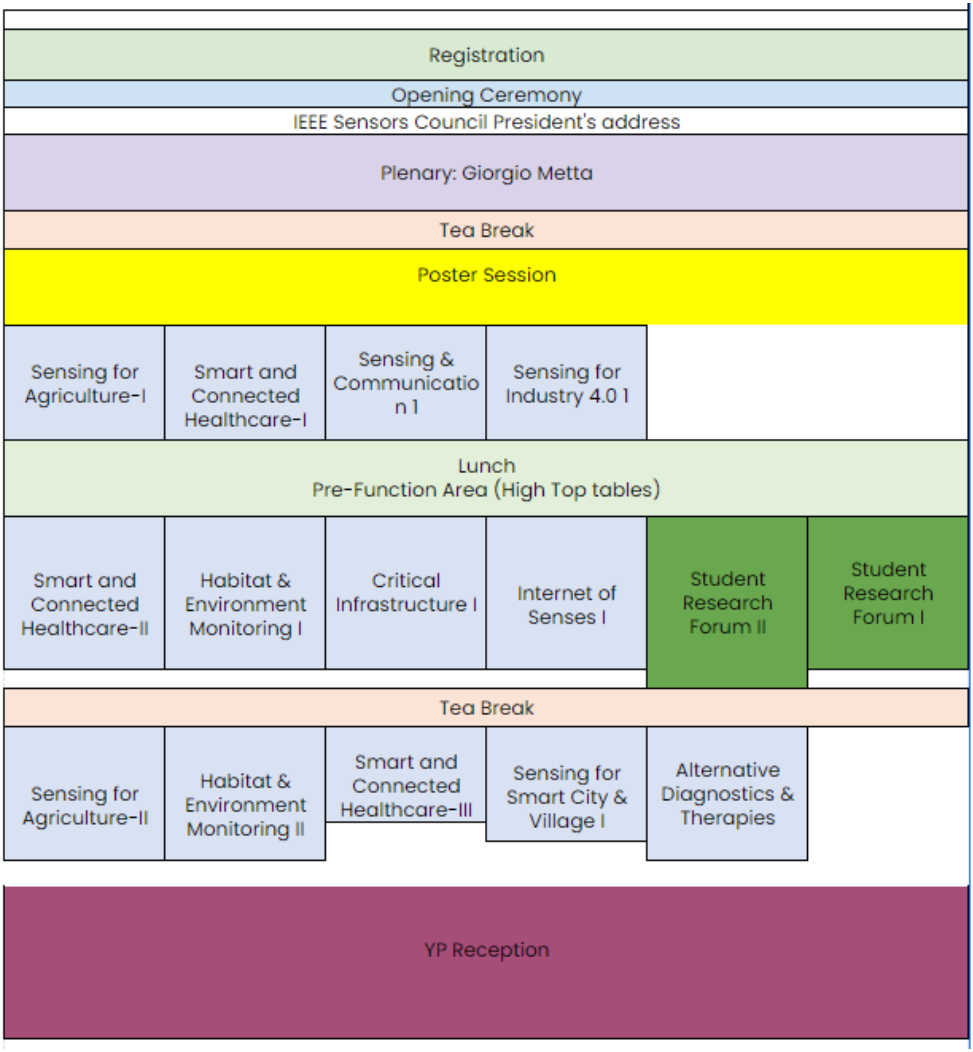
1313: **Metal/Metal Oxide Modified Graphene Nanostructures for Electrical Biosensing Applications: a Review**
Chirasree RoyChaudhuri, Bhaswati Chakraborty
Indian Institute of Engineering Science and Technology, India

1302: **An Energy-Efficient Power Allocation Scheme for NOMA-Based IoT Sensor Networks in 6G**
Rishu Raj, Abhishek Dixit
Department of Electrical Engineering, Indian Institute of Technology Delhi, New Delhi, India

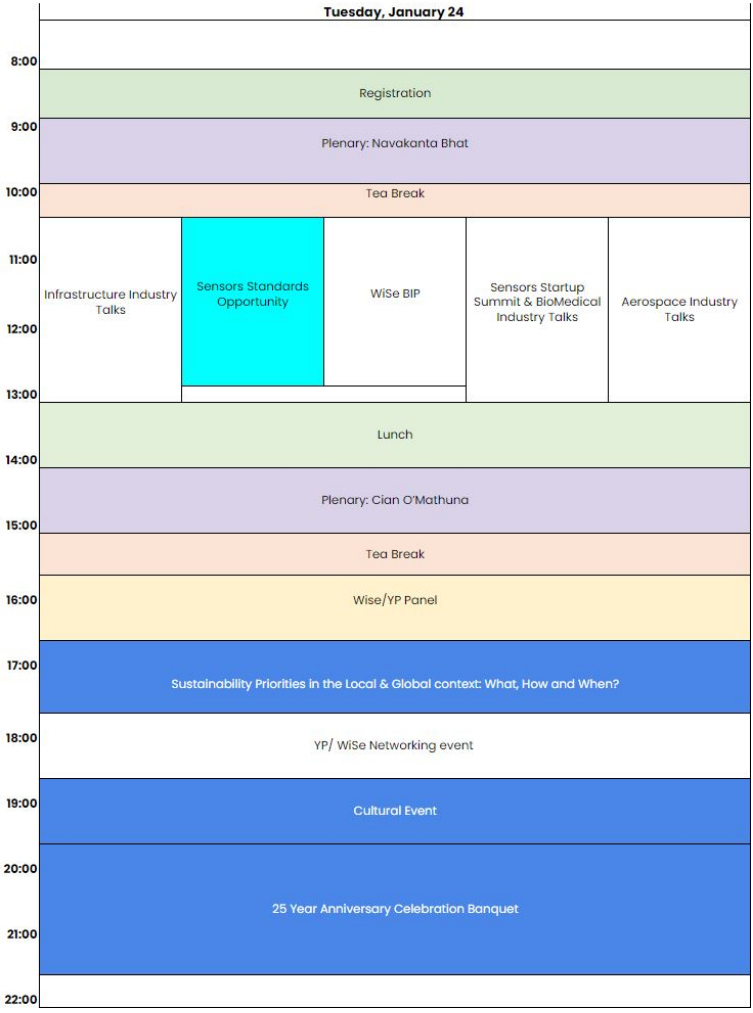
VENUE MAP


CONFERENCES & EVENTS (LEVEL 2)
FOYER AREA
BALLROOM 1
BALLROOM 2
BALLROOM 3
PRE-FUNCTION AREA
PRE-FUNCTION AREA
Jr. BALLROOM 1
Jr. BALLROOM 2
WASHROOMS
MEETING ROOM 1
MEETING ROOM 2
PRE-FUNCTION AREA
HOTEL LOBBY (LEVEL 1)
MEETING ROOM 3
MEETING ROOM 4
MEETING ROOM 5
MEETING ROOM 6
BUSINESS CENTER
DRIVE WAY

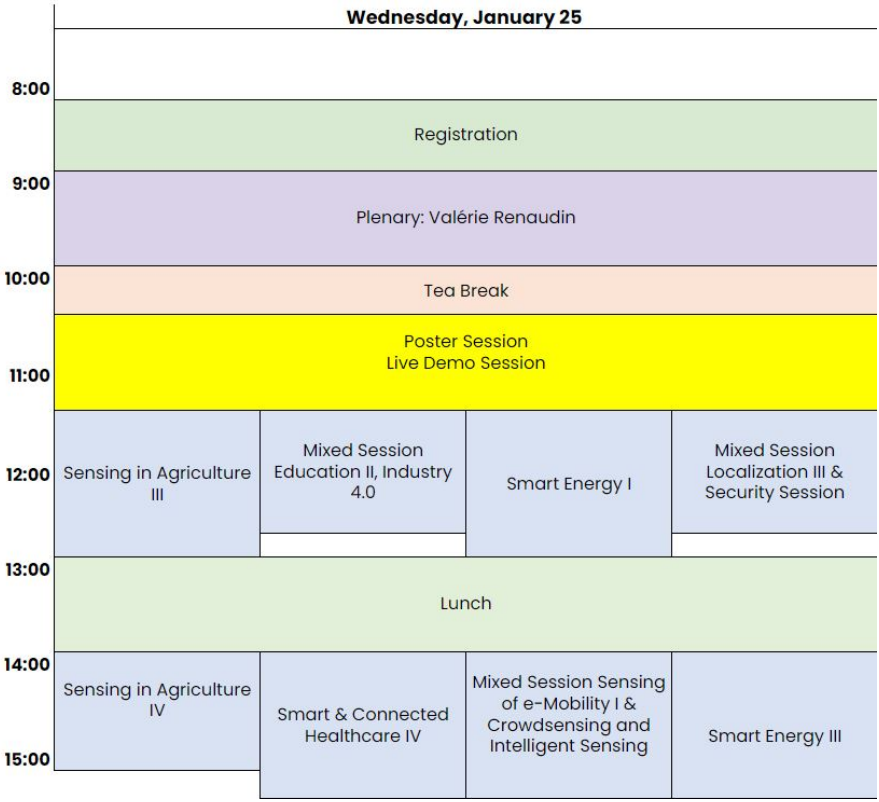
PROGRAM AT A GLANCE



PROGRAM AT A GLANCE



PROGRAM AT A GLANCE



8:00 - 8:45
Registration
Room: Pre-Function Area

8:45 - 9:00
Opening Ceremony
Room: Grand Ballroom
Session Chair(s): Anil Roy & Srinivas Tadigadapa & V. Ramgopal Rao

