IEEE
SENSORS 2024
Kobe, Japan || October 20 - 23, 2024

IEEE SENSORS 2024
CONFERENCE PROGRAM

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2024.ieee-sensorsconference.org

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WELCOME MESSAGE

Yokoso! Welcome to Kobe, and welcome to IEEE SENSORS 2024! This is the first time the IEEE SENSORS is in Japan. Exciting! On behalf of the organizing committee, we welcome you to Japan. IEEE SENSORS 2024 is held in the Kobe Portopia Hotel, a signature hotel with a beautiful night view of Kobe.

The IEEE SENSORS conference is a flagship conference of the IEEE Sensors Council. The council is the organization of sensors' enthusiasts and volunteers which serves 26 IEEE member societies.

Right from its inception in 2002, the IEEE SENSORS conference has been a forum for researchers, engineers, practitioners, and students to present and discuss their research, best ideas, innovations, and products. Traditionally, the conference has been covering all aspects of sensors, ranging from materials for sensing to sensing systems.

We have an exciting program for you this year. The conference starts off with topical workshops, which run in-parallel with tutorials. This year we invited the community to propose workshop ideas and selected four. This year, more than ever before, we are emphasizing in our program the important role of industry engagement. We are continuing our tradition of tutorials during SENSORS and 14 tutorials are offered this year. We are continuing the journal-conference synergy program with 46 papers to be presented under this program.

We totally received 1242 paper submissions to 14 technical tracks, 4 focused sessions, and live demonstrations. After a rigorous review process, 683 papers were accepted, with the acceptance rate of 55%. This year, we received 57.2% of the submission from Asia/Pacific, 29.7% from Europe, 8.9% from North America, 1.1% from Latin America, 3% from Middle East Asia/Africa. In total, 315 lectures and 357 posters are presented at the IEEE SENSORS 2024. In addition, 16 invited lectures are presented. All attendees were offered an opportunity to present their results during the open poster session, and 26 open posters are presented this year.

Each day of the conference opens with keynote talks from renowned experts in the field of sensors. On Monday, Masaki Hirota from Kyushu University, Japan, will give a talk titled "Sensors for advanced safety, comfort and convenience in future transportation systems". Andrew Cleland from the University of Chicago, USA, will give a talk titled "Emitting and sensing individual surface acoustic wave phonons" on Tuesday. Finally, Chris Van Hoof from IMEC, Belgium, will start the final day of the conference with the talk titled "Agriculture 5.0, Food 5.0 and Health 5.0 - How technology and AI can enable this radical transformation".

This year we emphasize industrial research and products, featured by 21 exhibitors, in an industry-organized Track and the Industrial Session on Monday, as well as an industry-organized workshop on "Body Sensing for Advanced Human Machine Interface".

The Young Professionals (YP) Committee organized a poster session at the general welcome reception on Sunday. Wise (Women in Sensors), YP, D&I (Diversity & Inclusion) and CEC joint session will be held on Monday as well. The WiSe committee invites you to a networking event on Tuesday. YP and Wise together sponsor the Big Idea Pitch competition on Wednesday. The conference participants will have an opportunity to meet Editors-in-Chief of IEEE Sensors council sponsored journals, including IEEE Sensors Journal, IEEE Sensors Letters, IEEE Journal of Selected Areas in Sensors, IEEE Sensors Reviews, IEEE Internet of Things Journal, and IEEE Journal on Flexible Electronics.

The social events during the IEEE SENSORS 2024 will include the welcome reception on Sunday and the Gala Dinner on Tuesday at the Portopia Hotel. The Gala dinner will treat attendees with the Taiko (Japanese drum) show and Awa Odori show, immersing in traditional Japanese culture.

The IEEE SENSORS 2024 is based on the collaborative effort of many people working together. We are grateful to all the organizing committee and program committee members for volunteering and spending much time to prepare for the conference. We thank authors and participants for visiting Kobe and sharing your thoughts and ideas. We are excited to meet you at the IEEE SENSORS 2024 in Kobe, Japan.

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Track 3: Chemical, Electrochemical and Gas Sensors
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Track 4: Microfluidics and Biosensors
Uwe Schnakenberg, *RWTH Aachen Unversity, GE*
Shih-Kang Fan, *Kansas State University*

Track 5: Optical Sensors
Cristian Manzoni, *Polytecnico Milano, IT*
Michiko Nishiyama, *Soka University, Japan*

Track 6: Physical Sensors: Temperature, Mechanical, Magnetic and Others
Siavash Pourkamali, *University of Texas at Dallas*
Zhu Yao*, Institute of Microelectronics*

Track 7: Acoustic and Ultrasonic Sensors
Hongyu Yu, *Hong Kong University of Science and Technology*
Sri-Rajasekhar (Raj) Kothapalli, *The Pennsylvania State University*

Track 8: Sensor Networks and IOT
Domenico Balsamo, *Newcastle University, UK*
Sebastian Bader, *Mid Sweden University*

Track 9: Emerging Sensor Technologies and Applications
Joost Lötters, *University of Twente, NL*
Bonnie Gray, *Simon Fraser University*

Track 10: Sensor Systems: Signals, Processing and Interfaces
Changhee Won, *Temple University*
Michael Sherburne, *The Johns Hopkins University Applied Physics Laboratory*

Track 11: Actuators, Energy Harvesting and Powering Sensors
Hongsoo Choi, *Daegu Gyeongbuk Institute, Korea*
Darrin J Young, *The University of Utah*

Track 12: Sensor Data Processing
Chao Tan, *Tianjin University, China*
Ashish Pandharipande, *NXP Semiconductors, NL*

Track 13: Wearable Sensors and Systems
Jürgen Kose, *Silicon Austria Labs, A*
Anna Maria Pappa, *Khalifa University*

Track 14: Sensors in Industrial Practices
Amit Kumar, *BioAxis DNA Research Centre, Hyderabad, IN*
Yu-Cheng Lin, *National Cheng Kung University, TW*

Track 15: Live Demonstration of Sensors and Sensing Technologies
Anna Grazia Mignani, *CNR-Istituto di Fisica Applicata "Nello Carrara", IT*
Youngwook Kim, *Sogang University*

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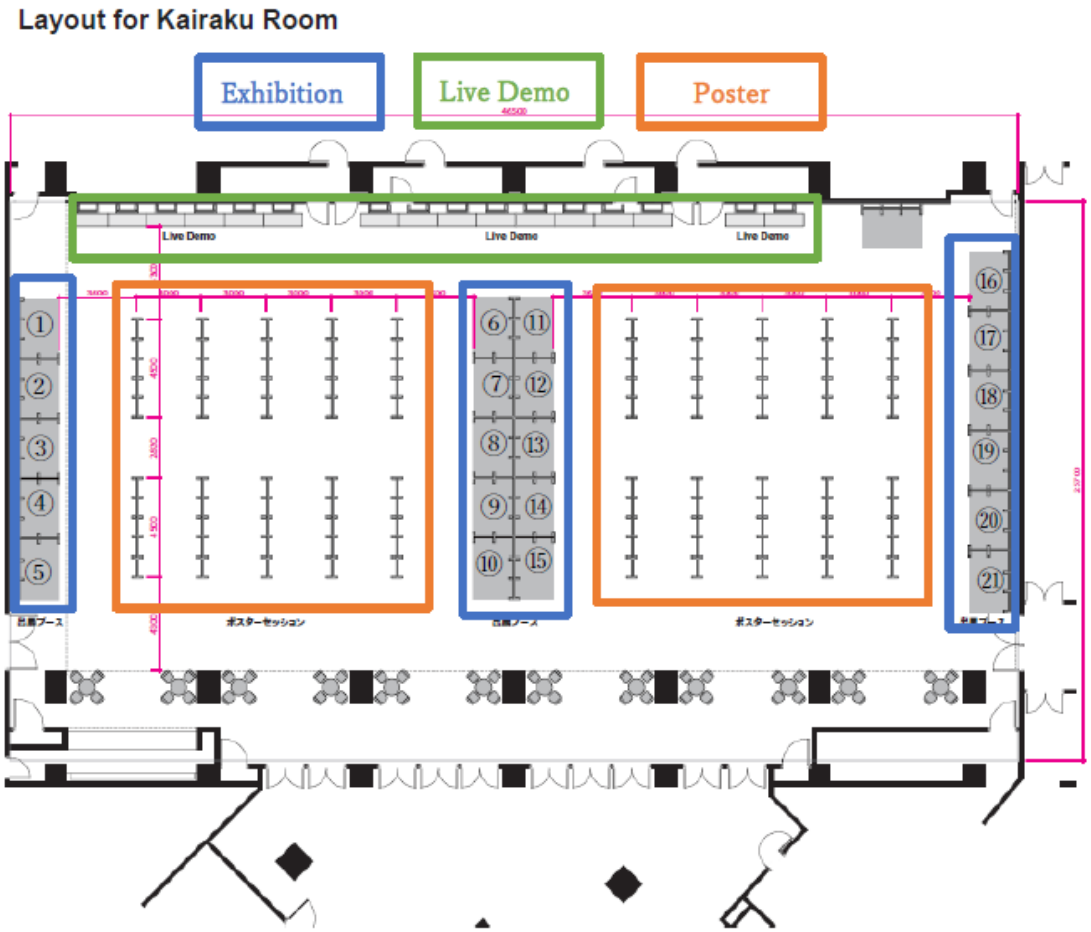
EXHIBIT HALL LAYOUT



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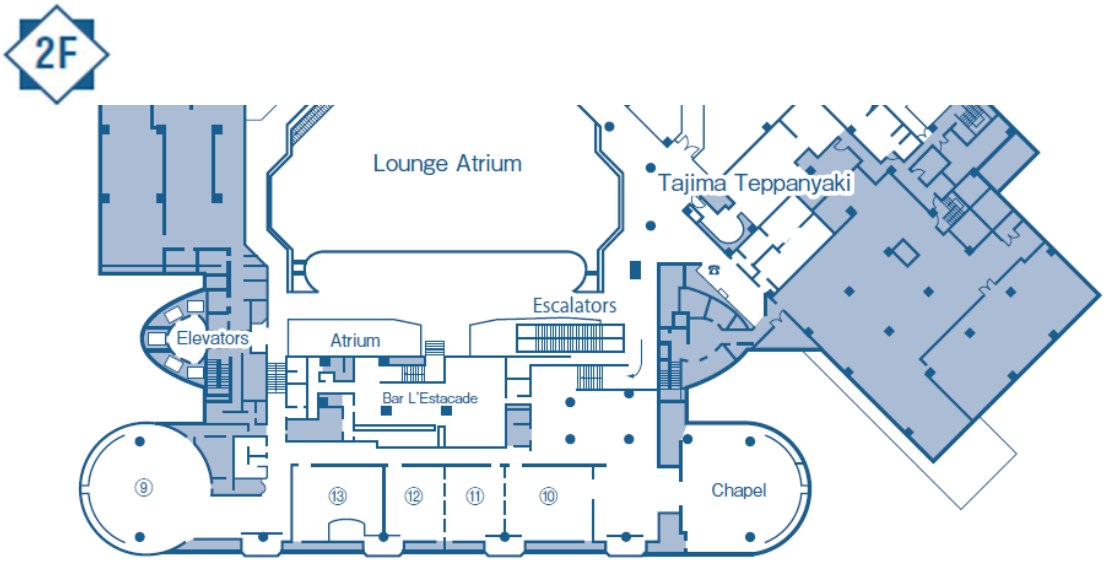
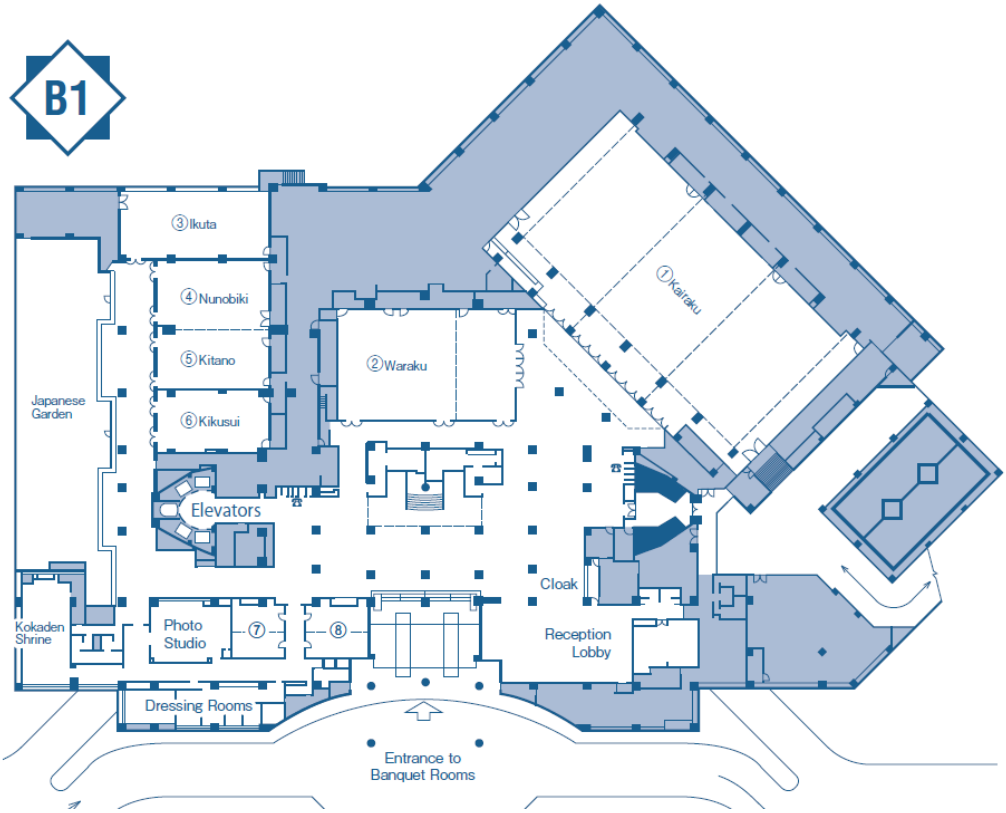
Main Building





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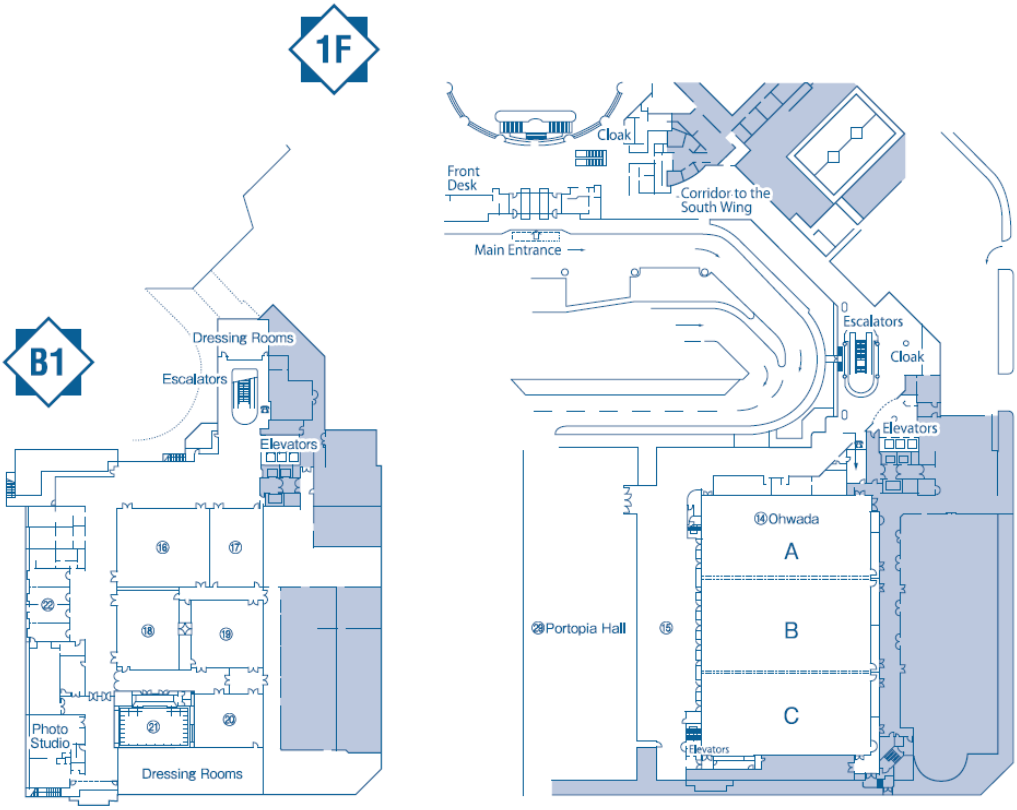
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B1
Dressing Rooms
Escalators
Elevators
Photo Studio
Dressing Rooms
Cloak
Front Desk
Corridor to the South Wing
Main Entrance
Escalators
Cloak
Elevators
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Elevators

KEYNOTE SPEAKERS

Masaki Hirota

The Graduate School of Integrated Frontier Sciences, Kyushu University
Dean, Professor

Sensors for advanced safety, comfort and convenience in future transportation systems

Monday | October 21, 2024 | 9:00 - 10:00

The number of automobiles owned in the world exceeds 1.5 billion, and major social issues are arising as the number increases and society changes. These include increasing traffic safety issues, traffic congestion issues, environmental issues related to exhaust gas, CO2 emissions and noise, and large consumption of petroleum energy.

Additionally, a major new challenge has emerged: ensuring safe and comfortable individual mobility in the aging society that is progressing in developed countries. The DX of automobiles that adapts to the advanced information society brought about by the spread of smartphones and AI is also an important issue. Although solutions using in-vehicle sensors are important, it is necessary for the entire transportation society to work together in cooperation with infrastructure systems. In this lecture, I will discuss past efforts such as ITS sensors and what we expect from future sensors such as autonomous driving.

Andrew Cleland

University of Chicago

Emitting and sensing individual surface acoustic wave phonons

Tuesday | October 22, 2024 | 8:00 - 9:00

I will describe recent results from my group, where we have shown that we can emit and detect individual microwave-frequency surface acoustic wave phonons on-demand. We have used these phonons to transmit quantum states and generate quantum entanglement; demonstrated a single-phonon interferometer and a quantum information process known as “quantum erasure”; and most recently demonstrated the acoustic Hong-Ou-Mandel effect with phonons, illustrating the wave-particle duality fundamental to quantum mechanics. Interestingly, this last development points to the possible development of a phonon-based architecture for quantum computing.

Chris Van Hoof

IMEC, OnePlanet Research Center
Vice-President R&D IMEC
General Manager OnePlanet Research Center

Agriculture 5.0, Food 5.0 and Health 5.0 - How technology and AI can enable this radical transformation

Wednesday | October 23, 2024 | 9:00 - 10:00

While industry 5.0 is in advanced stages of development in many industry segments, a number of areas are significantly lagging behind – among others for reasons of cost (or return on investment), regulatory & safety, complexity. At the same time, sustainable health, sustainable agri and sustainable food are among the biggest problems our society faces.

This keynote will focus on how technology platforms (silicon nanoelectronics, silicon photonics but also AI platforms) can remove key hurdles and enable major advances in agriculture 5.0, food 5.0 and health 5.0. The ABCD principle of the future of farming (Autonomous, Biology-centered, Collaborative and Decentralized) will be covered and specific examples related to digital orchards and autonomous greenhouses will be given. (Integrated) photonics innovations that enable plant-based protein production will be shown. In the field of preventive and personalized health, ingestible sensor innovations aiding personalized nutrition as well as early signaling will be covered. Digital twin models for health and agriculture and environment will be shown.

TUTORIALS

Joseph Andrews
University of Wisconsin-Madison
Assistant Professor

Flexible Hybrid Electronics for Sensing Applications

Sunday | October 20, 2024 | 10:30 - 12:00

Flexible hybrid electronics (FHE) combine flexible sensors and devices with rigid silicon integrated circuits (ICs) in order to produce flexible, light-weight electronic systems. The primary goal is to take the benefits of both technologies and synergistically combine them for a specific purpose. Flexible sensors offer many advantages in terms of conformability within wearable applications, but rigid silicon ICs offer highly efficient data processing and communication. While the benefits are evident, there are many challenges that are currently being addressed through research. One challenge is in the mechanical integration and connection between the two systems. Options include mechanical contacts, chemical contacts through solder or epoxies, and even novel approaches such as room temperature liquid metal connection points. Another challenge that is actively being solved is the development of flexible sensor technologies with the reliability and sensitivity required for real-world applications. Examples that will be discussed in this tutorial include kinematic sensing for monitoring brain injury events, pressure sensors, and multi-parameter soil sensors for enabling smart agriculture. Overall, this tutorial intends to provide background related to the advantages and challenges of FHE, coupled with specific examples that can serve as inspiration for both up-and-coming and experienced researchers.

André Eugenio Lazzaretti
Federal University of Technology - Paraná (Curitiba - Brazil)
Assistant Professor

Nonintrusive Load Monitoring: current approaches and perspectives

Sunday | October 20, 2024 | 15:30 - 17:00

NILM, or Non-Intrusive Load Monitoring, is a technique used in energy management to disaggregate total energy consumption into individual appliances' usage without requiring additional sensors. It relies on analyzing patterns in energy consumption data to identify and track the energy usage of specific devices within a household or building. Several methods have been proposed, and the state-of-the-art is solidly based on deep learning methods.

This talk aims to provide an overview of the history and the state-of-the-art in the area, as well as present possible advances that may appear, taking into account recent developments with multimodal models.

Mahesh Chowdhary
STMicroelectronics Inc, CA, USA
fellow and senior director of MEMS software solutions

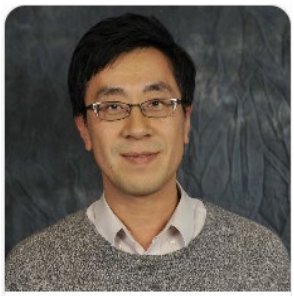
On-Sensor and No-Code Auto Tiny Machine Learning

Sunday | October 20, 2024 | 10:30 - 12:00

To enable artificial intelligence for time-critical and remote applications, tiny machine learning (tinyML) provides hardware and software paradigms that enable always-on, real-time, low-cost, and ultra-low-power inference at the extreme edge. To achieve even lower power envelope, lower latency, and smaller footprint, sensor manufacturers now integrate custom processing logic directly within the sensors for data analytics. These integrated processing blocks provide instructions for on-chip sensor fusion, signal conditioning, and running Machine Learning models.

This tutorial introduces tools from STMicroelectronics that provide a no-code pathway to train and deploy ML models within the sensor. The tutorial focuses on introducing ST's machine learning core (MLC) embedded in programmable ultra-low power accelerometers and iNemo inertial measurement units that can run decision trees on-sensor. The tutorial covers data collection, sensor data filter and feature selection, model optimization, and pathways to port the trained decision tree on the AI-enabled inertial sensor without writing any code. Example applications will be illustrated using MEMS Studio application and live demos will be conducted. The tutorial will enable participants to learn the mechanics of tinyML for the next generation of smart sensors for consumer, automotive, and industrial applications.

TUTORIALS



Henry Leung
University of Calgary
Schulich Industrial Chair
Professor

Predictive 3D Perception using Deep Learning

Sunday | October 20, 2024 | 13:30 - 15:00

3D perception, the ability to perceive depth and spatial relationships in the world, is fundamental to human cognition. In recent years, advancements in technology have enabled the development of 3D perception systems that replicate and enhance this capability in machines. From computer vision to robotics, 3D perception holds immense potential across various sensing domains, revolutionizing how we interact with and understand the world.
3D perception is facilitated by sensors like RGB-D cameras, LiDAR,and stereo vision systems, which measure depth in a scene. These sensors provide rich data for generating accurate 3D models. The emergence of deep learning-based techniques offers a compelling alternative, potentially enabling depth prediction from monocular camera inputs without additional hardware modifications. This tutorial will delve into the principles and applications of traditional 3D sensing methods, highlighting their strengths and limitations. Subsequently, we will introduce predictive 3D sensing based on deep learning, covering fundamental concepts, common architectures, and training data requirements. We will use simultaneous localization and mapping (SLAM) and autonomous driving as illustrations. Issues such as compatibility with monocular cameras and seamless integration into existing sensor systems without requiring additional hardware modifications will also be discussed in this tutorial.

Giacomo Langfelder
Politecnico di Milano
Associate Professor

Emerging Trends In Gyroscopes To Inspire Future Applications

Sunday | October 20, 2024 | 13:30 - 15:00

Almost 100% of MEMS gyroscopes you use in your everyday life is based on the well-consolidated capacitive mode-split architecture. A concurrent progress in technological developments and conception of new architectures gave birth in the last decade to alternative topologies, including mode-matching, amplitude-amplification, NEMS-based sensing, microshell-based sensing, frequency modulation, rate integrating… and other principles. Given the expected future trends from very different societal fields (from autonomous mobility, to consumer, from industrial to augmented reality from space to biomedical), which architecture best suites their requirements? Will any of the new ones be able to replace the old good mode-split amplitude modulation? This tutorial will investigate in depth pros and cons of the different approaches, including microelectromechanical-level, electronics-level and system-level considerations. While not giving a conclusive answer to the question above, the discussion will help understanding the fundamentals of each principle, as well as advanced considerations with respect to key performance indicators: noise, full-scale, bandwidth, consumption, stability and repeatability. Though limited to gyroscopes, the tutorial is paradigmatic towards the future evolution and choices in MEMS sensing technologies.

Sharmistha Bhadra
McGill University, Canada
Associate Professo

Photoplethysmography (PPG) Sensors for Wearables: Overcoming Challenges and Applications

Sunday | October 20, 2024 | 10:30 - 12:00

Photoplethysmography (PPG) is a low-cost electro-optical sensing technique that provides valuable health information. Due to the small dimensions, PPG has been largely applied to personal portable devices and pulse oximetry. However, discrepancies in PPG measurements based on skin tone, gender, body mass index, age and physical condition have been reported. Another important challenge of PPG sensor resolves around the significant power consumption of light-emitting diodes in a PPG sensor. Ambient light noise and motion artifact are other important limitations of PPG sensors. The tutorial will begin by providing the basic design and sensing principles of PPG sensors and establishing an understanding of their current limitations. Next, different strategies such as changing circuit topologies, use of organic and flexible emerging materials, employing solution processing techniques and utilizing signal processing, will be presented as solutions to the challenges of PPG sensing. Finally, different signal processing methods to extract multiple physiological parameters such as heart rate, breathing rate, blood oxygen saturation, blood pressure from PPG signal will be introduced. This tutorial will provide researchers an opportunity to learn more about PPG sensors and how their research can advance this important sensing method.

TUTORIALS

Samuel Mugo
MacEwan University, Canada
Analytical Chemistry
Professor

Transdermal Wearable Sensors For Mental Health Analytics

Sunday | October 20, 2024 | 13:30 - 15:00

In this presentation we will feature our flexible electrochemical probes based on biomimetric responsive composite hydrogels for in-situ multiplex detection of biologically relevant chemical markers, e.g., redox biomarkers, pH, biogenic amines, lactate, cortisol, and adrenaline. The composite hydrogels in these sensors simultaneously serve as an interface for biological fluid sampling and a medium for electrochemical sensing. In this presentation we will demonstrate results of our e-skin wearable sensors for real-time wireless monitoring of mental health biomarkers (emphasis on cortisol and adrenaline) in human sweat, towards applications in diagnostics in mental health and wellness. An accompanying emotional sensor app will be demonstrated.