9:00 - 9:10
IEEE Sensors Council President's Address
Room: Grand Ballroom
Ravinder Dahiya

9:10 - 10:10
Peripersonal space and margin of safety around the body: learning visuo-tactile associations in a humanoid robot with artificial skin
Giorgio Metta
Room: Grand Ballroom
Session Chair(s): Ravinder Dahiya

10:10 – 10:40
Tea Break
Room: Pre-Function Area

10:40 - 11:40
A1aP-05: Habitat & Environment Monitoring 3
Room: Poster Area

1037: Development of Landslide Forecasting System Using Deep Learning
Amrita Joshi{2}, Debi Prasanna Kanungo{1}, Rajib Kumar Panigrahi{2}
{1}CSIR-Central Building Research Institute, India; {2}Indian Institute of Technology Roorkee, India

1056: DL-RAP: Deep-Learning Based Real-Time Accident Diffusion Prediction
Bo Zhang, Xuhui Zhao, Hui Chen
Zhengzhou University, China

1112: Evaluation of Low-Cost Particulate Matter Sensor in Indoor and Outdoor Micro-Environments
Aswin Giri J, Shiva Nagendra SM
Indian Institute of Technology Madras, India

1123: Design and Development of Low-Cost Environmental Sensors for Urban Noise Measurements
Lakshmi Pradeep, S M Shiva Nagendra
Indian Institute of Technology Madras, India

1146: Analysis of Multi-Indices from Hyperspectral Strip Along Climatic Gradient as Surrogates of Climate Change
Maxim Shoshany{2}, Jisung Chang{2}, Yisok Oh{1}
{1}Hongik University, Korea; {2}Technion , Israel Institute of Technology, Israel

1177: ACR2UNet: Semantic Segmentation of Remotely Sensed Images Using Residual-Recurrent UNet and Asymmetric Convolutions
Aarabhi Putty, Annappa B.
National Institute of Technology Karnataka, India

10:40 - 11:40
A1aP-06: Habitat & Environment Monitoring 4
Room: Poster Area

1100: Chemosensor for Colorimetric Detection of Fluoroquinolone Antibiotics
Tennyson Mathai, Tathagata Pal, Soumyo Mukherji
Indian Institute of Technology Bombay, India

1102: Gold Nanoparticles Coated Aptamer-Based Fiber Optic LSPR Biosensor for Arsenic Detection
Ashish Shukla, Tathagata Pal, Soumyo Mukherji
Indian Institute of Technology Bombay, India

1162: Fully Automated, Real-Time Monitoring of Ambient Water Vapour Using a Compact 1392 nm Tunable Diode Laser-Based System
Durlav Paul{2}, Shruti De{2}, Kenneth T V Grattan{1}, Arup Lal Chakraborty{2}
{1}City, University of London, United Kingdom; {2}Indian Institute of Technology Gandhinagar, India

1175: Lossy Mode Resonance Based Optical Fiber Sensor Using Polyvinylpyrrolidone/Chitosan Composite for Identification of Cadmium Ions in Water
A Prasanth{3}, M Velumani{1}, S Narasimman{2}, Zachariah C Alex{3}
{1}Madanapalle Institute of Technology and Science, India; {2}Sri Venkateswara College of Engineering and Technology, India; {3}Vellore Institute of Technology, India

1181: Fabrication and Characterization of Liquid Phase Exfoliated MoS2 Nanosheet for Gas Sensing Application
Rahul Gond, Akhilesh Rawat, Mayank Baghoria, Bhanu Prakash, Brajesh Rawat
Indian Institute of Technology Ropar, India

1242: Reusable Porous Alumina-Based Adsorber for Removal of Copper Ions from Top Sediments Layers of Water Bodies and Effluents Discards
Vikram Maharshi{1}, Priya Vinayak{1}, Madhusudan Singh{1}, Ajay Agarwal{2}, Bhaskar Mitra{1}
{1}Indian Institute of Technology Delhi, India; {2}Indian Institute of Technology Jodhpur, India

10:40 - 11:40
A1aP-07: Sensing for Industry 4.0 2
Room: Poster Area

1048: Printed and Flexible Capacitive Pressure Sensors for Soft Robotics
Mani Teja Vijjapu{2}, Sherjeel Khan{2}, Syed Hassaan Abdullah{2}, Manoj Jose{2}, Johanna Zikulnig{2}, Lukas Rauter{2}, Lisa-Marie Faller{1}, Jürgen Kosel{2}
{1}Carinthia University of Applied Sciences, ADMiRE Lab, Austria; {2}Silicon Austria Labs GmbH, Austria

1049: Electricity Usage Forecasting Using Intelligent Electricity Meters and Edge Computing Device
Zepei Yu{1}, Xingjie Zeng{1}, Yuming Nie{1}, Zhicheng Bao{1}, Liang Xu{2}, Huansheng Ning{2}, Weishan Zhang{1}
{1}China University of Petroleum, China; {2}University of Science and Technology Beijing, China

1062: A Novel and Compact Photoacoustic Sensing System to Estimate Thermophysical Properties of the Lubricant Oil
Abhijeet Gorey, Arijit Sinharay, Chirabrata Bhaumik, Tapas Chakravarty, Arpan Pal
Tata Consultancy Services, India

1109: Efficient Prediction of Segment Kinematics and Dynamics from Motion Capture Data Using Deep Learning
Debneil Nag Chowdhury{1}, Aziz Ahmed{2}, Manish Sreenivasa{2}
{1}Indian Institute of Technology Kharagpur, India; {2}University of Wollongong, Australia

1142: DigiFresh - Quality Assurance of High Value Foods
Jayita Dutta, Parijat Deshpande, Selvan SS, Beena Rai
Tata Consultancy Services, India

1156: Modelling of a Highly Sensitive Polymer Composite Tactile Pressure Sensor
Syed Hassaan Abdullah{2}, Lisa-Marie Faller{1}, Mani Teja Vijjapu{2}, Jürgen Kosel{2}, Sherjeel Khan{2}
{1}Carinthia University of Applied Sciences, ADMiRE Lab, Austria; {2}Silicon Austria Labs GmbH, Austria

1182: Photo-Electric Characteristics Analysis of Quantum Corrected Strained Nanowire Drift-Diffusion Model Based Si/Si0.98C0.02 Asymmetrical Super-Lattice Near Infrared Photo-Detector
Saunak Bhattacharya{2}, Abhijit Kundu{2}, Debraj Chakraborty{1}, Angsuman Sarkar{3}, Moumita Mukherjee{1}
{1}Adamas University, India; {2}Chaibasa Engineering College, India; {3}Kalyani Govt. Engineering College, India

1206: CMOS-MEMS Nano Force Sensor with Sub-µm U-Channel Suspended Gate SOIFET
Pramod Martha{1}, Naveen Kadayinti{2}, V. Seena{1}
{1}Indian Institute of Space Science and Technology, India; {2}Indian Institute of Technology Dharwad, India

1225: A Two-Axis Force Sensor Using a Decoupling Compliant Mechanism for Calibrating Magnetic Robots
Sudhanva Bhat, G K Ananthasuresh
Indian Institute of Science, India

1246: Micromolding-in-Capillary Based Fabrication of Liquid Metal Patterned Structures for Soft Robotics
Radu Chirila {1}, Abhishek Singh Dahiya {1}, Ravinder Dahiya {2}
{1} University of Glasgow, United Kingdom; {2} Northeastern University

10:40 - 11:40
A1aP-08: Smart Energy 2
Room: Poster Area

1063: Reliability-Aware Energy-Efficient Joint Resource Allocation for Edge Computing
Haiying Peng, Jingjue Zhang, Zhidu Li, Tong Tang
Chongqing University of Posts and Telecommunications, China

10:40 - 11:40
A1aP-09: Sensing for Smart City & Village 2
Room: Poster Area

1021: Delay-Aware Task Scheduling and Resource Allocation Optimization in the Internet of Things
Dapeng Wu, Jie Liu, Hong Zhang, Ruyan Wang
Chongqing University of Posts and Telecommunications, China

1067: UAV-Assisted 3D Trajectory Planning and Data Collection in Wireless Powered IoT
Zhidu Li, Hekai Li, Tong Tang
Chongqing University of Posts and Telecommunications, China

1068: MD-RES: A Mode Decomposition Based Residual Matching Model for Short-Term Traffic Flow Prediction
Yuanyuan Zhang, Luojie Lin, Chang Liu, Yanru Chen, Hao Wang, Liangyin Chen
Sichuan University, China

1136: Deep Reinforcement Learning Empowered Particle Swarm Optimization for Aerial Base Station Deployment
Jinpeng Song, Bo Zhang, Junfeng Li
Zhengzhou University, China

10:40 - 11:40
A1bP-05: Sensing for Sports & Entertainment
Room: Poster Area

1022: A Popularity-Driven Edge-Cloud Caching for Wireless Sensor Networks
Peng Yang, Hui Wang, Hong Zhang, Dapeng Wu, Ruyan Wang
Chongqing University of Posts and Telecommunications, China

1138: Stronger Correlation of Music Features with Brain Signals Predicts Increased Levels of Enjoyment
Pankaj Pandey{2}, Poorva Satish Bedmutha{3}, Krishna Prasad Miyapuram{2}, Derek Lomas{1}
{1}Delft University of Technology, Netherlands; {2}Indian Institute of Technology Gandhinagar, India; {3}University of California, San Diego, United States