Virgilio Valente
Toronto Metropolitan
University, Toronto, Canada
Assistant Professor

Design of Integrated CMOS-MEMS Wireless Sensors in the Age of Intelligent Systems

Sunday | October 20, 2024 | 15:30 - 17:00

Thanks to their exceptional performance, scalability, low-power consumption and cost-effectiveness, MEMS sensors are becoming integral components of modern technologies for a wide range of applications, including quantum, automotive, industrial, medical, aerospace and agricultural. Integration of MEMS sensors with CMOS circuits significantly enhances the performance of MEMS-based systems, in terms of higher sensitivity and lower power consumption, while reducing their footprint and cost. This tutorial will discuss various approaches in the designs of silicon-based CMOS-MEMS wireless sensors, their advantages and current challenges.

The tutorial will include an overview of common design approaches, technologies, state-of-the-art solutions and practical applications of CMOS-MEMS sensors. The tutorial is divided in three main parts. After an introduction on MEMS devices, we will review practical designs of CMOS readout circuits for MEMS sensors. We will then cover recent advancements in the integration of CMOS and MEMS technologies that are significantly contributing to more energy efficient and miniaturized sensors systems. At the end of the tutorial, we will share some insights on emerging trends in the design of next generation CMOS-MEMS sensors systems.

Elena Gaura
Coventry University, UK
Professor of Pervasiv

James Brusey
Coventry University
Professor of Computer
Science

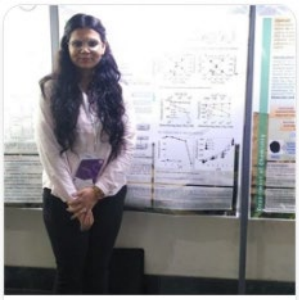
Sensors for Sustainable Futures: working towards inclusive and ethical approaches to deployed technologies.

Sunday | October 20, 2024 | 15:30 - 17:00

Sustainable, inclusive, resilient technological innovations are fundamental to progress towards UN Sustainable Development Goals (SDGs). However, most often it is not the technology itself, but the way technology is developed and deployed that will be instrumental in achieving these goals. Well-designed sensors and trustworthy data pipe-lines, are critically important to enable smart “human and technology” environments that allow governments, businesses, and communities to reduce poverty, improve health, create new economic opportunities, and help mitigate climate change.

By exploring sensor design and use protocols that work towards fair, ethical, and progressive deployed technologies, this talk will address how the use of sensors and their data can generate: -more inclusion in access to new technology, -more innovation in scaling technological impact and -more responsible operation and optimisation of new technological systems in situ. Drawing upon relevant case studies of real life sensors+technology interventions, this tutorial will show how thinking about the ethics of monitoring, sensors deployment, and data use before designing sensors, will bring to the fore questions around our data generation capacity, data consumption ability and data sensitivity. In doing so, this will offer greater insights into how to develop sensors and sensing that aid the transition to fairer, just, and sustainable deployed technologies.

TUTORIALS



Priya Vinayak
EDAG Design Technology Group at Synopsys (India) Pvt Ltd
Staff Engineer

Unlocking New Insights of Electrochemical Impedance Spectroscopy for Field Applications

Sunday | October 20, 2024 | 15:30 - 17:00

Electrochemical Impedance Spectroscopy (EIS) is a powerful tool that offers deep insights into the behavior of complex electrochemical systems. Plenty of tutorials in the literature explain the basics of EIS in a detailed manner, but this tutorial provides a comprehensive understanding of EIS's principles, methodologies, and applications, catering to both beginners and seasoned practitioners in the field of electrochemical sensors, batteries, fuel cell, biosensors and many others. The tutorial starts with the foundational concepts, including impedance theory and circuit modeling. It gradually explores advanced topics such as experimental setup, data interpretation, and impedance spectroscopy in various electrochemical systems. Through a combination of theoretical insights, practical demonstrations, and case studies, the tutorial provides participants with the skills and knowledge necessary to harness the full potential of EIS in research, development, and industrial applications.

Marco Del Sarto
STMicroelectronics

Sensor Package: Heterogeneous Integration or just a need?

Sunday | October 20, 2024 | 13:30 - 15:00

IEEE Heterogenous Integration Roadmap started to define clearly the nomenclature and meaning related to what we can call “more than Moore” development for microelectronics circuits. Our workshop will give its participants a comparison of advanced packaging solution with the ones used on MEMS and sensor environment highlighting similarities and difference with the scope to define common understanding and language also on the sensor package arena.

Scope of the workshop
From the standard definition of 2.5 and 3D package the discussion will move to fine the analogy on sensor packaging with the introduction of the concept of "sensing path". Different examples of uses of "mechanical chiplet" is then presented and explained till analyzing as standard package material can play a significantly different role on a sensor package. Finally it is presented how the research on sensor package is moving further ahead, in the need to define and protect the "sensing path", also closing the gap between some wafer level and assembly process brick.

Igor Paprotny
University of Illinois at Chicago
Associate Professor

Airborne Pathogen Sensing: A Review of the Theory, Detection Technologies, and Applications for Real-time Ubiquitous Detection of Airborne Pathogens

Sunday | October 20, 2024 | 13:30 - 15:00

Pandemics caused by airborne pathogens have been occurring, with devastating impact to human health, as well as national and food security, throughout human history. Despite advances in modern diagnostic and surveillance methods, a new outbreak is still detected through observation of large numbers of sick or dead animals, or of symptomatic individuals at point-of-care. This tutorial will provide a thorough introduction and review to the rapidly evolving field of real-time airborne pathogen sensing. We will review types of pathogens of interest, generation of pathogen-laden bioaerosols, and subsequent transport through air. We will then describe appropriate deposition or precipitation methods, followed by the analysis of the state-of-the art detection systems. We will analyze the available miniaturization technologies, including microfluidics and MEMS, that will enable cost-effective fabrication and wide use of such sensors. Novel techniques, such as pathogen multiplexing or pathogen-agnostic metagenomic techniques will also be described. Finally, we will conclude by providing several use cases of such sensors in agriculture and human health settings. The tutorial will include a 30-min interactive discussion regarding future directions and promising applications of this new technology.

Michael Caffrey
University of Illinois at Chicago
Professor

TUTORIALS

Shubhankar Majumdar
National Institute of Technology Meghalaya, Shillong, India

Harnessing Microwave Sensors for Non-Destructive Testing of Civil Infrastructure

Sunday | October 20, 2024 | 10:30 - 12:00

Unlock the potential of microwave sensing technology in civil infrastructure assessment with our tutorial. Discover how microwave sensors offer unparalleled capabilities in detecting defects, monitoring structural changes, and ensuring the safety of critical assets. Gain insights into the fundamentals of microwave sensing, recent advancements in sensor technologies, and practical applications through real-world case studies. Learn how to integrate microwave sensing with other non-destructive testing (NDT) techniques for comprehensive structural assessment. Explore the challenges and opportunities in deploying microwave sensors for civil infrastructure inspection and delve into data processing and analysis innovations. Join us to stay ahead in the evolving field of NDT and harness the power of microwave sensors for enhanced structural health monitoring.

WORKSHOPS

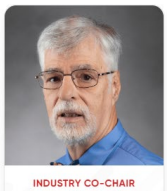
From Imaging to Sensing: Latest and Future Trends of CMOS Image Sensors

Sunday | October 20, 2024 | 10:30 - 17:30

This workshop will provide an overview of recent technological trends of CMOS image sensors (CIS). This workshop will have the invite talks from the principal engineers representing major CIS players in the image sensor industry as well as the academic researchers to introduce the recent CIS evolution, technological trends including imaging and sensing technologies and will have communication time to talk with these authors about future perspective about CIS technologies. The workshop has two major sessions: One is the general CIS technology review as consumer electronics devices such as smartphone camera, automotive camera in addition to the review of the cutting-edge CIS devices structures. The other is the new trend including non-imaging applications such as time of flight sensors which output the high precision depth map as well as SPAD (Single photon avalanche diode)) based image sensors to capture high quality images under very faint lighting conditions. We believe this workshop will pave the way of future imaging and sensing technology and would like to encourage all the attendee of the IEEE SENSORS 2024 conference to come to discuss the topics about "From Imaging to Sensing: Latest and Future Trends of CMOS Image Sensors".

INDUSTRY CO-CHAIR
Sozo Yokogawa
SONY Semiconductor Solutions Corporation
Biography

Erez Tadmor
onsemi
Biography



INDUSTRY CO-CHAIR
Dan McGrath
TechInsights, USA
Biography

Eiichi Funatsu
OMNIVISION
Biography

Jun Ogi
Sony Semiconductor Solutions Corp.
Biography

Neil Na
Artilux Inc.
Biography

Laurent Plaza
STMicroelectronics
Biography

Olivier Lemarchand
STMicroelectronics
Biography

Vladi Korobov
onsemi
Biography

Bumsuk Kim
Samsung Electronics
Biography

Keita Yasutomi
Shizuoka University
Biography

Kazuhiro Morimoto
Canon Inc.
Biography

Harish Venkataraman
Meta Inc.
Biography

Autonomous Driving: Noise Factors and Metrics for Robust Perception Sensors

Sunday | October 20, 2024 | 13:30 - 17:00

Autonomous and Automated Vehicles are on the verge of modifying completely travelling, commuting, and how different countries approach transportation modalities. This transportation revolution is accompanied by the promise of safer, more sustainable and inclusive journeys. With the increased importance of different perception sensor technologies enabling automation, this workshop aims to bring together sensors and automotive experts to explore the main challenges of sensing in the multifaceted, continuously changing, and unpredictable driving environment. Perception and general vehicle sensors are responsible for providing robust and reliable data to build situational awareness, enabling prompt and safe decisions.

INDUSTRY CO-CHAIR
Joonwoo Son
Sonnet.ai

WORKSHOP CHAIR
Valentina Donzella
University of Warwick, UK

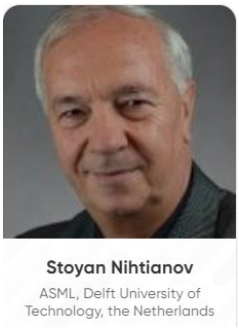
INVITED SPEAKER
Eren Aksoy
Halmstad University (Sweden)

INVITED SPEAKER
Sergio Fernandez
Valeo (Germany)

How do we understand, define and categorize sensors?

Sunday | October 20, 2024 | 15:30 - 17:00

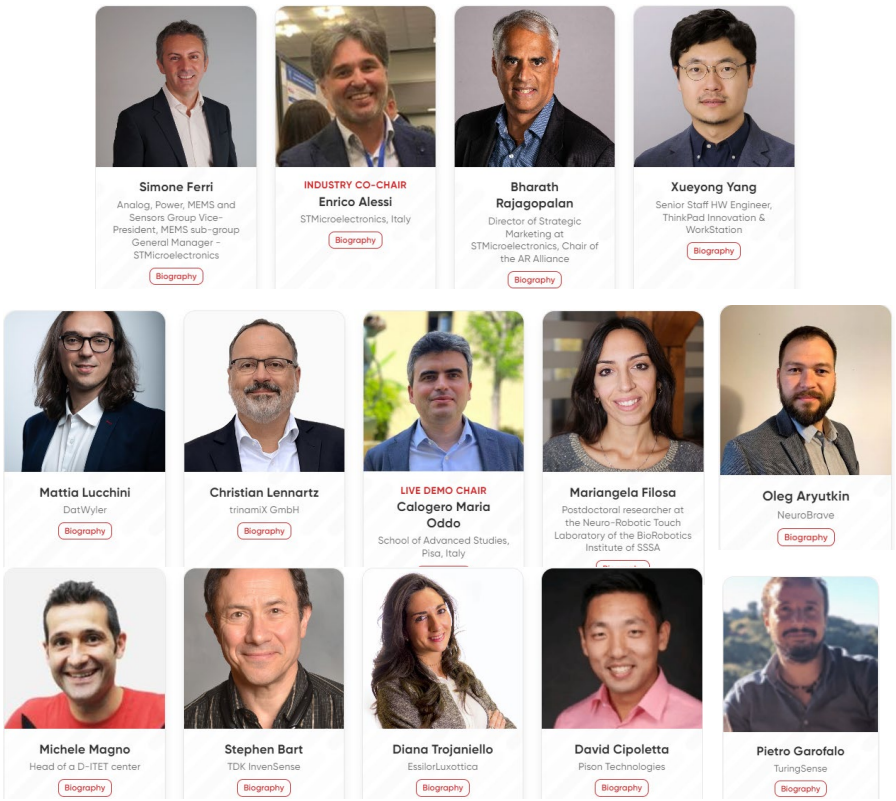
Sensors are everywhere around us and we can hardly imagine our life without them. Yet, it appears that there is not a single generally-accepted understanding about what actually is a “sensor”. The origin of this situation can be traced in the multidisciplinary nature of sensors and the extremely wide range of applications. The purpose of this session is to trigger a discussion on the need of providing consistency in the sensor terminology, definitions and categorization. The session will be moderated. We shall encourage all attendees to share their opinions and perceptions. We would be also happy to reserve 5 min time for short pitches expressing views and making statements, provided that we receive the scope and content of the pitch in advance, in PPT format.



Body Sensing for advanced Human Machine Interface

Tuesday | October 22, 2024 | 9:30 - 15:30

Traditional Human-Machine Interfaces (HMIs) often rely on external controls that can be cumbersome and limit natural interaction. Body sensing offers a revolutionary approach for HMIs by leveraging the human body itself as an additional interface. This approach utilizes various sensors to capture a rich set of biosignals, including muscle activity (electromyography), brain waves (electroencephalography), eye movements (electrooculography), voice and gestures, and even subtle changes in skin properties. By deciphering these signals, the system can interpret user intent and control machines in a more intuitive and seamless manner. This workshop explores the potential of body sensing for advanced HMIs, highlighting its applications in areas like prosthetics control, virtual reality, augmented reality, mixed reality, gaming, robotics, and rehabilitation. Additionally, it will discuss the latest advancements in sensors and electrodes technology, focusing on miniaturization, flexibility, and biocompatibility for achieving a truly natural and immersive human-machine interaction experience. This workshop is an opportunity for showing advances and trends in the industry and academic world regarding devices aim to address these application fields. STMicroelectronics, DuPont, Datwyler, Turingsense, Neurobrave together with relevant institute of Research such as ETHZ and Scuola Superiore Sant’Anna are only some of the participants of this vibrant and exciting workshop.