1153: Wearable Sensing Module for Table Tennis Stroke Detection
Sourin Ghosh, Yogesh Gholap, Siddharth Tallur
Indian Institute of Technology Bombay, India

10:40 - 11:40
A1bP-06: Sensors for Alternative Diagnostics and E-textile Sensors
Room: Poster Area

1285: A Monitored Miniature Dialysis Apparatus with Silicon Nanoporous Membrane
Abhishek Kumar, Fidal Kumar V T, Sivasundari Kannan, Sudeshna Sengupta, Enakshi Bhattacharya
Indian Institute of Technology Madras, India

1294: A Two-Dimensional (2D) WSe2 -Based Binary Composite for Ultrasensitive Trace Level Room Temperature NH3 Sensing for Non-Invasive Diagnosis
Deepak Sharma, Ayan Pal, Navakanta Bhat
Indian Institute of Science, India

1298: A Woven Wristband for Spatiotemporal Body Temperature Sensing for Healthcare Applications
Kunj Golwala{1}, Shrutidhara Sarma{1}, Ajay Agarwal{1}, Yuvraj Garg{2}
{1}Indian Institute of Technology Jodhpur, India; {2}National Institute of Fashion Technology, Jodhpur, India

11:40 - 13:10
A2L-01: Sensing in Agriculture 1
Room: Grand Ballroom I
Session Chair(s): Jose Joseph

11:40
1333: Silk-based piezoelectric materials for applied sensing
Jose Joseph
Digital University Kerala, India

12:10
1193: Experimental Investigation of Leaf Wetness Sensing Properties of MoS2 Nanoflowers Based Flexible Leaf Wetness Sensor
Priyanka Khaparde, Kamlesh S Patle, Yash Agrawal, Anil Roy, Vinay S Palaparthy
Dhirubhai Ambani Institute of Information and Communication Technology, India

12:25
1113: Selective Sensor Platform for the Measurement of 0.5 ppm of CH4 for Precision Agriculture
Anjitha R G, Palash Kumar Basu
Indian Institute of Space Science and Technology, India

12:40
1124: Printable Fused Silica Based Microchamber Integrated with Graphene Chemi-Resistive Sensors for Direct On-Chip Soil Testing
Sabitha Ann Jose, Yahya Atwa, Neil Mitchell, Hamza Shakeel
Queen's University of Belfast, United Kingdom

12:55
1060: Soil pH Sensing with an All-Solid-Electrode Sensor
Akshaya A V{2}, Nikila Nair{2}, Michael John Bosco{2}, Ananthasuresh G K{2}, Jose Joseph{1}
{1}Digital University Kerala, India; {2}Indian Institute of Science, India

11:40 - 13:10
A2L-02: Smart & Connected Healthcare 1
Room: Grand Ballroom II
Session Chair(s): Sri-Rajasekhar Kothapalli

11:40
1334: Invited Talk by Sri-Rajasekhar Kothapalli
Sri-Rajasekhar Kothapalli
Penn State University, United States

12:10
1010: Optimization Strategy of Delay-Driven Health Monitoring Service Quality
Jing Yang, Jun Luo, Hong Zhang, Dapeng Wu, Ruyan Wang
Chongqing University of Posts and Telecommunications, China

12:25
1061: Design and Characterization of a Frequency Modulated Continuous Wave Transceiver-Based Ultrasound Imaging System
Desh Deepak Lawania, Biswarup Mukherjee, Ankesh Jain
Indian Institute of Technology Delhi, India

12:40
1094: Embedded Machine Learning on Accelerometer Data for Exercise Classification
Rufyid-U- Nissa{1}, Nemai Chandra Karmakar{2}, Maryam Shojaei Baghini{1}
{1}Indian Institute of Technology Bombay, India; {2}Monash University, Australia

12:55
1098: Labour Monitoring in Pregnant Women Using Electrocardiography and Electromyography
Anushka Tiwari{1}, Shirley Chauhan{1}, Sailaja Bharatala{2}, Ajay Thammana{2}, Nilima Paleru{3}, Aftab Hussain{1}
{1}International Institute of Information Technology Hyderabad, India; {2}Prakhya Solutions OPC Pvt. Ltd., Ojas MedTech Center, IIIT Hyderabad, India; {3}Renova Neelima Hospital, India

11:40 - 13:10
A2L-03: Sensing & Communication 1
Room: Grand Ballroom III
Session Chair(s): Prasant Misra

11:40
Information Processing Techniques for Mobile Sensing at Scale
Prasant Misra
TATA Consultancy Services – Research, Bangalore, India

12:10
1059: An Improved Thompson Sampling Method for Dynamic Spectrum Access in Non-Stationary Environments
Shuai Ye, Shaowei Wang
Nanjing University, China

12:25
1087: A Photonics-Aided MMW OFDM Joint Radar and Communication System with Velocity Accuracy Improvement
Lanfeng Peng{3}, Dongxiang Luo{1}, Yaoqiang Xiao{2}, Fan Li{3}
{1}Guangzhou University, China; {2}Hunan University, China; {3}Sun Yat-sen University, China

12:40
1071: Enhanced Transmission Based on Cell Location and Calcium Concentration Sensing in Molecular Communication Networks
Peng He, Mengnan Su, Yaping Cui, Ruyan Wang, Dapeng Wu
Chongqing University of Posts and Telecommunications, China

12:55
1321: A Fingerprinting Based Audio-Seismic Systems for Human Target Localization in an Outdoor Environment Using Regression
Priyankar Choudhary, Neeraj Goel, Mukesh Saini
Indian Institute of Technology Ropar, India

11:40 - 13:10
A2L-04: Sensing for Industry 4.0 1
Room: Junior Ballroom I
Session Chair(s): Vinay Jammu

11:40
1332: Invited Talk by Vinay Jammu
Vinay Jammu
GE, India

12:10
1047: An Array of Bandpass Detectors for Measuring Beam Spectral Components
Mojtaba Jahangiri{1}, Paolo Sberna{1}, Amir Sammak{2}, Stoyan Nihtianov{1}
{1}Delft University of Technology, Netherlands; {2}Netherlands Organisation for Applied Scientific Research, Netherlands

12:25
1088: Acoustic Based Machine Anomaly Detection Using Beamforming and Sequential Transform Learning
Saurabh Sahu{2}, Kriti Kumar{2}, Angshul Majumdar{1}, A Anil Kumar{2}, M Girish Chandra{2}
{1}Indraprastha Institute of Information Technology Delhi, India; {2}Tata Consultancy Services, India

12:40
1093: Monte Carlo Method Based Model for Augmenting Data Towards Lubricant Oil State Analysis in Heavy Machine Industry
Subhasri Chatterjee, Abhijeet Gorey, Supriya Gain, Arijit Sinharay, Chirabrata Bhaumik, Tapas Chakravarty, Arpan Pal
Tata Consultancy Services, India

12:55
1160: An Analog Linearizing Circuit for TMR Angle Sensor with Flexible Measurement Range
Kishor Bhaskarrao Nandapurkar
Indian Institute of Technology Dhanbad, India

13:10 - 14:10
Lunch
Room: Pre-Function Area

14:10 - 16:10
A3L-01: Smart & Connected Healthcare 2
Room: Grand Ballroom I
Session Chair(s): Prosenjit Sen

14:10
1341: Invited Talk by Prosenjit Sen
Prosenjit Sen
IISc Bangalore, India

14:40
1119: Advantage of Droplet Encapsulation Scheme in Microflow Cytometer Based Detection
Kshitija Mirkale, Ashis Kumar Sen
Indian Institute of Technology Madras, India

14:55
1128: PEDOT:PSS Based Disposable Humidity Sensor for Skin Moisture Monitoring
Ajay Beniwal{2}, Ravinder Dahiya{1}
{1}Northeastern University, United States; {2}University of Glasgow, United Kingdom

15:10
1140: A Reusable and Reagent-Free Solid-State Sensor for Chloride Detection
Vinay Patel, Vinayak Ramesh, Priyanka Maske, Arnab Ghosh, Rohit Srivastava
Indian Institute of Technology Bombay, India

15:25
1166: A Kirigami Inspired Biaxial Force-Sensitive Cell Fabricated with Graphene Paper Sheets
Constantinos Heracleous{1}, Julian Leong{2}, Rui Loureiro{1}
{1}University College London, United Kingdom; {2}University College London, NHS Trust, United Kingdom

15:40
1310: Molecular Imprinting with Polyaniline on ENIG Finish PCB Electrodes for Electrochemical Detection of Melamine
Ruchira Nandeshwar, Madhumita P. Date
Indian Institute of Technology Bombay, India

15:55
1315: Cortical Source Domain Based Motor Imagery and Motor Execution Framework for Enhanced Brain Computer Interface Applications
Lalan Kumar, Amita Giri, Tapan K. Gandhi
Indian Institute of Technology Delhi, India

14:10 - 16:10
A3L-02: Habitat & Environment Monitoring 1
Room: Grand Ballroom II
Session Chair(s): Suphiya Khan

14:10
1330: Development of Fluoride Sensors and commercially viable affordable de-fluoridation Technology
Suphiya Khan
Drumlins Water Technologies Pvt LTD, India

14:40
1101: Detection of Microcystin-LR in Water Using Polyaniline Coated U-Bent Fiber Optic Biosensor
Atindra Kanti Mandal, Tathagata Pal, Suparna Mukherji, Soumyo Mukherji
Indian Institute of Technology Bombay, India