FOCUS SESSIONS

Sensors for Climate-Smart Agriculture

Monday | October 21, 2024 | 10:30 - 12:00

Danilo Demarchi, Politecnico di Torino, Italy
Marios Sophocleous, eBos, Cyprus

Innovative sensors for the study of crops and soil health, targeting applications for Climate-Smart Agriculture. Different types of sensors: electrical, physical, (bio)chemical. Devices going beyond the SoA for possible improvements in terms of efficiency, robustness, low-cost, low-power.

Fusing Sensation with Innovation: The Next Frontier in Printed Smart Sensors for Electronic Skin

Monday | October 21, 2024 | 10:30 - 12:00

Hossein Cheraghi Bidsorkhi, Department of Astronautical, Electrical and Energy Engineering, Sapienza University of Rome

In the rapidly evolving landscape of sensory technology, the integration of printed smart sensors into electro-skin (e-skin) represents a frontier with transformative potential across numerous domains, including medical diagnostics, soft robotics, intelligent prosthetics, and enhanced human-computer interaction.

Acoustic and Electromagnetic Sensors and Sensing Technologies for Extreme Environments

Wednesday | October 23, 2024 | 10:30 - 12:00

Akira Nagakubo, Graduate School of Engineering, Osaka University
Pai-Yen Chen, University of Illinois Chicago

In-situ acoustics piezoelectric sensors development and sensing technologies for diverse industrial and non-industrial settings with a focus on difficult and challenging conditions, such as high pressure, high temperature, corrosives, radiation, and more.

Bio-Digital Convergence Technology for Sensors and Data Analytics

Wednesday | October 23, 2024 | 10:30 - 12:00

Tai Hyun Park, Ewha Womans University, Seoul, Korea
Yixin Liu, Department of Chemical Engineering, Michigan Technological University, United States

Bio-digital convergence technology is essentially the integration of biotechnology and digital technology. The merging of these technologies also together with nanotechnology can create innovative new technologies. It is a rapidly evolving field that holds great promise for a wide range of applications including the sensor system. Biotechnology provides the sensor with excellent sensing elements, which allows an extremely selective and sensitive interaction with specific target molecules. Then these elaborative binding events affect the electrical properties of the transistor, resulting in a high discrimination ability. Nanotechnology provides the transistor with excellent electrical properties, which allows the development of new and improved electrical sensing platforms, which can be also assembled as an array and used for multiplexed detection. Digital technology contributes to the signal processing and pattern analysis in the sensor system. This focused session will cover the newly developed sophisticated bio-digital convergence technology for a sensor system.

Industrial Focus Session

Monday | October 21, 2024 | 15:30 – 18:00

Over the past decade, 3-dimensional (3D) wafer level stacked backside Illuminated (BSI) CMOS image sensors (CIS) have achieved the rapid progress in mass production. This focus session on stacking in image sensors will have 4 invited papers to explore the sensor stack technology evolution from process development, circuit architecture to AI/edge computing in system integration.

IEEE SENSORS 2024

Kobe, Japan || October 20 - 23, 2024

Do you want to know about IEEE Sensors Council Chapter activities and how to hold joint activities?

Do you want to know how IEEE Sensors Council is working on Diversity and Inclusion?

Do you want to know how IEEE Sensors Council encourages Women in Sensors and gives them a platform to overcome hurdles and achieve?

Do you want to know how IEEE Sensors Council encourages Young Professionals and gives them a platform to network?

Here is your chance! Come and attend the Joint event at the IEEE Sensors Conference 2024 at Kobe.

Block your calendar for 21st Oct from 13:30 to 15:00 JST.

You will hear four-chapter champions speak and interact with all.

Don't miss this opportunity!! Looking forward to meeting you at Kobe.

CHAPTER CHAIRS

DR. JERONIMO SEGOVIA
YP Nominee from, Bay area chapter in the USA

DR. PEDRO BERTEMES
WiSe Nominee from UDESC Brazil

MR. EMMANUEL MUSUNDI
DI nominee from Kenya Section chapter

DR. SANGEETA SINGH
CEC nominee from Hyderabad chapter India

2024.ieee-sensorsconference.org

IEEE STANDARDS SESSION

Sensors Industry and Standards Track

Monday |October 21, 2024 | 13:30 – 15:00

Sri Chandra
Country Head, IEEE India

Shinji Tanabe
Mitsubishi Electric retired, Japan

The annual IEEE SENSORS Conference Series provides a special opportunity for conference participants to engage in IEEE sensor industry and standards programs. This year the agenda is an introduction to the various programs of the IEEE Standards Association (IEEE-SA) and the activities of the Sensors Council Standards Committee (SC-SC). Come learn about the resources provided by IEEE-SA to support the development of new sensor standards. Come see progress being made by the SC-SC to publish a standard for baseline performance of odor monitoring instruments. Hear reports from SC-SC Standards Working Group members and see demonstrations of their efforts at applying the new standard's tests on available monitoring equipment. The Track ends with an Open Forum in which members of the audience can suggest new sensor-standard projects and volunteer to participate in new and ongoing SC-SC Standards Working Groups.

SOCIAL EVENTS

CONFERENCE DINNER

The Conference Dinner will be held in the Ohwada Room of the Kobe Portopia Hotel. The dinner is included in the full student and non-student conference registration fees - you can purchase a guest ticket for your +1 to attend this event via the conference registration site.

Tuesday | October 22, 2024 | 18:00 – 20:30

Location: Kobe Portopia Hotel, Ohwada Room

YP WELCOME RECEPTION & POSTER SESSION

This poster session is dedicated to young professionals (YP) to showcase their research work to the sensor community. The presenter of this poster must be a YP. Light hors d'oeuvres and drinks will be provided.

Sunday | October 20, 2024 | 18:00 – 19:30

Location: Kobe Portopia Hotel, Ohwada Room

SUNDAY, OCTOBER, 20, 2024

IEEE SENSORS 2024
Kobe, Japan || October 20 - 23, 2024

	Sumire/Tsutsuji	Nojigiku	Ikuta	Nunobiki	Kitano	Kikusui	Waraku.2
9:00	Registration Room: Kairaku Foyer						
9:30							
10:00							
10:30	WS: From Imaging to Sensing: Latest and Future Trends of CMOS Image Sensors	Photoplethysmography (PPG) Sensors for Wearables: Overcoming Challenges and Applications	On-Sensor and No-Code Auto Tiny Machine Learning	Flexible Hybrid Electronics for Sensing Applications	Harnessing Microwave Sensors for Non-Destructive Testing of Civil Infrastructure		
11:00							
11:30							
12:00	Lunch Room: Ohwada 2span						
12:30							
13:00							
13:30	WS: From Imaging to Sensing: Latest and Future Trends of CMOS Image Sensors	Transdermal wearable sensors for mental health analytics	Predictive 3D Perception using Deep Learning	Sensor Package: Heterogeneous Integration or just a need?	Airborne Pathogen Sensing: A Review of the Theory, Detection Technologies, and Applications for Real-time Ubiquitous Detection of Airborne Pathogens	WS: Autonomous Driving: Noise Factors and Metrics for Robust Perception Sensors	Emerging trends in gyroscopes to inspire future applications
14:00							
14:30							
15:00	Coffee Break || Room: Kairaku						
15:30	WS: From Imaging to Sensing: Latest and Future Trends of CMOS Image Sensors	Unlocking New Insights of Electrochemical Impedance Spectroscopy for Field Applications	Sensors for Sustainable Futures: working towards inclusive and ethical approaches to deployed technologies.	Design of Integrated CMOS-MEMS Wireless Sensors in the Age of Intelligent Systems.	Nonintrusive Load Monitoring: current approaches and perspectives	WS: Autonomous Driving: Noise Factors and Metrics for Robust Perception Sensors	How do we understand, define and categorize sensors?
16:00							
16:30							
17:00							

SUNDAY, OCTOBER, 20, 2023

	Sumire/Tsutsuji	Nojigiku	Ikuta	Nunobiki	Kitano	Kikusui	Waraku.2
17:30							
18:00	YP Welcome Reception/ Poster Session Room: Ohwada 1Span						
18:30							
19:00							
19:30							

MONDAY, OCTOBER, 21, 2024

IEEE SENSORS 2024
Kobe, Japan || October 20 - 23, 2024

	Nojigiku	Waraku1	Kitano	Kikusui	Sumire/Tsutsuji	Nunobiki	Sappaire	Ikuta	Waraku2	Cosmopolitan
7:00	Registration Room: Kairaku Foyer									
7:30										
8:00										
8:30	Opening Ceremony || Room: Portopia Hall									
9:00	KN1:Prof. Masaki Hirota: Sensors for advanced safety, comfort and convenience in future transportation systems Room: Portopia Hall									
9:30										
10:00	Coffee Break || Room: Kairaku									
10:30	Sensors for Climate: Smart Agriculture	Innovative Smart Sensors for E-Skin	Sensors in Industry Practices	Actuators, Energy Harvesters & Powering Sensors 1	Optical Sensors 1	Wearable Sensors: System Integration	Sensor Systems Optical Integration	Current & Magnetic Field Sensors	Data Processing & AI for Biomedical Applications	Meet the Editors Panel
11:00										
11:30										
12:00	Lunch Room: Ohwada									
12:30							Best Paper Evaluations I Room: Nojigiku	Best Paper Evaluations II Room: Sumire/Tsutsuji		
13:00										
13:30	Poster Session 1 | Coffee Break | Live Demos Room: Kairaku								WiSe/YP D&I CEC Joint Session	Industrial Track: Standards Organization Room: Ikuta
14:00										
14:30										
15:00										

MONDAY, OCTOBER, 21, 2024

IEEE SENSORS 2024
Kobe, Japan || October 20 – 23, 2024

	Nojigiku	Waraku1	Kitano	Kikusui	Sumire/Tsutsuji	Nunobiki	Sappaire	Ikuta	Waraku2	Cosmopolitan
15:30	Chemical Sensing and Biosensing	Acoustic & Ultrasonic Sensors	Sensor Networks & IOT	Optical Sensors 2	Wearable Sensors: Materials & devices	Biosensors 1	Emerging Sensors for Biomedical Applications 1	Pressure Sensors	Data Processing & AI for Automotive Applications	Industry Session
16:00										
16:30										
17:00										
17:30										

TUESDAY, OCTOBER, 22, 2024

IEEE SENSORS 2024
Kobe, Japan || October 20 – 23, 2024

	Nojigiku	Waraku1	Kitano	Kikusui	Sumire/Tsutsuji	Nunobiki	Sappaire	Ikuta	Waraku2	Topaz
7:00	Registration Room: Kairaku Foyer									
7:30										
8:00	IEEE Sensors Council Introduction by Sensors Council President (8:15-8:30) || Room: Portopia Hall									
8:30	KN2: Prof. Andrew Cleland: Emitting and sensing individual surface acoustic wave phonons Room: Portopia Hall									
9:00										
9:30	Coffee Break || Room: Kairaku									
10:00	Gas Sensors & MEMS	Sensor Phenomenology, Modeling & Evaluation 1	Signal Processing in Specific Applications	Imaging Technologies 1	Optical Sensors 4	Sensor Systems: Applications 1	Chemical, Electrochemical & Gas Sensors 4	Flow Sensors		WS: Body Sensing for advanced Human Machine Interface
10:30										
11:00	Physical Sensors & Tactile Sensors	Magnetic Sensors	Sensor Electronics and Systems	Imaging Technologies 2	Medical Applications	Emerging Microwave, Wireless & Telemetry Sensors	Chemical, Electrochemical & Gas Sensors 5	Inertial Sensors	Data Processing & AI for Electronic Nose & Gas Sensing	
11:30										
12:00	Lunch Room: Ohwada								WiSe Networking Lunch Room: Ohwada	
12:30										
13:00										
13:30	Optical Sensor & Measurement Technologies	Acoustic, Piezoelectric, and Wireless Sensors and TechnologiesWaraku1	Mechanical Sensors		Microfluidics 1	Sensor Systems: Advanced Signal Processing	Chemical, Electrochemical & Gas Sensors 1	Miscellaneous Physical Sensors	Data Processing & AI for Human Sensing	WS:Body Sensing for advanced Human Machine Interface
14:00										
14:30										
15:00										

TUESDAY, OCTOBER, 22, 2024

IEEE SENSORS 2024
Kobe, Japan || October 20 – 23, 2024

	Nojigiku	Waraku1	Kitano	Kikusui	Sumire/Tsutsuji	Nunobiki	Sappaire	Ikuta	Waraku2	Topaz
15:30	Coffee Break || Room: Kairaku									
16:00	Wireless & Magnetic Sensing Technologies	Sensor Phenomenology, Modeling & Evaluation 2	Sensor Materials, Fabrication & Packaging 1	Imaging Technologies 3	Microfluidics 2	Wearable Sensors: Applications	Sensor Systems: Applications 2	Emerging Sensors for Navigation & Object Detection	Sensor Data Processing: Applications	
16:30										
17:00										
17:30										
18:00	Gala Dinner Room: Portopia Hall									
18:30										
19:00										
19:30										
20:00										
20:30										