14:55
1247: Electrochemical Detection of Fe2+ Ions in Water Using 2-Dimensional g-C3N4 Modified Glassy Carbon Electrode-Based Sensor
Deepan Kumar Neethipathi{2}, Ajay Beniwal{2}, Priyanka Ganguly{2}, Adrian Bass{2}, Marian Scott{2}, Ravinder Dahiya{1}
{1}Northeastern University, United States; {2}University of Glasgow, United Kingdom

15:10
1144: Spectroscopic Studies and Numerical Modelling on Nanoparticle Based Toxic Heavy Metal Sensor for the Development of a Low Cost Prototype in Field Use
Nivedita Pan{2}, Ria Ghosh{2}, Debdatta Mukherjee{6}, Neha Bhattacharyya{5}, Lopamudra Roy{5}, Amrita Banerjee{1}, Soumendra Singh{2}, R. T. Goswami{4}, Mala Mitra{3}, Arpita Chattopadhyay{4}, Samir Kumar Pal{2}
{1}Jadavpur University, India; {2}S.N.Bose National Centre for basic Sciences, India; {3}Sister Nivedita University, India; {4}Techno International, India; {5}University of Calcutta, India; {6}University of Kalyani, India

15:25
1023: Degradable Nanofibers-Based Capacitive Pressure Sensor for Underwater Monitoring
Xenofon Karagiorgis {1}, Ajay Beniwal {1}, Peter Skabara{1}, Ravinder Dahiya {2}
{1} University of Glasgow, United Kingdom; Northeastern University, USA

15:40
1311: Ammonia Sensing Performance of RGO-Based Chemiresistive Gas Sensor Decorated with Exfoliated MoSe2 Nanosheets
Ravindra Jha{1}, Aman Nanda{2}, Navakanta Bhat{2}
{1}CSIR-Central Electronics Engineering Research Institute, India; {2}Indian Institute of Science, India

15:55
1317: Potential of Impedance Spectroscopy Towards Quantified Analysis of Gas Sensors: a Tutorial
Koushik Dutta
Indian Institute of Information Technology, Design and Manufacturing, Jabalpur, India

14:10 - 16:10
A3L-03: Critical Infrastructure 1
Room: Grand Ballroom III
Session Chair(s): Dipti Gupta

14:10
1331: Invited Talk by Dipti Gupta
Dipti Gupta
IIT Bombay, India

14:40
1116: Design and Development of a Wireless Condition Monitoring System Biased Using Through Wall Power Transfer Technique
Amit Pal{1}, Ramya Anandanatarajan{1}, Suresh Kaluvan{2}, Uma Gandhi{1}, Umapathy Mangalanathan{1}, Guido Herrmann{3}, Thomas Bligh Scott{2}
{1}National Institute of Technology Tiruchirappalli, India; {2}University of Bristol, United Kingdom; {3}University of Manchester, United Kingdom

14:55
1141: Distributed Fiber-Optic Calorimetric Dosimeter
Aleksey Tregubov, Victor Prikhodko, Alexander Alekseyev, Sergey Novikov, Galina Tertyshnikova, Andrey Zhukov
Ulyanovsk State University, Russia

15:10
1154: Design of a Sensor for Real-Time Measurement of High Molarity(12M-16M) Sodium Hydroxide
Shri Vidhatri M M{2}, Metta Sivaramakrishna{1}, S Chitrakkumar{1}
{1}Indira Gandhi Centre for Atomic Research, India; {2}International Institute of Information Technology Hyderabad, India

15:25
1155: Tracking Moored Vessel Movement in Multiple DOF Using Active Sensing Methods
Robin Kerstens{2}, Wouter Jansen{2}, Gauthier de Borrekens{2}, Stefaan Ides{1}, Jan Steckel{2}
{1}Port of Antwerp-Bruges, Belgium; {2}University of Antwerp, Belgium

15:40
1214: Silicon Nitride Microcantilever-Based Temperature Sensors
Hemant Kumar Verma{1}, Darkasha Khan{1}, Manoj Kandpal{2}, Satya N Behra{2}, Jaspreet Singh{2}, Akshay Naik{1}
{1}Indian Institute of Science, India; {2}Semi-Conductor Laboratory Mohali, India

15:55
1194: Real-Time Missing Data Estimation in Water Networks
Jyotirmoy Bhardwaj{1}, Christopher Harman{2}, Harsha S. G. Pussewalage{3}, Linga Reddy Cenkeramaddi{3}
{1}Norwegian Institute for Water Research, University of Agder, Norway; {2}Norwegian Offshore Wind Cluster, Norway; {3}University of Agder, Norway

14:10 - 16:10
A3L-04: Internet of Senses 1
Room: Junior Ballroom
Session Chair(s): T. K. Bhattacharyya

14:10
1328: Invited Talk by T. K. Bhattacharyya
T. K. Bhattacharyya
IIT Kharagpur, India

14:40
1318: A VLSI-Based Hybrid ECG Compression Scheme for Wearable Sensor Node
Jitumani Sarma, Rakesh Biswas
Indian Institute of Information Technology Guwahati, India

14:55
1189: Metadata Enhanced Security Watermarks for Sensor Data Protection
Akash Reddy Kondapuram{1}, Albert Treytl{1}, Henri Ruotsalainen{2}, Thilo Sauter{3}
{1}Danube University Krems, Austria; {2}Pölten University of Applied Sciences, Austria; {3}Technische Universität Wien, Austria

15:10
1245: Transparent Flexible Capacitive Pressure Sensor Array
Nitheesh M. Nair{2}, Dhayalan Shakthivel{2}, Ravinder Dahiya{1}
{1}Northeastern University, United States; {2}University of Glasgow, United Kingdom

15:25
1249: Understanding Conversational Usage Patterns Between English and Hindi
Nidhi Tarware, Meet Mungra, Harshit Parmar, Yash Chaudhari, Kalyan Sasidhar
Dhirubhai Ambani Institute of Information and Communication Technology, India

15:40
1305: Laser-Assisted Gaussian Microstructure Patterned PDMS Encapsulated Ti3 C2Tx (MXene)-Based Pressure Sensor for Object and Touch Detection
Parikshit Sahatiya, Vivek Adepu, Krutarth Kamath, Venkat Mattela
Birla Institute of Technology and Science, Pilani, India

15:55
1046: Flying Path Optimization of Rechargeable UAV for Data Collection in Wireless Sensor Networks
Yuchao Zhu, Shaowei Wang
Nanjing University, China

14:10 - 16:10
B2L-01: Student Research Forum 1
Room: Meeting Room II
Session Chair(s): Vinay S Palaparthy & P. Sahatiya

14:10
1176: Grapevine leafroll Disease high-Throughput phenotyping Using UAV-Based Imagery with Improved YOLOv7
Zhuowei Wang{1}, Yixue Liu{2}
{1}Australian Artificial Intelligence Institute, University of Technology Sydney, Australia; {2}Northwest A&F University, China

14:25
1303: Development of Micro-Thermoelectric Cooler for Thermal Management of Integrated Photonic Sensors
Rajvinder Kaur, Amit Tanwar, N. Padmanathan, Kafil M. Razeeb
Tyndall National Institute, University College Cork, Ireland

14:40
1252: Polyaniline Coated Plastic Optic Fiber Based Biosensor for Detection of Aflatoxin B1 in Nuts, Cereals, Beverages, and Body Fluids
Tathagata Pal, Soumyo Mukherji
Indian Institute of Technology Bombay, India

14:55
1257: Design of Piezoelectric Energy Harvester for Self-Powered Sensor Applications
Priyabrata Biswal{2}, Banibrata Mukherjee{1}, Sougata Kumar Kar{2}
{1}Indian Institute of Technology Kharagpur, India; {2}National Institute of Technology Rourkela, India

15:10
1263: An Web Application for Bike-Sharing System Demand Prediction
Chao-Yen Huang
National Sun Yat-sen University, Taiwan

15:25
1262: The Development of a Biosensor for the Early Detection of Pancreatic Cancer
Taskeen Ebrahim
Stellenbosch University, South Africa

15:40
1179: Machine Learning Techniques for Real-Time Human Activity Recognition Using mmWave Radar
Girish Tiwari, Shalabh Gupta
Indian Institute of Technology Bombay, India

15:55
1259: Mining Skyline Quantify-Utility Patterns from Different Environments
Ranran Li
Shandong University of Science and Technology, China

14:10 - 16:25
B2L-02: Student Research Forum 2
Room: Meeting Room I
Session Chair(s): M. Krishna & Vinay Patel

14:10
1265: Development of Sensitive and Selective Solid State Gas Sensor System
Snehanjan Acharyya
Indian Institute of Technology Kharagpur, India

14:25
1266: Gas Sensor Array Prototype for Breath Collection and Analysis
Anumol Dominic, Manoj M. Varma, Muddukrishna P.
Indian Institute of Science, India

14:40
1268: Label-Free Sensor for Detection of Infectious Agents: from the Development of Novel Plasmonic Sensor to Multiplexed Sensing
Kuzhandai Shamlee J
Indian Institute of Technology Madras, India

14:55
1269: Microelectrodes Arrays Electrochemical Sensors for Applications in Soil and Water Analysis
Tarun Narayan, Pierre Lovera, Alan O'Riordan
Tyndall National Institute, Ireland

15:10
1270: Development of Thermoelectric Materials and Micro-Thermoelectric Devices for Wearable Biomedical Devices
Amit Tanwar, Rajvinder Kaur, N. Padmanathan, Kafil M. Razeeb
Tyndall National Institute, University College Cork, Ireland