WEDNESDAY, OCTOBER, 23, 2024

IEEE SENSORS 2024
Kobe, Japan || October 20 – 23, 2024

	Nojigiku	Waraku1	Kitano	Kikusui	Sumire/Tsutsuji	Nunobiki	Sappaire	Ikuta	Waraku2
8:00	Registration Room: Kairaku Foyer								
8:30									
9:00	KN3: Dr. Chris Van Hoof: Agriculture 5.0, Food 5.0 and Health 5.0 - How technology and AI can enable this radical tranformation Room: Portopia Hall								
9:30									
10:00	Coffee Break || Room: Kairaku								
10:30	Acoustic & Electro-magnetic Sensors & Sensing Technol-ogies for Extreme Environments	Bio-Digital Convergence Technology for Sensors & Data Analytics	Sensor Materials, Fabrication & Packaging 2	Biomedical Sensing	Optical Sensors 3	Sensor Systems & Processing: Radar	Chemical, Elec-trochemical & Gas Sensors 2	Emerging Sensors for Biomedical Applications 2	Force Sensors
11:00									
11:30									
12:00	Lunch Room: Ohwada								
12:30									
13:00									
13:30	Poster Session 2 Room: Portopia Hall								WiSe/ YP BIP
14:00									
14:30									
15:00	Imaging & Tomography	Radar Sensors & Applications	Thermal Sensing Technologies	Sensor Systems & Applications	MEMS	Optical Sensors and Systems	Biosensors	Chemical, Electrochemical & Gas Sensors 3	Data Processing & AI for Imaging & Optical Sensing
15:30									
16:00									

WEDNESDAY, OCTOBER, 23, 2024

	Nojigiku	Waraku1	Kitano	Kikusui	Sumire/Tsutsuji	Nunobiki	Sappaire	Ikuta	Waraku2
16:30	Conference & Council Publications Award Ceremony Room: Portopia Hall								
17:00									
17:30	Closing Remarks || Room: Portopia Hall								

7:00 AM
Registration
Room: Kairaku Foyer

8:30 AM – 9:00 AM
Opening Ceremony
Room: Portopia Hall

9:00 AM – 10:00 AM
KN1:Prof. Masaki Hirota: Sensors for advanced safety, comfort and convenience in future transportation systems
Room: Portopia Hall

10:00 AM – 10:30 AM
Coffee Break
Room: Kairaku

10:30 AM - 12:00 PM
Sensors for Climate: Smart Agriculture
Room: Nojigiku
Session Chair(s): Danilo Demarchi
Umberto Garlando

10:30 AM
7236: Modeling of Synthetic Biology-Based Plant Sensors
Yosi Shacham{1}, Aakash Jog{2}, Adi Avni{2}
{1}Reichman University, Israel; {2}Tel Aviv University, Israel; {2}Tel Aviv University, Iran

11:00 AM
6284: Sensor System for Water Stress Detection Using In-Plant Transmitted Signal Amplitude Evaluation
Mattia Barezzi, Luca Rolle, Danilo Demarchi, Umberto Garlando
Politecnico di Torino, Italy

11:15 AM
6942: Lightweight Energy-Constraint Wireless Sensor Solution for Plant Monitoring
Sarah Goossens, Jona Cappelle, Guus Leenders, Thomas Reher, Valentijn De Smedt, Bram Van de Poel, Lieven De Strycker, Liesbet Van der Perre
Katholieke Universiteit Leuven, Belgium

11:30 AM
6850: Detection of Hidden Non-Metallic Objects Using Electromagnetic Field
Seitaro Kon, Ryosaku Kaji
National Institute of Advanced Industrial Science and Technology, Japan

11:45 AM
7162: Ground-Engineered Planar CSRR-Array for Real-Time Nutrient Monitoring in Precision Agriculture
Nima Karbaschi, Amirhossein Yazdanicherati, Zahra Abbasi
University of Calgary, Canada

10:30: AM - 12:00 PM
Innovative Smart Sensors for E-Skin
Room: Waraku1
Session Chair(s): Hossein Cheraghi Bidsorkhi
Alessandro Giuseppe D'Aloia

10:30 AM
7258: Wearable Sensors and Electronic Skin in Digital Driven Diagnostics, Prognostics, and Therapeutics for Sustainable Health Care
Maria Sabrina Sarto
Sapienza University of Rome, Italy

11:00 AM
6490: Facile and Scalable Fabrication of Micro-Dome Structure Array Based on Liquid Metal and its Application for High-Performance Flexible Pressure Sensors
Seong-Min Im, Min-Gu Kim
Yonsei University, Korea

11:15 AM
6797: Analysis of Piezoresistive Silicon as Sense Element for Use in Flexible Tactile Sensors
Vartika Verma{2}, Eslam Ahmed{1}, Nicola Kovac{1}, Christof Landesberger{1}, Horst Gieser{1}, Ralf Brederlow{2}
{1}Fraunhofer Research Institution for Microsystems and Solid State Technologies EMFT, Germany; {2}Technische Universität München, Germany

11:30 AM
6810: Screen-Printed Graphene-Ink on a Fitted Sheet for Pressure Sensing and Sleeping Posture Recognition by Machine Learning Techniques
Nicola Pesce, Lavanya Rani Ballam, Fabrizio Marra, Alessio Tamburrano
Università di Roma Sapienza, Italy

11:45 AM
7135: Fully-Printed Sensor Based Extended Gate Field Effect Transistors for Wireless Monitoring of Potassium and Ammonium Ions
Munia Ferdoushi, Mohammad Shafiqul Islam, Wenxin Cai, Sandra Lara Galindo, Md Farhad Hassan, Yasser Khan
University of Southern California, United States

10:30 AM - 12:00 PM
Sensors in Industrial Practices
Room: Kitano
Session Chair(s): Amit Kumar
Sangeeta Singh

10:30 AM
7248: Application of Super Fine Inkjet for Sensor Technology -Adding Diversity with Micro Droplets-
Kazuhiro Murata
SIJTechnology, Inc., Japan

11:00 AM
6714: Architecture and Doping Optimization for FSI SPAD in 55nm BCD Lite® Process
Ping Zheng, Francesco Gramuglia, Yongshun Sun, Yew Tuck Chow, Yong Chau Ng, Deepthi Kandasamy, Li Fei Tan, Sally Chwa, Vinit Dhulla, Jan Hoentschel, Eng Huat Toh
Globalfoundries, Germany; Globalfoundries, Singapore

11:15 AM
6304: Enhancing Maritime Situational Awareness Through Monocular Vision
Deran Maas{1}, Bruno Arsenali{1}, Jukka Peltola{2}, Kalevi Tervo{2}, Stefano Maranò{1}
{1}ABB Corporate Research, Switzerland; {2}ABB Marine and Ports, Finland

11:30 AM
7038: Unobtrusive Spatial Localization of Impact Induced Soundwaves Using 2D Beamforming Algorithm
Mayukh Biswas{3}, Raj Rakshit{3}, Amit Swain{3}, Snehasis Das{1}, Ronit Ray Samajder{4}, Chirabrata Bhaumik{3}, Arun Kumar Majumder{2}
{1}Indian Institute of Science Education and Research Bhopal, India; {2}Indian Institute of Technology Kharagpur, India; {3}TCS Research, India; {4}Vellore Institute of Technology, India

11:45 AM
6385: The Patchkeeper: an Integrated Wearable Electronic Stethoscope with Multiple Sensors
Hongwei Li{1}, Zoran Radivojevic{1}, Maja Hedlund{2}, Anton Fahlgren{2}, Michael Eggleston{1}
{1}Nokia Bell Labs, United Kingdom; {1}Nokia Bell Labs, United States; {2}Nokia Product Design, United States

10:30 AM - 12:00 PM
Actuators, Energy Harvesters & Powering Sensors 1
Room: Kikusui
Session Chair(s): Hongsoo Choi

10:30 AM
7228: Powering Wireless Sensors Using Magnetoelectric Wireless Power Transfer
Orpita Saha, Shad Roundy
University of Utah, United States

11:00 AM
6204: Using Triple Reverse-Trapezoid Cantilevers and Unique Driving Method to Extend the Bandwidth of MEMS Microspeaker
Chin Tseng{2}, Chia-Hao Lin{1}, Po-Shen Chen{2}, Tsung-Wen Tsai{2}, Weileun Fang{2}
{1}Institute of NanoEngineering and MicroSystem, National Tsing Hua University, Taiwan; {2}National Tsing Hua University, Taiwan

11:15 AM
6527: Performance Enhancement of Piezoelectric MEMS Microspeaker by Jointed and Separated Curved Cantilever Array with Phase Modulation Circuit
Chia-Hao Lin{1}, Chin Tseng{2}, Tsung-Wen Tsai{2}, Po-Shen Chen{2}, Mei-Feng Lai{2}, Weileun Fang{2}
{1}Institute of NanoEngineering and MicroSystem, National Tsing Hua University, Taiwan; {2}National Tsing Hua University, Taiwan

11:30 AM
6604: Wirelessly Powered Buried Soil Moisture Sensor System
Vernon Crasto, William Eisenstadt, David Arnold
University of Florida, United States

11:45 AM
6938: A Multi-Directional Pendulum-Based Energy Harvester for Self-Powered and Distributed Ocean Environment Monitoring
Haopeng Xie{2}, Hailing Fu{2}, Zhiyi Wu{1}, Nikolaos Chrysochoidis{4}, Theofanis Plagianakos{3}, Fang Deng{2}
{1}Beijing Institute of Nanoenergy and Nanosystems, China; {2}Beijing Institute of Technology, China; {3}National Technical University of Athens, Greece; {4}University of Patras, Greece

10:30 AM - 12:00 PM
Optical Sensors 1
Room: Sumire/Tsutsuji
Session Chair(s): Yosuke Mizuno

10:30 AM
6291: Under Display Ambient Light Sensor for Non-Invasive Vital Signs Monitoring
Nicola Picozzi, Alessandro Gumiero, Charlotte Milanetto, Ayoub Sabri
STMicroelectronics, Italy; STMicroelectronics, France

10:45 AM
6301: Biocompatible Artificial Skin with an Embedded Optical Fiber Specklegram Sensor
Eric Fujiwara
Universidade Estadual de Campinas, Brazil

11:00 AM
6487: Multispectral Imaging for Preliminary Burn Depth Evaluation in Mice with Tissue Section Analysis
Yu-Hsien Lu{1}, Meng-Hsuan Wu{1}, Yu-Zheng Chen{1}, Po-Liang Ou{1}, Kuo-Shu Hung{2}, Yi-Syuan Shin{3}, Yuan-Yu Hsueh{2}, Peng-Ting Chen{1}, Chih-Lung Lin{1}
{1}National Cheng Kung University, Taiwan; {2}National Cheng Kung University and National Cheng Kung University Hospital, Taiwan; {3}National Cheng Kung University Hospital, Taiwan

11:15 AM
6897: Hetero-Core Fiber Optic Glucose Sensor Coated with Glucose Oxidase Immobilized in pH-Sensitive Polymer Multilayer of Poly-L-Lysine and Poly Acrylic Acid
Deepro Banerjee, Kazuhiro Watanabe, Michiko Nishiyama
Soka University, Japan

11:30 AM
6968: Design and Development of Dual Point Photoplethysmography Device for Assessing Impact of Diabetes on Arterial Stiffness
Apakrita Tayade{1}, Saurav Kumar{1}, Prabhat Kumar{2}, Ravi Bhallamudi{1}
{1}Indian Institute of Technology Bombay, India; {2}University of California, San Francisco, United States

10:30 AM - 12:00 PM
Wearable Sensors: System Integration
Room: Nunobiki
Session Chair(s): Anna Maria Pappa
Nour Al Rahmani

10:30 AM
6509: Design and Development of Wearable Olfactory Interface for Locating Odor Source
Shuo Li{1}, Hanqing Zhao{2}, Cong Yu{1}, Ting Han{1}
{1}Shanghai Jiao Tong University, China; {2}Tokyo Institute of Technology, Japan

10:45 AM
6752: Modular Wireless Inertial Motion Capture System with Self-Calibration
Niklas Schäfer{2}, Bastian Latsch{2}, Julian Seiler{2}, Lukas Hugo Hammen{2}, Lars Stein{2}, Felix Herbst{2}, Philipp Beckerle{1}, Mario Kupnik{2}
{1}Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; {2}Technische Universität Darmstadt, Germany

11:00 AM
7082: A Methodology for Developing and Evaluating FBG-Based Smart 3D-Printed Prosthetics
Doua Kosaji{1}, Nour Al-Rahmani{1}, Fatima Abdallah{1}, Mariam Alhmoudi{1}, Maryam Aljaberi{1}, Rashed Al-Ali{1}, Mohammad Awad{1}, Kinda Khalaf{1}, Maria de Fatima Domingues{2}
{1}Khalifa University, U.A.E.; {2}Khalifa University & University of Aveiro, U.A.E.