15:25
1271: An Effective Neural Architecture Search for Bike-Sharing System Demand Prediction
Bo-Han Chen
National Sun Yat-sen University, Taiwan

15:40
1272: Metal-Organic Framework Coated Optical Fiber Heavy Metal Ion Sensors
Swetha Menon, V V Raghavendra Sai
Indian Institute of Technology Madras, India

15:55
1273: Optimizing Hyperparameters of Deep Learning in Bicycle Flow Prediction Based on Hybrid Metaheuristic Algorithm
Yun-Ye Cai
National Sun Yat-sen University, Taiwan

16:10
1274: Development of Diagnostic Devices for Pre- and Post-Liver Transplant Care
Allwyn S. Rajamani
Indian Institute of Technology Madras, India

16:25 – 16:55
Tea Break
Room: Pre-Function Area

16:55 – 18:40
A4L-01: Sensing in Agriculture 2
Room: Grand Ballroom I
Session Chair(s): Rajul Patkar

16:55
1327: Invited Talk by Rajul Patkar
Rajul Patkar
Proximal Soilsens Technologies Pvt. Ltd., India

17:25
1040: Intra Plant Body Signal Transmission Using Capacitive and Galvanic Coupling
Gunjan Kumari, Nagendra Prasad Pathak
Indian Institute of Technology Roorkee, India

17:40
1125: Design of Round Corner Rectangular Planar Sensor with DGS for Measurement of Permittivities
Swaranpreet Kaur, Surinder Singh, M.M. Sinha
Sant Longowal Institute of Engineering and Technology, India

17:55
1208: A Microwave Sensor for Grain Moisture-Content Measurement Designed with Surface Wave Transmission Line
Swati Varun Yadav, Ashish Chittora
Birla Institute of Technology and Science, Pilani, India

18:10
1219: Design and Characterization Methodology of Capacitive Sensors for Soil Moisture Sensing Applications
Surya Varchasvi Devaraj, Khalid Manzoor Shaikh, Vidushi Gaur, Laxmeesha Somappa, Maryam Shojaei Baghini
Indian Institute of Technology Bombay, India

18:25
1235: Environmental Testing Methodology for Real-Time Soil Health Monitoring System
Tejas Rajendra Naik, Khalid Manzoor Shaikh, Surya Varchasvi Devaraj, Shambulingayya N Doddapujar, Reddygari Bhupal Dheeraj, Rajul Patkar, Maryam Shojaei Baghini
Indian Institute of Technology Bombay, India

16:55 - 18:40
A4L-02: Habitat & Environment Monitoring 2
Room: Grand Ballroom II
Session Chair(s): Dipankar Bandyopadhyay

16:55
1337: Microfluidic Nanobiosensors Targeting Multiplexed Diagnostics on a Chip
Dipankar Bandyopadhyay
IIT Guwahati, India

17:25
1296: Conducting Yarn Based Capacitive Humidity Sensor
Anupam Kumari{1}, Ajay Agarwal{1}, Angan Sengupta{1}, Yuvraj Garg{2}
{1}Indian Institute of Technology Jodhpur, India; {2}National Institute of Fashion Technology, Jodhpur, India

17:40
1066: Portable H2S Gas Detection and Alert System Prototype Using Highly Sensitive Nanocrystalline SnO2 Thin Films
Supriya Kanth{2}, Ajai Kumar Chikara{1}, Sipra Choudhury{1}, C. A Betty{1}
{1}Bhabha Atomic Research Centre, India; {2}Homi Bhabha National Institute, India

17:55
1108: Effect of Rapid Thermal Annealing on Material, Electrical and Sensing Characteristics of Ag-Doped CaTiO3-CuO Thin Film Carbon Dioxide Gas Sensors
Rudraswamy S B{2}, Shwetha H R{3}, Navakanta Bhat{1}
{1}Indian Institute of Science, India; {2}Jagadguru Sri Shivarathreeshwara Science and Technology University, India; {3}Jawaharlal Nehru National College of Engineering, India

18:10
1243: Wet Porous Electrode Glow Discharge Optical Emission Spectroscopy Chip for Low Cost Rapid Analysis of Aqueous Samples
Manjeet Kumar, Henam Sylvia Devi, Madhusudan Singh, Bhaskar Mitra
Indian Institute of Technology Delhi, India

18:25
1253: Au Deposited Carbon-Thread Electrode for Lead Ions Detection in Water Samples
Sreerama Amrutha Lahari, Khairunnisa Amreen, Satish Kumar Dubey, Ponnalagu R N, Sanket Goel
Birla Institute of Technology and Science, Pilani, India

16:55 - 18:25
A4L-03: Smart & Connected Healthcare 3
Room: Grand Ballroom III
Session Chair(s): Navaneeth Krishna

16:55
1174: Spatial Field Fusion Network (SFFNet) for Panoramic Dental X-Ray Segmentation
Ananya Mantravadi{3}, Kanak Raj{1}, Rohit Pawar{4}, Sai Chandra Teja R{2}, Nagesh Kumar S{5}
{1}Birla Institute of Technology, Mesra, India; {2}Independent Researcher, India; {3}Indian Institute of Information Technology, Raichur, India; {4}Pune Institute of Computer Technology, India; {5}Sri Venkateswara Institute of Medical Sciences is a Medica

17:10
1186: Sensor Based Image Reconstruction in Electrical Impedance Tomography Using Open-Source Technology
Priya Chimurkar{2}, Prasad Trimukhe{2}, Deepak Berwal{1}, Maryam Shojaei Baghini{2}
{1}Florida Atlantic University, United States; {2}Indian Institute of Technology Bombay, India

17:25
1198: A Resistance Change Detection Circuitry for Thread Based Resistive Sensors
Narendranath Samaddar{1}, Mohamad Idris Wani{1}, Vikram Maharshi{1}, Sameer Sonkusale{2}, Shahid Malik{1}
{1}Indian Institute of Technology Delhi, India; {2}Tufts University, United States

17:40
1313: Metal/Metal Oxide Modified Graphene Nanostructures for Electrical Biosensing Applications: a Review
Chirasree RoyChaudhuri, Bhaswati Chakraborty
Indian Institute of Engineering Science and Technology, India

17:55
1188: Open Source AI-Enhanced 3D-Printed Insulin Pump
Fares Fawzi, Mostafa Sedky, Youssef Abohammar, Hossam Sharara, Mohamed Serry
American University in Cairo, Egypt

18:10
1011: Impedimetric Study of Poly-Butyl Thiophene-Based Sensor for Detection of VOCs and Mixtures
Palwinder Kaur, Sudeshna Bagchi, Amol P. Bhondekar
CSIR-Central Scientific Instruments Organisation, India

16:55 - 18:25
A4L-04: Sensing for Smart City & Village 1
Room: Junior Ballroom
Session Chair(s): Shahid Malik

16:55
1335: Minimally Invasive Injectable Sensors
Shahid Malik
SeNSE, IIT Delhi, India

17:25
1106: Non Line of Sight (NLoS) Path Loss Evaluation of Wi-Sun in an Urban Landscape
Aditya Gupta, Muppala Ruthwik, Advaita Saxena, Aftab Hussain
International Institute of Information Technology Hyderabad, India

17:40
1079: An Effective Evolutionary Neural Architecture Search for Bike-Sharing System Demand Prediction
Bo-Han Chen, Yun-Ye Cai, Chao-Yen Huang, Chun-Wei Tsai
National Sun Yat-sen University, Taiwan

17:55
1237: Wi-Fi Sensing Based Real-Time Activity Detection in Smart Home Environment
Ajit Kumar Sahoo, Vaishnavi Kompally, Siba Kumar Udgata
University of Hyderabad, India

18:10
1073: DC-ST: A Short-Term Traffic Flow Prediction Approach Based on Distance Correlation and Spatial-Temporal Dependence
Chang Liu, Luojie Lin, Yuanyuan Zhang, Yanru Chen, Hao Wang, Liangyin Chen
Sichuan University, China

16:55 - 18:40
B1L-01 : Special Session: Alternative Diagnostics & Therapies
Room: Meeting Room I
Session Chair(s): Manoj Nesari

16:55
1344: Invited Talk by Ajay Agrawal
Ajay Agrawal
IIT Jodhpur, India

17:25
1295: Trace Level Molecular Detection in Organic Honey Relevant for Therapeutic Applications
Sarvar Singh, Sambit Kumar Keshi, Ajay Agarwal
Indian Institute of Technology Jodhpur, India

17:40
1297: Rapid Detection of Inflammatory Biomarkers Using Surface Enhanced Raman Spectroscopy
Akilandeshwari B, Sarvar Singh, Ajay Agarwal, Sushmita Jha
Indian Institute of Technology Jodhpur, India

17:55
1282: Fullerene- MoSe2 Nanocomposite-Based Sensor for Selective Detection of Formaldehyde
Radha Bhardwaj, Arnab Hazra
Birla Institute of Technology and Science, Pilani, India

18:10
1292: Molecular Analysis of Sweat for Evidence Based Ayurvedic Diagnosis
Prachi Soni, Sarvar Singh, Ujjwal Singh, Ajay Agarwal
Indian Institute of Technology Jodhpur, India

18:25
1293: Salivary Analysis for Evidence Based Ayurvedic Diagnosis
Poushali Nandi, Sarvar Singh, Ajay Agarwal
Indian Institute of Technology Jodhpur, India

19:00 - 21:00
YP Reception
Room: Grand Ballroom I & II

TECHNICAL PROGRAM: TUESDAY JANUARY 24, 2023

8:00 - 9:00
Registration
Room: Pre-Function Area

9:00 - 10:00
Towards Smart Bio-Chemical Sensing Platforms
Navakanta Bhat
Room: Grand Ballroom
Session Chair(s): V. Ramgopal Rao

10:00 – 10:30
Tea Break
Room: Pre-Function Area

10:30 - 13:15
Sensors Startup Summit & BioMedical Industry Talks
Room: Grand Ballroom II
Moderator: Chandrashekhar Nair

10:30
Development of Micro-Thermoelectric Generator as an Alternative Energy Source for Wearable Bio-Medical Devices
Kafil M Razeeb
Tyndall Institute

10:50
Rajesh Kumar Gnanasekaran
GE-Healthcare

11:15
Sensors Startup Summit Panel
Sankar Dasiga, Wellnesys
Saritha, Green Cosmos
Sudhanshu, Infab Technologies
Sanathana, BioPixs
Chandrashekhar, MolBio / BigTech
Rajul Patkar, SoilSens
Mohan Kumar R., FanPlay IoT

10:30 - 13:15
Aerospace Industry Talks
Room: Grand Ballroom III
Session Chair(s): Harinarayana Kota

10:30
Vishwanath Rao
GTRE-DRDO

10:50
Prasanna Ramamurthy
Collins Aerospace

11:10
Sensors in Current and next Gen Aircrafts
George Koilpillay
Honeywell

11:30
Umamaheshwar D.
GE Aerospace

11:50
Kallappa Pattada
Boeing

12:10
Panel Discussion
Adishesha C Sivaramasastry (Moderator), Collins Aerospace
A N Vishwanatha Rao, GTRE-DRDO
Yogananda Jeppu, Honeywell
George Koilpillay, Honeywell
Umamaheshwar D, GE Aerospace
Suresh Padmanabhan, Collins Aerospace
K Vijayaraju, Ex Aeronautical Dev. Agency
Anjana Jain, NAL

10:30 - 13:15
Infrastructure Industry Talks
Room: Grand Ballroom I
Session Chair(s): Natarajan K

10:30
Sensors for Autonomous Vehicles
Nagesh Poojary
Continental

10:50
Venkatarao Ryali
GE Vernova

11:10
Nagahanumaiah
CMTI Bangalore

11:30
Jayanti Ganesh
GE Aerospace

11:50
Suraj Rengarajan
Applied Materials

12:10
Metrology for Self-Reliance
Venu Gopal Achanta
National Physical Laboratory, Delhi

12:30
Panel Discussion

10:30 - 13:15
Sensors Standards Opportunity
Room: Junior Ballroom
Session Chair(s): Sri Chandrasekaran & Munir Mohammed

10:30
IEEE Sensors Council's Standards Committee and its Activities: an Overview
Sri Chandrasekaran
Practice Lead, Foundational Technologies IEEE Standards Association

10:50
P1451-99: Harmonization of IoT Devices & Systems
Gopalakrishna Kuppa
IEEE Hyderabad Section

11:10
Trends and Applications of Sensing Technologies in power systems
Akilur Rahman
Chief Technology Officer – Hitachi Energy India Limited

11:30
Manufacturing of Gyros
S Venu
Senior Deputy General Manager of Servo System Division

11:50
Inertial Guidance sensors
Jagannath Nayak
DRDO Outstanding Scientist and Director CHESS

12:10
Seismic Sensors for Atomic Energy installations
J. Subiram
Electronics Corp of India (ECIL)- Hyd

12:30
Lexisearch based Multi sensor based data fusion with high order singular value
Srinivas Koduri
ISRO

10:30 – 13:15
WiSe/YP Big Idea Pitch Competition
Room: Meeting Room I
Session Chair(s): Amit Kumar, Mitradip Bhattacharjee, Saakshi Dhanekar & Veda Sandeep Nagaraja

13:15 – 14:15
Lunch
Room: Pre-Function Area

14:15 – 15:15
Micro Sensor Systems for the Future Internet of Everything (IoE)
Cian Ó Mathúna
Room: Grand Ballroom
Session Chair(s): Srinivas Tadigadapa

15:15 – 15:45
Tea Break
Room: Pre-Function Area

15:45 – 16:45
WiSe/YP Panel: Current and Future Trends in Applied Sensing
Room: Grand Ballroom
Moderator: Sarita Mishra

Thilo Sauter, TU Wien and Danube University Krems
Navakanta Bhat, Indian Institute of Science, Bangalore
Cian Ó Mathúna, Tyndall National Institute, Ireland
Enakshi Bhattacharya, IIT Madras

16:45 – 17:45
Panel: Sustainability Priorities in the Local & Global context: What, How and When?
Room: Grand Ballroom
Moderator: Gayatri Chauhan

Bruno Meyer, IEEE Fellow, Vice President Technical Activities 2022
K. VijayRaghavan, Padma Shri awardee (2013), FRS, ex-Principal Scientific Adviser to the Govt. of India
Anil Gupta, Padma Shri awardee (2004), the Executive Vice-Chair at the National Innovation Foundation, Founder of the Honey Bee Network, ex- Professor, Indian Institute of Management, Ahmedabad
Fabrice Labeau, McGill University

17:45 – 18:45
WiSe/YP Networking Event
Room: Pre-Function Area

18:45 – 19:45
Cultural Event
Room: Grand Ballroom

19:45 – 21:45
Sensors Council 25th Anniversary Celebration Dinner
Room: Grand Ballroom

8:00 - 9:00
Registration
Room: Grand Ballroom

9:00 - 10:00
Smart Processing with Wearable Devices: Shall We Consider the Human Influence?
Valérie Renaudin
Room: Grand Ballroom
Session Chair(s): Anil Roy

10:00 – 10:30
Tea Break
Room: Pre-Function Area

10:30 - 11:30
C1aP-05: Live Demonstrations
Room: Pre-Function Area
Session Chair(s): Bishakh Bhattacharya & Svetlana Tatic-Lucic

1279: MYOSA (Make Your Own Sensors Applications)
Abhishek Jani{2}, Anil Roy{1}
{1}Dhirubhai Ambani Institute of Information and Communication Technology, India; {2}eInfochips, an Arrow Electronics Company, India

1280: Ai Based, Acoustic Traffic Preemption System
Bhuvana B M, K M Vanitha, Shruti S, Prerana Malashetti, H M Lakshmi
Ramaiah Institute of Technology, India

1286: Optical Pickup Unit: Synchronous Detection and DC Method for Measuring Focus Error Signal
Rekha S. Sekar, Abhinav R., Kanimozhi V., Vandana P., Arvind Ajoy
Indian Institute of Technology Palakkad, India

1287: A Compact Tunable Diode Laser-Based System for Continuous Monitoring of Ambient Water Vapour
Durlav Paul{2}, Shruti De{2}, Kenneth T V Grattan{1}, Arup Lal Chakraborty{2}
{1}City, University of London, United Kingdom; {2}Indian Institute of Technology Gandhinagar, India

1289: Sonomyography-Based Sensing of Muscle Activity for Intuitive Control of Bionic Devices
Anne Tryphosa Kamatham, Manikandan S., Desh Deepak Lawania, Ankesh Jain, Biswarup Mukherjee
Indian Institute of Technology Delhi, India

Demonstration of portable moisture melie and rapid soil testing device, Nuteisens
Rajul Patkar, Mukul Singh
Proximal Soilsens Technologies, India

10:30 - 11:30
C1aP-06: Sensing in Agriculture 5
Room: Pre-Function Area

1143: Analysis of Impedance Sensor Probes for Electric Field Treatment During Post-Harvest Processing
Thomas Mohan, Suja K J, Sunitha K
National Institute of Technology Calicut, India

1215: UAV Sensing-Based Semantic Image Segmentation of Litchi Tree Crown Using Deep Learning
Debarun Chakraborty, Bhabesh Deka
Tezpur University, India

1222: System Architecture and Software Design of a Handheld High Throughput Phenotyping Device: AgRECA
Kartik Cholachgudda, Rajashekhar Biradar, Kouame Yann Olivier Akansie, Aditya Sannabhadti, Geetha Devanagavi
REVA University, India

1251: Extracting Leaf Wetness Duration Using Baseline Correction Through Group-Sparse Total Variation Method for LW Sensor
Riya Saini, Kamlesh S Patle, Sukruti Shah, Ahlad Kumar, Vinay S Palaparthy
Dhirubhai Ambani Institute of Information and Communication Technology, India

10:30 - 11:30
C1aP-07: Sensing of e-Mobility 2
Room: Pre-Function Area

1095: Aeroelastic Analysis in a Hybrid Composite by Embedding Shape Memory Alloy
Kartik Tandel, Rammohan Bhanumurthy, Harathi Meghashyam
Dayananda Sagar University, India

1135: Design and Development of a Novel Bluetooth Based Vehicle Scanner
Ashish Kulkarni{1}, Narendra Kumar{1}, Kalaga Ramachandra Rao{2}
{1}Delhi Technological University, India; {2}Indian Institute of Technology Delhi, India

1039: Cooperative Caching and Transmitting in Sensor Networks Based on Cognitive Radio
Haiying Peng, Zhuangzhaung Jin, Hong Zhang, Dapeng Wu, Ruyan Wang
Chongqing University of Posts and Telecommunications, China

1229: Design and Simulation of Tactical Grade Capacitive Based MEMS Vibratory Ring Gyroscope
Vinay Venkataram, Pradnya Chabbi, Venkatesh KP Rao
Birla Institute of Technology and Science, Pilani, India