11:15 AM
6987: Deep Neural Network to Remove Motion Artifacts from Heart Rate Sensor Embedded on Handle Cane
Rafael Villalba-Bravo, Paula Ruiz-Barroso, Francisco M. Castro, Andrés Trujillo-León, Nicolás Guil, Fernando Vidal-Verdú
Universidad de Málaga, Spain

11:30 AM
6757: Deep Learning-Enhanced EMG Armband with an Interactive Game for Effective Wrist Rehabilitation
Truong-Tien Vo{1}, Ngoc-Dau Mai{2}, Jaeyeop Choi{1}, Junghwan Oh{1}
{1}Pukyong National University, Korea; {2}Visionin Inc., Korea

11:45 AM
6926: Textile-Integrated Organic Electrochemical Transistor for Selective Ion Detection via Electrical Impedance Spectroscopy
Antonio Altana{1}, Bajramshahe Shkodra{1}, Pietro Ibba{1}, Martina Aurora Costa Angeli{1}, Moritz Ploner{1}, Eva-Maria Korek{2}, Paolo Lugli{1}, Luisa Petti{1}
{1}Free University of Bozen-Bolzano, Italy; {2}Technische Universität München, Germany

10:30 AM - 12:00 PM
Sensor Systems Optical Integration
Room: Sappaire
Session Chair(s): Bérengère Lebental
Chang-hee Won

10:30 AM
6578: Advanced Integration of 3D Optomechanical Sensor Microsystems with Optical Fibers
Hengky Chandrahalim, Jeremiah Williams
U.S. Air Force Institute of Technology, United States

11:00 AM
6408: Multi Time-Over-Threshold System for Light Signal in a Liquid Xenon 3-Photon Compton Camera
Quentin Lainé{1}, Nicolas Beaupere{2}, Dingbang Cai{2}, Cyril Lahuec{1}, Eric Morteau{2}, Fabrice Seguin{1}, Dominique Thers{2}
{1}IMT Atlantique, France; {2}Subatech - IN2P3, France

11:15 AM
6425: Resolution Upscaling of 3D Time-of-Flight Sensor by Fusion with RGB Camera
Yannick Waelti, Matthias Ludwig, Josquin Rosset, Teddy Loeliger
Zurich University of Applied Sciences ZHAW, Switzerland

11:30 AM
6493: System for Measuring Material Properties and Surface Roughness of Objects from Microscopic Images
Kouji Murakami, Taishi Sakamoto
Kyushu Sangyo University, Japan

11:45 AM
7126: Unleashing Dynamic Range and Resolution in Unlimited Sensing Framework via Novel Hardware
Yuliang Zhu, Ayush Bhandari
Imperial College London, United Kingdom

10:30 AM - 12:00 PM
Current & Magnetic Field Sensors
Room: Ikuta
Session Chair(s): Matteo Rinaldi
Sarafianou Mantalena

10:30 AM
6748: Optimal Design of Differential Sensor Array for Interference Elimination of Noninvasive Multicore Cable Current Measurement
Qi Zhu, Guangchao Geng, Quanyuan Jiang
Zhejiang University, China

10:45 AM
6157: Graphene Electric Field Sensor for Lightning Detection
Afsal Kareekunnan{1}, Jiali Hu{1}, Muhammed Razzakul Islam{1}, Takeshi Kudo{2}, Takeshi Maruyama{2}, Atsushi Nishizaki{2}, Yuki Tokita{2}, Hiroshi Mizuta{1}
{1}Japan Advanced Institute of Science and Technology, Japan; {2}Otowa Electric Co., Ltd., Japan

11:00 AM
6062: High Sensitivity Lateral Hall Device in Silicon on Insulator (SOI) Platform
Guiqiang Zheng{2}, Qingyin Zhong{2}, Jie Ma{2}, Yichen Li{2}, Nannan Cheng{2}, Nailong He{1}, Sen Zhang{1}, Yongjia Li{2}, Long Zhang{2}, Siyang Liu{2}, Weifeng Sun{2}
{1}CSMC Technologies Company, China; {2}Southeast University, China

11:15 AM
6215: A Self-Biased Strontium Ferrite-Nickel Ferrite Compostite and PZT Bilayer for Magnetic Field Sensors
Sujoy Saha, Sabita Acharya, Gopalan Srinivasan
Oakland University, United States

11:30 AM
6692: Mode Localized Piezoelectric Resonator Design and Implementation for Electrical Current Sensing
Yu-Chi Hung, Ken-Wei Tang, Sheng-Shian Li
National Tsing Hua University, Taiwan

10:30 AM - 12:00 PM
Data Processing & AI for Biomedical Applications
Room: Waraku2
Session Chair(s): Hajar Abedifirouzjaei

10:30 AM
6925: Smartphone Video-Based Blood Pressure Estimation via Pulse Transit Time and Machine Learning
Vishal Singh Roha, Maggie Ezzat Gaber Gendy, Mehmet Rasit Yuce
Monash University, Australia

10:45 AM
6563: Direct Estimation vs. Indirect Metrics: Machine Learning Techniques for Cardiac Output Estimation
Vishal Singh Roha, Mehmet Rasit Yuce
Monash University, Australia

11:00 AM
6279: Contactless Electrical Impedance Tomography with Deep Learning for Lung Monitoring: Phantom Study
Yuxi Guo{1}, Manuchehr Soleimani{2}, Maomao Zhang{1}
{1}Shenzhen Institute for Advanced Study, University of Electronic Science and Technology of China, China; {2}University of Bath, United Kingdom

11:15 AM
6512: TSeizNet: Triplet Loss Empowered Multi-Scale CNN for Superior EEG Seizure Detection
Wipamas Polpakdee{1}, Phairot Autthasan{1}, Theerawit Wilaiprasitporn{2}
{1}Vidyasirimedhi Institute of Science and Technology, Thailand; {2}Vidyasirimedhi Institute of Science and Technology, Sense AI Company Limited, Thailand

11:30 AM
6666: Advancing Fetal Surveillance with Physiological Sensing: Detecting Hypoxia in Fetal Sheep
Weitao Tang{3}, Nhi Tran{4}, Nasim Katebi{1}, Reza Sameni{2}, Gari Clifford{2}, David Walker{4}, Vaishnavi Horlali{3}, Callum Taylor{3}, Robert Galinsky{5}, Faezeh Marzbanrad{3}
{1}Emory University, United States; {2}Georgia Institute of Technology, Emory University, United States; {3}Monash University, Australia; {4}Ritchie Centre, Hudson Institute of Medical Research, Australia; {5}Ritchie Centre, Hudson Institute of Medical Re

11:45 AM
7036: Tactile Zero-Shot Sensing of Breast Tumors: Recognition of Human Data from Phantom Data
Arpita Das{1}, Dina Caroline{2}, Chang-Hee Won{1}
{1}Temple University, United States; {2}Temple University Hospital, United States

10:30 AM – 11:30 AM
Meet the Editors Panel
Room: Cosmopolitan

12:00 PM – 1:30 PM
Lunch
Room: Ohwada

1:30 PM - 3:30 PM
Sensor Phenomenology, Modeling & Evaluation – A (Poster Session)
Room: Kairaku
Session Chair(s): Arum Han
Tao Li

6006: Influence of Scallops in Deep Reactive Ion Etching on Vertical Comb-Based Sensors/Actuators
Yuhu Xia{2}, Biyun Ling{2}, Bo Chen{1}, Xiaoyue Wang{2}, Biqing Zhou{3}, Yaming Wu{2}
{1}East China Institute of Photo-Electron IC, China; {2}Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences, China; {3}Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences, UCAS, C

6031: Broadband Terahertz Metamaterial Absorber Based on Laser Reduced Graphene Oxide Films
Hao Wu, Xiaomeng Bian, Misheng Liang, Rui You
Beijing Information Science and Technology University, China

6070: Design of an Ultra Low-Power Glass-Based Micro-Hotplate with Thermal Isolation Structure
Xiangyang Wei, Yi Chen, Wenhao Yu, Hailong Liu, Rui You
Beijing Information Science and Technology University, China

6087: Singularity-Enhanced Deep Sub-Linewidth Mode Matching of the Disk Resonator Gyroscope
Sen Zhang, Xingjing Ren, Ying Ouyang, Xin Zhou
National University of Defense Technology, China

6118: Numerical Temperature Analysis of the Double-Side Photonic Thermal Sensor System with Janus Radiation Cooler
Kuan-Hua Chen{2}, Hsin-Yu Chuang{2}, Wei-Yu Chen{2}, Yu-Bin Chen{1}, Cheng-Yang Liu{2}
{1}National Tsing Hua University, Taiwan; {2}National Yang Ming Chiao Tung University, Taiwan

6154: Modeling of Hall-Based Magnetoelastic Torque Sensors
Nicole Yazigy, Enrico Gasparin, Bruno Brajon, Lucian Barbut, Gaël Close
Melexis Technologies SA, Switzerland

6179: Quadrature Compensation for a Frequency Modulated piezoMEMS Gyroscope
Antti Ontronen{1}, Masahiro Ishii{2}, Chika Sakamoto{2}, Seiji Umezawa{2}, Yasuhiro Aida{2}
{1}Murata Electronics Oy, Finland; {2}Murata Manufacturing Co. Ltd., Japan

6190: Simulation and Validation of Automotive Radar Performance with Water Spray Over Radome
Diogo Wachtel Granado{2}, Thomas Rothmeier{2}, Leticia Cristófoli{2}, Martin Vossiek{1}, Werner Huber{2}
{1}Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; {2}Technische Hochschule Ingolstadt, Germany

6193: Design and Simulation of a Ground Test Platform for Stray Electric Fields in Space Inertial Sensors
Le Wang{1}, Yang Wang{3}, Zhi Wang{2}, Mingli Dong{1}
{1}Beijing Information Science and Technology University, China; {2}Changchun Institute of Optics, Fine Mechanics and Physics, China; {3}Jilin Agricultural University, China

6358: Self-Powered Component for High-g Sensing via Prestress Structured Triboelectric Transducer
Yuhan Wang, Yiqun Wang, Zhihao Zheng, Xiaofeng Wang, Keren Dai, Zheng You
Tsinghua University, China

6449: Performance Evaluation of a Skin Conformable Polymer-Based Flexible Temperature Sensor
Athul Krishnan{1}, Karthick Thiyagarajan{2}, Mitradip Bhattacharjee{1}, Yang An{2}
{1}Indian Institute of Science Education and Research Bhopal, India; {2}Western Sydney University, Australia

6457: A Study of Low Power Infrared Sensor Using Ground Truth for Presence Detection Applications
Syed Salman Rahman, Min Kyun Kim, Mauro Scandiuzzo, Yu Feng
STMicroelectronics, United States

1:30 PM - 3:30 PM
Sensor Materials, Fabrication & Packaging – A (Poster Session)
Room: Kairaku
Session Chair(s): Dong-Weon Lee
Schmid Ulrich

6050: Vapour Recognition Based on Deep-Convolutional Neural Network: Portable Impedance Analyzer
Eliott Vercoutere{1}, Sandra Kenne{1}, Colin Morchain{1}, Sebastien Pecqueur{3}, Bilel Hafsi{2}
{1}ICAM Lille, France; {2}ICAM Lille, Université de Lille, CNRS, Centrale Lille, Université Polytechnique Hauts-de-France, France; {3}IEMN, Université de Lille, CNRS, Centrale Lille, Université Polytechnique Hauts-de-France, France

6088: A Flexible and Self-Powered Chitosan-BaTiO3 Composite Pressure Sensor for E-Skin Applications
Zhao Wang, Bhavani Prasad Yalagala, Hadi Heidari, Andrew Feeney
University of Glasgow, United Kingdom

6146: A Wireless Facemask for Ultrafast and Continuous Tracking of Breath CO2 Patterns
Xubin Zheng, Qingpeng Cao, Di Wang
Zhejiang Lab, China

6152: Dynamic Error Reduction in Soft Tactile Sensors by Optimum Material Selection
Dirk Ettelt{2}, Nicolas Dupré{2}, Jeroen Didden{1}, Théo Le Signor{2}, Gaël Close{2}
{1}Melexis Technologies NV, Belgium; {2}Melexis Technologies SA, Switzerland

6344: Pheromone Receptor-Based Olfactory Sensors Using Resonant Diamond Membranes
Thi Thanh Thuy Nguyen{2}, Oumaima Zaki{1}, Nicolas Pavy{2}, Emmanuel Scorsone{1}, Olivier Francais{2}, Lionel Rousseau{2}, Gaelle Lissorgues{2}
{1}CEA-List, Université Paris-Saclay, France; {2}Université Gustave Eiffel, CNRS, ESYCOM, France

6365: Lemon Aids Green Synthesis of Reduced Graphene Oxide-Based FET Sensors for the Detection of Lead and Cadmium Ions in Water
Nimisha Nimisha{2}, Monojit Mondal{2}, Avik Sett{1}, Virendra Kumar Tewari{2}, Tarun Kanti Bhattacharyya{2}
{1}Delft University of Technology, Netherlands; {2}Indian Institute of Technology Kharagpur, India

6460: Analysis of Uptake and Release of Explosive Analyte from PDMS Films Using UV-Vis Absorption Spectroscopy
Osheen Joseph, Paul Burn, Jos Kistemaker, Paul Shaw
University of Queensland, Australia

6521: Efficient Colorimetric Membrane pH Sensor Based on Electrospun PCL/PVP Immobilized with Anthocyanin Extract for Intelligent Food Packaging
Shichen Li, Dhandayuthapani Thiyagarajan, Bong-Kee Lee
Chonnam National University, Korea

6545: Surface-Potential-Driven Sensing of Interfacial Configuration in Functionalized Suspended Graphene for Ionic Solutions
Yu-Xuan Lu{2}, Fang-Min Lin{2}, Wei-Yu Long{2}, Yu-Hsiu Lin{1}, Chih-Ting Lin{2}, Chi-Hsien Huang{1}
{1}Ming Chi University of Technology, Taiwan; {2}National Taiwan University, China; {2}National Taiwan University, Taiwan

6935: Piezoresistive Accelerometer Based on Amorphous Carbon Films
Qi Zhang{1}, Xing Pang{1}, Yulong Zhao{2}
{1}Xi'an Jiaotong University, China; {2}Xi'an Jiaotong University, State Key Laboratory for Manufacturing Systems Engineering, China

6941: A Wafer-Level Package Design with Symmetrical Out-Plane Electrodes for 3D-MEMS Devices
Jianjun Ma{2}, Jincui Cui{2}, Shuangxin Huang{3}, Qilin Cai{1}, Qi Wei{2}, Bin Zhou{2}, Rong Zhang{2}
{1}Southwest Jiaotong University, China; {2}Tsinghua University, China; {3}University of Chinese Academy of Sciences, China

7034: Flexible Tactile Sensing Using PDMS/TiO2 Based Capacitor with MOSFET Structure
Kamalesh Tripathy{1}, Dhanranjan Kumar{1}, Karthick Thiyagarajan{2}, Mitradip Bhattacharjee{1}
{1}Indian Institute of Science Education and Research Bhopal, India; {2}Western Sydney University, Australia

7095: Investigation of Long-Term Embedded RFID Sensors for Structural Health Monitoring
Sergej Johann{1}, Harald Kohlhoff{1}, Jörg Schlischka{1}, Christoph Strangfeld{1}, Matthias Bartholmai{1}, Kay Smarsly{2}
{1}Bundesanstalt für Materialforschung und -prüfung, Germany; {2}Hamburg University of Technology, Germany