1234: RFID-Enhanced Connected Lane Markings: Design Constraints and Requirements
Dajiang Suo{1}, Rahul Bhattacharyya{1}, Joan Melià-Seguí{2}, Sanjay Sarma{1}
{1}Massachusetts Institute of Technology, United States; {2}Universitat Oberta de Catalunya, Spain

10:30 - 11:30
C1aP-08: Sensing & Communication 2
Room: Pre-Function Area

1196: Sensing the Environment with 5G Scattered Signals (5G-CommSense): A Feasibility Analysis
Sandip Jana{1}, Amit Kumar Mishra{2}, Mohammed Zafar Ali Khan{1}
{1}Indian Institute of Technology Hyderabad, India; {2}University of Cape Town, South Africa

10:30 - 11:30
C1aP-09: Smart & Connected Healthcare 5
Room: Pre-Function Area

1016: A Study on Pulse Wave Signals Based on Fibre Bragg Grating Arrays
Manish Mishra, Prasant Kumar Sahu
Indian Institute of Technology Bhubaneswar, India

1020: An Accelerometer-Based Voice Assessment in Muscle Tension Dysphonia
Ashok Dan{2}, Arvind Kumar Kairo{1}, S. Pravin Kumar{3}, Deepak Joshi{2}
{1}All India Institute of Medical Science, India; {2}Indian Institute of Technology Delhi, India; {3}Sri Sivasubramaniya Nadar College of Engineering, India

1050: Discrimination of VOCs Using Chemiresistive Sensor Array – Towards Electronic Nose Applications
Nikhil Vadera, Saakshi Dhanekar
Indian Institute of Technology Jodhpur, India

1065: Detecting Moments of Distraction During Meditation Practice Based on Changes in the EEG Signal
Pankaj Pandey{3}, Julio Rodriguez-Larios{1}, Krishna Prasad Miyapuram{3}, Derek Lomas{2}
{1}Columbia University, United States; {2}Delft University of Technology, Netherlands; {3}Indian Institute of Technology Gandhinagar, India

1074: Directed Transimission of Ca2+ Signals in Three-Dimention Biological Cell Networks
Peng He, Mengnan Su, Yaping Cui, Yifan Chen, Maolin Hua, Kai Wang
Chongqing University of Posts and Telecommunications, China

1096: Analysis of Interpolation Techniques for a Flexible Sensor Mat for Plantar Pressure Measurement
Anis Fatema, Ivin Kuriakose, Rohan Gupta, Aftab Hussain
International Institute of Information Technology Hyderabad, India

1099: Fabrication and Characterization of a Flexible Transparent Nozzle/Diffuser Micropump
Shreya Malkurthi, Dhayanithi Niteesh, Sumana Bhattacharjee, Aftab Hussain
International Institute of Information Technology Hyderabad, India

1117: Brain Activity Recognition Using Deep Electroencephalography Representation
Riddhi Johri{2}, Pankaj Pandey{2}, Krishna Prasad Miyapuram{2}, Derek Lomas{1}
{1}Delft University of Technology, Netherlands; {2}Indian Institute of Technology Gandhinagar, India

1120: Design and Optimization of a Wearable Sonomyography Sensor for Dynamic Muscle Activity Monitoring
Anne Tryphosa Kamatham, Biswarup Mukherjee
Indian Institute of Technology Delhi, India

1129: Sensitivity Analysis of a Flexible Piezoresistive Sensor for Efficient Packaging
Lakhvir Singh, Mitradip Bhattacharjee
Indian Institute of Science Education and Research, Bhopal, India

1163: Optimizing of Bathing Water Heater Using Microwave and Microcontroller Technology
Prashobh Karunakaran{3}, M. Shahril Osman{3}, Badrul Hisham Hossain{3}, Keren John{3}, Prashanth Karunakaran{2}, Shanthi Karunakaran{2}, Arjun Karunakaran{1}
{1}National Institute of Technology, Tomakomai College, Japan; {2}Swinburne University of Technology, Malaysia; {3}University of Technology Sarawak, Malaysia

1180: Weighted Frequency Subband Compounding in Ultrasonic Imaging Sensor Consisting of a Single Transducer and a Random Coding Mask
Mohammad Syaryadhi, Norio Tagawa, Ming Yang
Tokyo Metropolitan University, Japan

1184: Mental Stress Detection Using EEG and Recurrent Deep Learning
Abhi Patel, Dinesh Nariani, Akhand Rai
Ahmedabad University, India

1192: Design of Round Corner Rectangular Planar Sensor with Circular Slot for Estimation of Permittivity and Conductivity of Material
Swaranpreet Kaur, Surinder Singh, M.M. Sinha
Sant Longowal Institute of Engineering and Technology, India

1197: Development and Validation of Offset Current Compensation Technique for Optical Sensors
Sumit Kumar{2}, Sadan Saquib Khan{2}, Rohan Patil{2}, Meraj Ahmad{3}, Laxmeesha Somappa{1}, Shahid Malik{2}
{1}Indian Institute of Technology Bombay, India; {2}Indian Institute of Technology Delhi, India; {3}University of Glasgow, United Kingdom

1211: Acetone and Benzene Detection Using MEMS Electro-Thermal Actuation
Vandana Chalka, Megha Chauhan, Saakshi Dhanekar, Kamaljit Rangra
Indian Institute of Technology Jodhpur, India

1248: A Wearable Device for Detecting and Analyzing Gait Changes
Aniruddh Muley, Kalyan Sasidhar, Ronak Dhokai
Dhirubhai Ambani Institute of Information and Communication Technology, India

1275: SrTiO3-TiO2 Heterostructured Nanotubes Array for Selective Acetone Sensing
Radha Bhardwaj, Arnab Hazra
Birla Institute of Technology and Science, Pilani, India

10:30 - 11:30
C1bP-05: Critical Infrastructure 2
Room: Pre-Function Area

1202: Comparative Study and Experimental Validation of Phase-Sensitive-Detection Techniques for Sensor Lock-In Amplifiers
Rohan Patil{2}, Mohamad Idris Wani{2}, Tarikul Islam{3}, Maryam Shojaei Baghini{1}, Laxmeesha Somappa{1}, Shahid Malik{2}
{1}Indian Institute of Technology Bombay, India; {2}Indian Institute of Technology Delhi, India; {3}Jamia Millia Islamia, India

10:30 - 11:30
C1bP-06: Internet of Senses 2
Room: Pre-Function Area

1008: Efficient But Effective Perceptual Quality Model of Screen Content Image
Tong Tang, Chuan You, Ruoying Zhang
Chongqing University of Posts and Telecommunications, China

1027: Cross-Modal Visual Inpainting for Internet of Senses
Junqi Liao, Zizhu Miao, Yuyuan Yao
Nanjing University of Posts and Telecommunications, China

1036: Cross-Modal Signal Recovery for Internet of Senses: from Haptic to Visual
Zizhu Miao, Jiahao Zhang, Meng Zhang, Hengfa Liu
Nanjing University of Posts and Telecommunications, China

1043: Resource Allocation in Large-Scale Cognitive Self-Organizing Industrial Internet of Things
Fan Yang, Shilong Zhang, Jie Huang, Tao Yu
Chongqing University of Technology, China

1069: Floodet: A Lightweight Edge AI Model for Intelligent Flood Detection
Wenzhong Ou, Liekang Zeng, Xu Chen
Sun Yat-sen University, China

1218: Software Reconfigurable Frequency Readouts with Coarse Voltage Quantizers for Sensor Applications
Laxmeesha Somappa{1}, Shahid Malik{2}, Maryam Shojaei Baghini{1}
{1}Indian Institute of Technology Bombay, India; {2}Indian Institute of Technology Delhi, India

1228: Fabrication of Silk Nanofibers with In-Situ Crystallization for Large-Area Tactile Sensing
Chithra Parameswaran {1}, Dhayalan Shakthivel {1}, Ravinder Dahiya {2}
{1}University of Glasgow, United Kingdom; {2} Northeastern University, USA

10:30 - 11:30
C1bP-07: Sensing in Security
Room: Pre-Function Area

1207: Analysis on the Avalanche Phase Delay of Optically Modulated ATT Based Organic Photo-Sensor at Terahertz Regime
Debraj Chakraborty{1}, S D Nyar{1}, Ajanta Palit{2}, Moumita Mukherjee{1}
{1}Adamas University, India; {2}Maulana Abul Kalam Azad University of Technology, India

1236: Development of MoSe2/Ti3C2Tx (MXene) Nanohybrid Based Flexible Electromechanical Sensor for Artificial E-Skin Application
Vivek Adepu, Chandrasekhar Reddy Kolli, Parikshit Sahatiya
Birla Institute of Technology and Science, Pilani, India

10:30 - 11:30
C1bP-08: Crowdsensing & Intelligent Sensing
Room: Pre-Function Area

1028: Evolutionary Game-Based Crowd Cooperation Sensing Incentive Mechanism
Puning Zhang, Ziyun Xian, Xiaming Fan
Chongqing University of Posts and Telecommunications, China

11:30 - 13:00
C2L-01: Sensing in Agriculture 3
Room: Grand Ballroom I
Session Chair(s): G K Ananthasuresh

11:30
1326: Invited Talk by G K Ananthasuresh
G K Ananthasuresh
Indian Institute of Science, India

12:00
1014: Multi-Level Fusion of Multi-Spectral Images to Detect the Artificially Ripened Banana
Narayan Vetrekar{1}, Raghavendra Ramachandra{2}, Rajendra Gad{1}
{1}Goa University, India; {2}Norwegian University of Science and Technology, Norway