7185: Fully Automated Rapid Immunofludic Device by Use of Microfibrous Reactor for Human Saliva Sample
Yecan Wang{2}, Kaito Maehara{3}, Shigenobu Mitsuzawa{1}, Satoru Shinkawa{1}, Toshihiro Kasama{4}, Ryo Miyake{4}, Madoka Takai{4}
{1}Honda R&D Ltd., Japan; {2}Honda R&D Ltd. / University of Tokyo, Japan; {3}Next Computer system Engineering Co, Japan; {4}University of Tokyo, Japan

7090: Fabrication of 3D Screen-Printed Micro-Cavities Towards Sweat Sensors for Integrated Flexible Hybrid Electronics
Cameron Anderson{2}, Hugh Fan{2}, Jorg Richstein{1}, Mark Sussman{1}, Toshikazu Nishida{2}
{1}Jabil Inc., United States; {2}University of Florida, United States

7302: Integration of Surface-Mount Devices in Microsystems Using Tracks Consisting of Nanoparticles
Tina Mitteramskogler
Johannes Kepler University Linz, Austria

1:30 PM - 3:30 PM
Chemical, Electrochemical & Gas Sensors – A (Poster Session)
Room: Kairaku
Session Chair(s): Hamida Hallil
Jeong-O Lee

6164: Development of a Portable Optical Sensor for Low-Concentration Copper Sulfate Detection in Water
Yu-Chen Hsu{1}, Ciao-Ming Tsai{2}, Wei-Yi Kong{1}, Zong-Yi Cai{1}, Weileun Fang{2}, Cheng-Hao Ko{1}
{1}National Taiwan University of Science and Technology, Taiwan; {2}National Tsing Hua University, Taiwan

6173: Perfume Reproduction Analysis with Robustness Against Interference Using Improved NMF in Mass Spectrum Space
Dani Prasetyawan{2}, Shengyu Wang{2}, Hanqing Zhao{2}, Takamichi Nakamoto{1}
{1}Institute of Innovative Research, Tokyo Institute of Technology, Japan; {2}Tokyo Institute of Technology, Japan

6182: MEMS Acetone Gas Sensors with Eu-Doped SnO2/In2O3 Nanofibers Using Electrospinning and Lithography Patterning Technique
Tongheng Cheng{2}, Jin Li{2}, Gaoqiang Niu{1}, Xitong Sun{2}, Fei Wang{2}
{1}Dongguan University of technology, China; {2}Southern University of Science and Technology, China

6227: Pd Decorated SiO_2-TiO_2 Nanocomposite for Low Temperature Hydrogen Sensing
Thillini Thathsara{2}, Christopher Harrison{2}, Caiden Parker{1}, Rosalie Hocking{2}, Mahnaz Shafiei{2}
{1}Royal Melbourne Institute of Technology, Australia; {2}Swinburne University of Technology, Australia

6323: Covalent Functionalization of Violet Phosphorus Nanosheets for Room-Temperature NO2 Sensing
Xue Liu, Weilin Chen, Chao Fan, Jian Wu, Jingzhu Li, Nantao Hu, Jianhua Yang, Min Zeng, Gang Liu, Zhi Yang
Shanghai Jiao Tong University, China

6338: Oxygen Plasma Treated RGO Based Resistive Sensor: A Step Towards NH3 Detection from Human Breath
Ambika Kumari, Srijeet Tripathy, Tarun Kanti Bhattacharyya
Indian Institute of Technology Kharagpur, India

6347: Autonomous Continuous Methane Monitoring Sensor for Leak Detection in Oil and Gas Facilities
Mathieu Dauphin, Aditi Chakrabarti, Andrew Speck, Ballard Andrews
SLB, United States

6589: Real-Time Monitoring of CaCO3 Precipitation Using Fiber Optics Scale Sensor Under High Temperature and Pressure Conditions
Sakurako Satake{4}, Ai Hosoki{1}, Takuya Okazaki{3}, Akira Ueda{4}, Hideki Kuramitz{4}, Amane Terai{2}
{1}Akita University, Japan; {2}JOGMEC, Japan; {3}Meiji University, Japan; {4}University of Toyama, Japan

6665: Self-Heating SnO2 Gas Sensors for Low-Power Intelligent Olfactory Diagnosis
Xuesi Li{3}, Feng Lin{1}, Shin'Ichi Warisawa{2}
{1}Fuyao University of Science and Technology, China; {2}University of Tokyo, Japan; {3}Zhejiang Lab, China

6709: Integrating LSPR and SERS for Rapid and Effective Visualization and Identification of Volatile Organic Compounds Distribution
Cong Wang, Kumazoe Shingo, Hao Guo, Yao Wang, Fumihiro Sassa, Hayashi Kenshi
Kyushu University, Japan

6869: MEMS Gas Sensor with On-Chip Electrospun Ru-SnO2 Nanospheres Patterned by Photolithography
Jin Li, Xitong Sun, Tongheng Cheng, Fei Wang
Southern University of Science and Technology, China

7062: Fully Printed Low-Cost Ammonia Gas Sensor on Paper Substrate
Sahira Vasquez Baez{1}, Bajramshahe Shkodra{1}, Almudena Rivadeneyra{2}, Martina Aurora Costa Angeli{1}, Antonio Altana{1}, Ciro Allarà{1}, Pietro Ibba{1}, Paolo Lugli{1}, Luisa Petti{1}
{1}Free University of Bozen-Bolzano, Italy; {2}University of Granada, Spain

7177: Compact Room Temperature-Operated Sensing System for Methanol and Ethanol Mixture Separation and Quantification
Meng-Qun Feng{1}, Tanju Yildirim{2}, Alexandru Nica{1}, Kosuke Minami{1}, Kota Shiba{1}, Genki Yoshikawa{1}
{1}National Institute for Materials Science, Japan; {2}Southern Cross University, Australia

7096: Electrochemical Fingerprinting for Discrimination of Aβ3-16, Aβ11-16 and Their Pyroglutamate Counterparts, Related to Alzheimer's Disease
Aleksandra Tobolska, Katarzyna Biernat, Nina Wezynfeld, Wojciech Wróblewski, Patrycja Ciosek-Skibińska
Warsaw University of Technology, Poland

1:30 PM - 3:30 PM
Microfluidics – A (Poster Session)
Room: Kairaku
Session Chair(s): Hyejin Moon
Yoshikazu Hirai

6080: Opto-Microfluidic Lab-on-a-Chip Characterization of Yeast Suspension Using Monte Carlo Method-Based Light Extinction Model
Hsin-Yu Chuang, Kuan-Hua Chen, Quoc-Thinh Dinh, Shuo-Chih Chien, Cheng-Yang Liu
National Yang Ming Chiao Tung University, Taiwan

6095: Generation of Microdroplet Lens for Surface-Enhanced Raman Spectrometry Analysis for Sample Detection
Chia-Wen Tsao, Zi-Yi Yang
National Central University, Taiwan

6213: Research on the Metal 3D Printing Heat Exchanger for the Graphene Nanofluids
Yachi Ho{3}, Tsai-Liang Wu{1}, Da-Jeng Yao{2}
{1}Industrial Technology Research Institute, Taiwan; {2}Industrial Technology Research Institute, National Tsing Hua University, Taiwan; {3}National Tsing Hua University, Taiwan

6228: High-Performance Microfluidic Chip Calorimeter for Biomedical Applications
Yi Chen, Bo Yan, Nan Zhao, Xiangxiang Gao, Chenyuan Li, Zhuoqing Yang, Congchun Zhang
Shanghai Jiao Tong University, China

6353: Development of Microfluidic Impedance Flow Cytometry Based on Three-Dimensional Hydrodynamic Focusing
Xiao Chen{2}, Yimin Li{2}, Minruihong Wang{1}, Xuzhen Qin{4}, Junbo Wang{3}, Xiaoye Huo{3}, Jian Chen{3}
{1}Aerospace Information Research Institute, CAS, University of Chinese Academy of Sciences, China; {2}Aerospace Information Research Institute, Chinese Academy of Sciences, China; {3}Aerospace Information Research Institute, Chinese Academy of Sciences,

6427: Microfluidic Platform for Real-Time Impedance Profiling of Transwell-Based Barrier Models
Amber Bultena, Amanzhol Kurmashev, Julia Alicia Boos, Wei Wei, Mario M. Modena, Fernando Cardes, Andreas Hierlemann
ETH Zürich, Switzerland

6534: Electrical Impedance Spectroscopy Platform for Label-Free Characterization of Spheroid Viability
Claudia Sampaio Da Silva{2}, Julia Alicia Boos{2}, Mario M. Modena{2}, Sreedhar Kumar{2}, Christian Beyer{1}, Thomas Valentin{1}, Andreas Hierlemann{2}, Vincent Revol{1}
{1}CSEM, Switzerland; {2}ETH Zürich, Switzerland

6535: Microfluidic Sensor for Label-Free Corrosion and Biofilm Monitoring Using Electrical Impedance Spectroscopy
Song-I Han, Yuwen Li, Han Zhang, Arum Han
Texas A&M University, United States

6734: Lateral Compression Enhanced Single-Cell Microfluidic Cytometer for Tumor Cell Detection
Yiming Liu, Shuaihua Zhang, Ziyu Han, Xuexin Duan
Tianjin University, China

7088: Microbial Fuel Cell (MFC)-Based In-Situ Water Toxicity Biosensor for Monitoring Heavy Metals and BTEX
Jonghyun Baik{3}, Jae-Hoon Hwang{1}, Keugtae Kim{2}, Woo Hyoung Lee{3}
{1}Concordia University, Canada; {2}Dongguk University, Korea; {3}University of Central Florida, United States

1:30 PM - 3:30 PM
Biosensors – A (Poster Session)
Room: Kairaku
Session Chair(s): Hyejin Moon
Yoshikazu Hirai

6119: Optimal Growth Conditions for Human Endometrial Stromal Cells in a Bidirectional OoC with Porous Membrane
Pin Yao Lee{2}, Yi-Wen Wang{1}, Ying-Fang Chang{2}, Ming-Jyh Chang{2}, Yi-Wei Lin{2}, Hong-Yuan Huang{1}, Da-Jeng Yao{3}
{1}Chang Gung Memorial Hospital, Taiwan; {2}Industrial Technology Research Institute, Taiwan; {3}Industrial Technology Research Institute, National Tsing Hua University, Taiwan

6122: Digital Magnetic Proximity Extension RPA-CRISPR/Cas12a-Assisted Immunoassay with Attomolar Sensitivity
Fangchi Shao, Jiumei Hu, Kuangwen Hsieh, Pengfei Zhang, Pataraiarin Akarapipad, Joon Soo Park, Hanran Lei, Tza-Huei Wang
Johns Hopkins University, United States

6133: Spatial Transepithelial Electrical Resistance Profiling with Multi-Electrode Array for Nondestructive Cell Culture Model Monitoring
Joowon Seo{2}, Jooseon Baek{1}, Taewan Kim{2}, Jaegon Kim{1}, Sungjae Ha{1}, Sung Jae Kim{2}
{1}ProvaLabs, Inc., Korea; {2}Seoul National University, Korea

6383: Cytotoxicity Anlysis of Drugs Using Contrast Surface Plasmon Images in Gold Nanoslit Arrays
Hsien-San Hou{1}, Tingjui Tu{1}, Ji-Yen Cheng{1}, Kuang-Li Lee{2}, Pei-Kuen Wei{1}
{1}Academia Sinica, Taiwan; {2}National Chi Nan University, Taiwan

6481: Graphene FET Biosensors with Surface-Charge Modulation
Shota Ushiba{1}, Tomomi Nakano{1}, Yuka Tokuda{1}, Shinsuke Tani{1}, Masahiko Kimura{1}, Kazuhiko Matsumoto{2}
{1}Murata Manufacturing Co., Ltd., Japan; {2}Osaka University, Japan

6533: Enhancing Sensitivity and Size Efficiency in CMOS Extended Gate FET Biosensors
Han-En Lee, Chun-Chen Wang, Michael Lu
National Tsing Hua University, Taiwan

7015: On the Cramér-Rao Bound for Bacterial Sensors
Florian Anderl{1}, Martin Damrath{1}, Mladen Veletić{2}, Ilangko Balasingham{1}
{1}Norwegian University of Science and Technology, Norway; {2}Oslo University Hospital, Norway

7073: Multi-Sensor Integration in Orthopedic Implants for Total Knee Arthroplasty
Pierre Gasnier{1}, Guillaume Nonglaton{1}, Paul Fourcade{1}, Ramzy Rammouz{1}, Sebastien Brulais{1}, Martin Gauroy{1}, Francois Frassati{1}, Melanie Descharles{1}, Maxime Gougis{1}, Charles Chatard{1}, Cecile Moro{1}, Mathieu Le Stum{4}, Liz Leconte{3}, G
{1}CEA-Leti, Universite Grenoble Alpes, France; {2}Inserm, LaTIM and Universite de Bretagne Occidentale, France; {3}SLS France, France; {4}Universite de Bretagne Occidentale, France

1:30 PM - 3:30 PM
Optical Sensors – A (Poster Session)
Room: Kairaku
Session Chair(s): Cristian Manzoni

6359: Noninvasive Glucose Estimation Using Multi-Wavelength Diffused Transmitted and Reflected NIRS in Solid Tissue Phantoms
Jongdeog Kim, Mi-Ryong Park, Bong Kyu Kim
Electronic and Telecommunications Research Institute, Korea

6510: Towards a Portable Multi-Gas Sensor for Environmental Gases with Miniaturized Photoacoustic Cells and Mid-Infrared Quantum Cascade Lasers
Michaël Palmieri{3}, Badhise Ben Bakir{3}, Bertrand Bourlon{3}, Maeva Doron{3}, Olivier Lartigue{3}, Sonia Messaoudène{3}, Adrien Poizat{3}, Sarah Renault{3}, Jules Skubich{3}, Marion Volpert{3}, Olivier Masson{2}, Clément Garaffa{3}, Julien Marianne{3},
{1}Université Clermont Auvergne, CNRS, IRD, OPGC, Laboratoire Magmas et Volcans, France; {2}Université Grenoble Alpes, CEA, France; {3}Université Grenoble Alpes, CEA-Leti, France