12:15
1115: IoT Based Data Sensing System for AutoGrow, an Autonomous Greenhouse System for Precision Agriculture
Pavan Patil{2}, Ramesh Kestur{2}, Madhav Rao{2}, Aswath C{1}
{1}Indian Institute of Horticultural Research, India; {2}International Institute of Information Technology Bangalore, India

12:30
1203: Multi Task Learning for Plant Leaf Segmentation and Counting
Bharathi Chaudhury{1}, Vasudha Joshi{1}, Anand S Sahadevan{2}, Pabitra Mitra{1}
{1}Indian Institute of Technology Kharagpur, India; {2}Indian Space Research Organization, India

12:45
1220: Impact of Annealing on Soil Moisture Sensing Properties of Graphene Oxide
Kamlesh S Patle, Priyanka Khaparde, Shivangni Jain, Sukruti Shah, Yash Sheth, Yash Agrawal, Vinay S Palaparthy
Dhirubhai Ambani Institute of Information and Communication Technology, India

11:30 – 12:45
C4L-02: Mixed Session Education 2, Industry 4.0
Room: Grand Ballroom II
Session Chair(s): L. S. Shashidhara

11:30
1342: Invited Talk by L. S. Shashidhara
L. S. Shashidhara
Ashoka University, India

12:00
1103: Flexible Writing Pad Based on a Piezoresistive Thin Film Sensor Matrix
Mohee Datta Gupta, L. Lakshmanan, Anis Fatema, Aftab Hussain
International Institute of Information Technology Hyderabad, India

12:15
1210: A Novel Dual Torsional MEMS Suspended Gate FET (DTM-SGFET) Accelerometer
Raeann Jesma R, N Mahesh Sreevatsava, V. Seena
Indian Institute of Space Science and Technology, India

12:30
1322: The Machine Learnings Leading the Cuffless PPG Blood Pressure Sensors Into the Next Stage
Duc Huy Nguyen, Paul C.-P. Chao, Chih-Cheng Wu
National Yang Ming Chiao Tung University, Taiwan

11:30 – 12:45
C2L-03: Smart Energy 1
Room: Grand Ballroom III
Session Chair(s): K S Reddy

11:30
1340: Invited Talk by K S Reddy
K S Reddy
IIT Madras, India

12:00
1051: Remote Sensing Using Drone and Machine Learning for Computation of Rooftop Solar Energy Potential
Prakash P S{1}, Pavan R. Vyas{2}
{1}National University of Ireland Galway, Ireland; {2}Visvesvaraya Technological University, India

12:15
1097: A Dual-Slope RDC Using T-Network for Low Resistance Measurement
Gopal Singh{2}, Shiraz Sohail{2}, Tarikul Islam{1}
{1}Jamia Millia Islamia, India; {2}National Institute of Technology Tiruchirappalli, India

12:30
1169: Handling Gas Entrainment Issues in Coriolis Flow Sensors
Saketh Mahalingam{1}, Muhammad Arsalan{2}
{1}Aramco Overseas Company, United Kingdom; {2}Saudi Aramco, Saudi Arabia

11:30 – 12:45
C4L-04: Mixed Session Localization 3 & Security Session
Room: Junior Ballroom I
Session Chair(s): Thilo Sauter

11:30
1339: IoT Concepts in Automation Systems and their Impact on Security
Thilo Sauter
Vienna University of Technology and University for Continuing Education Krems, Austria

12:00
1091: MoS2 Based Nanomechanical Bolometer for Combined Radiation Sensing and the Estimation of Material Properties
Shubham Saxena, Tewodros Ashagre, Dibakar Rakshit, Samaresh Das, Valipe Ramgopal Rao
Indian Institute of Technology Delhi, India

12:15
1201: Development of Time-Multiplexed Magnetic-Induction Based Ranging Systems
Mudra Chavda{2}, Ashwani Chandola{2}, Shahid Malik{2}, Catherine O'Sullivan{1}, Andrew S. Holmes{1}
{1}Imperial College London, United Kingdom; {2}Indian Institute of Technology Delhi, India

12:30
1024: Dynamic Collaborative Caching Strategy for Responsive Data Search in IoT
Dapeng Wu, Meiyu Sun, Puning Zhang, Zhigang Yang
Chongqing University of Posts and Telecommunications, China

13:00 - 14:00
Lunch
Room: Pre-Function Area

14:00 - 15:15
C3L-01: Sensing in Agriculture 4
Room: Grand Ballroom III
Session Chair(s): Alan O'Reardon

14:00
1338: Sensors for Agri-Food and the Environment
Alan O'Reardon
Tyndall National Institute, Ireland

14:30
1132: Yes/No Type Swab Based Colorimetric Paper Biosensor for Detection of Chlorpyrifos on Agricultural Produce: A Nondestructive Sensing Approach
Tathagata Pal, Soumyo Mukherji
Indian Institute of Technology Bombay, India

14:45
1250: A Battery-Less NFC Sensor Transponder for Cattle Health Monitoring
Dinesh R. Gawade{1}, Roy B. V. B. Simorangkir{1}, Sanjeev Kumar{1}, Melusine Pigeon{2}, Marco Belcastro{1}, Nadeem Rather{1}, John L. Buckley{1}, Brendan O'Flynn{1}
{1}Tyndall National Institute, University College Cork, Ireland; {2}University of Bath, United Kingdom

15:00
1230: Visual Sensor Network Based Early Onset Disease Detection for Strawberry Plants
Usman Dar{1}, Hossein Anisi{1}, Vahid Abolghasemi{1}, Chris Newenham{2}, Andrey Ivanov{2}
{1}University of Essex, United Kingdom; {2}Wilkin & Sons Ltd., United Kingdom

14:00 – 15:30
C3L-02: Smart & Connected Healthcare 4
Room: Junior Ballroom
Session Chair(s): Jerald Yoo

14:00
1343: Invited Talk by Jerald Yoo
Jerald Yoo
National University of Singapore, Singapore

14:30
1204: A ΔC Detection Circuit for Capacitive Sensing Based Prosthetic Control Applications
Bhavesh Nakum, Mohamad Idris Wani, Khan Mohammad Ehsan, Shahid Malik
Indian Institute of Technology Delhi, India

14:45
1231: Characterizing the Dynamics of Surface Electromyography Signals in Muscle Fatigue Through Visibility Motif Networks
Navaneethakrishna Makaram{1}, Ramakrishnan Swaminathan{2}
{1}Boston Childrens Hospital, United States; {2}Indian Institute of Technology Madras, India

15:00
1238: Non-Linearity Switching in PMUTs for Enhanced Sensitivity
Sri Harsha Paladugu, Priyanka Singh, Annapoorni Rangarajan, Rudra Pratap
Indian Institute of Science, India

15:15
1255: Modified Carbon-Thread Based Miniaturized Electrochemical Platform for Real Time Serotonin Detection
Sanjeet Kumar, Khairunnisa Amreen, Satish Kumar Dubey, Sanket Goel
Birla Institute of Technology and Science, Pilani, India

14:00 - 15:30
C2L-02: Mixed Session Sensing of e-Mobility 1 & Crowdsensing and Intelligent Sensing
Room: Grand Ballroom II
Session Chair(s): Shiv Govind Singh

14:00
1329: Invited Talk by Shiv Govind Singh
Shiv Govind Singh
IIT Hyderbad, India

14:30
1114: Radar and Camera Fusion for Multi-Task Sensing in Autonomous Driving
Kun Shi, Shibo He, Jiming Chen
Zhejiang University, China

14:45
1131: Sensing System Assisted Novel PID Controller for Electric Vehicles
Dayarnab Baidya, Shreya Dhopte, Mitradip Bhattacharjee
Indian Institute of Science Education and Research, Bhopal, India

15:00
1147: Fitness Activity Classification Using mmWave Radar Point-Cloud and Machine Learning
Girish Tiwari, Shalabh Gupta
Indian Institute of Technology Bombay, India

14:00 - 15:30
Smart Energy 3
Room: Grand Ballroom I
Session Chair(s): Antonio Puliafito

14:00
Integrating the Cyber World with the Internet of Things: How to transform cities and industries into smarter places
Antonio Puliafito
University of Messina, Italy

14:30
1185: Design and Experimental Analysis of Triboelectric Energy Harvester with In-House Set-Up
Souvik Khan, Banibrata Mukherjee
Indian Institute of Technology Kharagpur, India

14:45
1200: Enhanced TCR Results of TiOx Thin Films for Uncooled Infrared Microbolometers
Y. Ashok Kumar Reddy{1}, P.V. Karthik Yadav{1}, T. Ramya Barathy{1}, B. Ajitha{3}, Isha Yadav{2}, Sudha Gupta{2}
{1}Indian Institute of Information Technology, Design and Manufacturing, Kancheepuram, India; {2}Solid State Physics Laboratory, Defence Research & Development Organization, India; {3}Vellore Institute of Technology, India

15:00
1212: Flexible Vibrational Energy Harvester with Groove Design Using BTO/PVDF-TrFE Film for Higher Output
Sandeep Singh Chauhan, Nadeem Tariq Beigh, Dibyajyoti Mukherjee, Dhiman Mallick
Indian Institute of Technology Delhi, India

15:15
1302: An Energy-Efficient Power Allocation Scheme for NOMA-Based IoT Sensor Networks in 6G
Rishu Raj, Abhishek Dixit
Department of Electrical Engineering, Indian Institute of Technology Delhi, New Delhi, India