6789: MEMS Based Rain Sensor
Pooja Thakkar{2}, Povilas Smaliukas{2}, Marta Kisielewska{2}, Georg Brunnhofer{1}, Andreas Tortschanoff{2}
{1}AVL List GMBH, Austria; {2}Silicon Austria Labs GmbH, Austria

6896: Long-Term Durability Evaluation of Hetero-Core Optical Fiber Hydrogen Sensor Composed of Palladium Nanoparticles and Poly-L-Lysine
Yuna Nakamura, Kazuhiro Watanabe, Michiko Nishiyama
Soka University, Japan

7033: Broadband Response Photodetectors Based on Lead-Free Perovskite Quantum Dots/Transfer-Free Green Graphene Heterojunctions
Yu-Yun Sun{1}, Jian-Hong Du{1}, Yu-Lin Qiu{1}, Yu-Chi Hu{1}, Meng-Lin Tsai{3}, Sheng-Kuei Chiu{2}, Ji-Lin Shen{4}, Chiashain Chuang{4}, Dung-Sheng Tsai{4}
{1}Chung Yuan Christian University, Taiwan; {2}Feng Chia University, Taiwan; {3}National Taiwan University of Science and Technology, Taiwan; {4}Research Center for Semiconductor Materials and Advanced Optics, Chung Yuan Christian University, Taiwan

7035: Plasmon-Induced Concentric Hexagonal Ring Resonator for Nanophotonic Sensing
Shyamal Guchhait{1}, Subhasri Chatterjee{2}, Tapas Chakravarty{2}, Nirmalya Ghosh{1}
{1}Indian Institute of Science Education and Research Kolkata, India; {2}TCS Research, India

6528: Quality Factor Engineering in NIR Optical Metasurfaces Using Ge2Sb2Te5 and Graphene
Seyed As'ad Amirhosseini{2}, Daniyal Khosh Maram{1}
{1}Amirkabir University of Technology, Iran; {2}Isfahan University of Technology, Iran

1:30 PM - 3:30 PM
Physical Sensors 1 (Poster Session)
Room: Kairaku
Session Chair(s): Sarafianou Mantalena
Yi Chiu

6074: Flexible Sensing Skin for Simultaneous Measurement of Wall Shear Stress, Flow Direction and Dynamic Pressure
Peng Pang, Jianing Zhang, Chenhao Luo, Binghe Ma, Xingxu Zhang, Jian Luo, Jinjun Deng
Northwestern Polytechnical University, China

6156: Fabrication and Assembly of All-Quartz Integrated Resonant Accelerometer with High Stability
Hong Xue{1}, Shengxiang Zhou{1}, Kai Bu{1}, Zichao Zhang{1}, Yulong Zhao{2}, Cun Li{1}
{1}Xi'an Jiaotong University, China; {2}Xi'an Jiaotong University, State Key Laboratory for Manufacturing Systems Engineering, China

6220: Performance Enhancement of Piezoresistive Tactile Sensor Based on Mechanical Metamaterial with Negative Poisson's Ratio
Mingyu Kang, Honggap Choi, Keun Park, Soonjae Pyo
Seoul National University of Science and Technology, Korea

6311: A Novel MEMS Sensor with a Floating Cover Plate for Wall-Shear Stress Measurement in the Harsh Supersonic Flow
Yunzhe Liu, Lei Shi, Yunjian Chen, Shengming Ma, Kai Cheng, Chuqiao Wang, Xingxu Zhang, Jian Luo, Binghe Ma
Northwestern Polytechnical University, China

6373: Triaxial Force Plate with High Speed and Resolution Line Scan Camera for Sampling Moiré Method
Yukitake Nakahara, Ohga Nomura, Hidetoshi Takahashi
Keio University, Japan

6388: Laws of Long-Term-Drift Performance for a Highly Sensitive MEMS Gravimeter Over 500 Days
Lujia Yang{1}, Shasha Liu{1}, Xiaochao Xu{1}, Fangzheng Li{1}, Le Gao{1}, Fangjing Hu{1}, Wenjie Wu{1}, Liangcheng Tu{2}
{1}Huazhong University of Science and Technology, China; {2}Huazhong University of Science and Technology & Sun Yat-sen University, China

6488: Electrostatic Resonant Accelerometer with Force-Rebalance Control
Yoshiyuki Hata, Daiki Kondo, Haruki Kawano, Yugo Takeda
Meijo University, Japan

6610: Three-Dimensional Shape Optimized Seesaw-Type Force Sensor Fabricated with a Micro-Scale 3D Printer
Soya Sato{1}, Yukitake Nakahara{1}, Gakuto Kagawa{1}, Makoto Asai{2}, Hidetoshi Takahashi{1}
{1}Keio University, Japan; {2}Keio University Global Research Institute, Japan

6627: A Multi-Segment Ferromagnetic-Core Enhanced Stretchable Strain Sensor
Zhengyan Wang, Yufeng Wang, Xinxin Chang, Houping Wu, Hongbo Wang
University of Science and Technology of China, China

6631: Critical Buckling Voltage Shift-Based Resonant Vacuum Pressure Micro-Sensor
Nouha Alcheikh
Khalifa University, U.A.E.

6898: Low-Frequency Structural Vibration Monitoring Using a Hetero-Core Fiber Optic Accelerometer
Atsuki Hirose{2}, Miyuki Kadokura{2}, Tokio Kasai{1}, Kazuhiro Watanabe{2}, Michiko Nishiyama{2}
{1}Aviation Technology Directorate, Japan Aerospace Exploration Agency, Japan; {2}Soka University, Japan

6970: A Fast Start Method for Whole-Angle Micro-Shell Resonator Gyroscope
Sheng Yu, Xuezhong Wu, Yongmeng Zhang, Jiangkun Sun, Dingbang Xiao
National University of Defense Technology, China

6518: Analyzing and Overcoming Strain-Rate Dependence for Triboelectric Self-Powered Pressure Sensors
Vanessa Barton, Hridyesh Tewani, Vaibhav Khurana, Pavana Prabhakar, Joseph Andrews
University of Wisconsin - Madison, United States

1:30 PM - 3:30 PM
Emerging Sensor Technologies & Applications – A (Poster Session)
Room: Kairaku
Session Chair(s): Bonnie Gray

6198: Speed-Invariant Texture Discrimination Using an Optical Tactile Sensor Array (LiVec Finger)
Olivia Leslie, David Córdova Bulens, Stephen James Redmond
University College Dublin, Ireland

6206: Dual-Coupling Induced Singularities and Ultra-Sensitivity in Non-Hermitian Electromagnetic Systems
Minye Yang, Baolong Jian, Zhilu Ye, Ming Liu
Xi'an Jiaotong University, China

6296: Smart Cell with Internal Sensors to Limit Lithium Plating During Fast-Charge at Low Temperature
Romain Franchi, Sylvie Genies, Pierre Balfet, Cedric Debruyne, Yvan Reynier, Olivier Raccurt
Université Grenoble Alpes, CEA LITEN, DEHT, France

6466: Analysis of the Photothermal Parasitic Effect on an Optomechanical Antenna
Daniyal Khosh Maram, Xavier Cartoixà, Gabriel Abadal
Universitat Autònoma de Barcelona, Spain

6501: MXene-Based Planar Microwave Sensor for Acetone Gas Detection
Jie Wei, Xiao-Cong Tang, Zhe-Yi Li, Qiang Wang, Cong Wang
Harbin Institute of Technology, China

6514: Multi-Modal EIT Imaging Using Lensfree and Flexible Impedance Sensor
Hao Fang{2}, Ronald B. Liu{2}, Jingyu Sun{2}, Pierre O. Bagnaninchi{1}, Zhe Liu{2}, Yunjie Yang{2}
{1}Centre for Regenerative Medicine, IRR, University of Edinburgh, United Kingdom; {2}SMART Group, University of Edinburgh, United Kingdom

6581: Proof of Principle: Full 6D Point-to-Point Motion Tracking with Magnetoelectric Sensors
Johannes Hoffmann, Moritz Boueke, Erik Engelhardt, Tobias Schmidt, Clint Hansen, Julius Welzel, Walter Maetzler, Gerhard Schmidt
Christian-Albrechts-Universität zu Kiel, Germany

6634: Ultra-Sensitive Differential Sensor for Liquid Dielectric Characterization Using 1-Bit Coding in DGS
Cong Wang, Jie Wei, Zhe-Yi Li, Xiao-Cong Tang, Jiao-Yang Li, Yang Yi
Harbin Institute of Technology, China

6644: Event-Based Real-Time Fall Detection Using YOLOv8 and LSTM
Weihao Liang, Yongsheng Ma
Southern University of Science and Technology, China

6768: Loaded Re-Entrant Cavity Microwave Sensor for Dielectric Constant Measurement
Tsung-Yu Li, Chin-Lung Yang
National Cheng Kung University, Taiwan

7089: Wireless Sensor Nodes for Condition Based Maintenance in Railway Systems
Philipp Kersten, Johannes Buzin, Soeren Hirsch
Technische Hochschule Brandenburg, Germany

1:30 PM - 3:30 PM
Wearable Sensors & Systems – A (Poster Session)
Room: Kairaku
Session Chair(s): Doua Kosaji
Anna Maria Pappa

6003: An Inkjet-Printed Stretchable Sensor Patch for Multimodal Physiological Monitoring
Wei Ling, Xue Shang, Junchen Liu, Tao Tang
Zhejiang Lab, China

6076: Chinese Paper-Cutting Inspired Topological Flexible Piezoresistive Pressure Sensor for Wearable Health Monitoring
Lukang Wang{2}, Jinjin Cao{1}, Ming Liu{2}, Yi Lv{2}
{1}Fourth Military Medical University, China; {2}Xi'an Jiaotong University, China

6112: Liquid Metal Flexible Pressure Sensor Based on Femtosecond Laser Direct Writing Microchannel
Luyao Zhang{1}, Misheng Liang{1}, Wanquan Liu{2}, Xiaomeng Bian{1}, Rui You{1}
{1}Beijing Information Science and Technology University, China; {2}Sun Yat-sen University, China

6128: Sensitivity-Enhanced Non-Invasive Glucose Sensor Using Interdigital Capacitors
Shasha Yang{2}, Shiwen Gao{2}, Yi Zhuang{2}, Lili Gao{1}, Zhenxiang Yi{2}
{1}East China Institute of Photo-Electron IC, China; {2}Southeast University, China

6211: IoT Based Smart Spectacles Integrated with Mobile App for Tech-Neck Posture Correction
Ankita Awasthi{2}, Astha Rangare{2}, Roshni Kaushik{2}, Varad Shinde{2}, Pugazhenthan Thangaraju{1}, Jose Immanuel{2}
{1}All India Institute of Medical Sciences Raipur, India; {2}Indian Institute of Technology Bhilai, India

6230: Wireless, Fully Soft, Pressure and Temperature Sensors for Sensitive and Robust Diabetic Foot Ulcer Monitoring
Xinran Li, Zhilu Ye, Minye Yang, Ming Liu, Xiaohui Zhang
Xi'an Jiaotong University, China

6270: Wearable Textile Sensor Using Hetero-Core Optical Fiber for Blood Pressure Measurement
Ryouta Takayama{1}, Michiko Nishiyama{2}, Yuya Koyama{1}
{1}Chiba Institute of Technology, Japan; {2}Soka University, Japan

6498: Force Myography Sensors for Gait Phase Detection
Bastian Latsch{2}, Niklas Schäfer{2}, Stephan Schaumann{2}, Steffen Graffe{2}, Asghar Mahmoudi{2}, Martin Grimmer{2}, Alexander Anton Altmann{2}, Omar Ben Dali{2}, Julian Seiler{2}, Stephan Rinderknecht{2}, Philipp Beckerle{1}, Mario Kupnik{2}
{1}Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; {2}Technische Universität Darmstadt, Germany

6499: Wearable Ballistocardiography for Unobtrusive Respiratory and Heart Rate Monitoring
Bastian Latsch, Alexander Anton Altmann, Omar Ben Dali, Romol Chadda, Niklas Schäfer, Kilian Schäfer, Muhammad Bilal Khan, Jan Helge Dörsam, Felix Herbst, Sven Suppelt, Oliver Gutfleisch, Mario Kupnik
Technische Universität Darmstadt, Germany

6566: Evaluation of Patchable Inkjet-Printed Wearable Sensors for Measuring Muscle Activities
Jihoon Lim{2}, Huihui Zhang{1}, Mingrui Sun{2}, Han Lin{1}, Baohua Jia{1}, Jefferson Zhe Liu{2}, Ying Tan{2}
{1}Royal Melbourne Institute of Technology, Australia; {2}University of Melbourne, Australia

6625: Graphene/Silver-Fused Nanocomposites for Strain Sensing Applications
Aniket Chakraborthy, H Harija, Suresh Nuthalapati, Anindya Nag, Mehmet Ercan Altinsoy
Technische Universität Dresden, Germany

6630: A Low-Power Low-Complexity Circuit for Event-Based Feature Extraction from sEMG
Andrea Prestia, Andrea Mongardi, Danilo Demarchi, Fabio Rossi, Paolo Motto Ros
Politecnico di Torino, Italy

6637: Wearable Temperature Sensing Bandages Based on Fano Resonance
Xi-Fan Gao{2}, Zi-Ang Qi{2}, Qing-An Huang{1}, Lei Dong{2}
{1}Key Laboratory of MEMS of the Ministry of Education, Southeast University, China; {2}Southeast University, China

6659: SensOL: Memory-Efficient Online Learning for Tiny MCUs
Lokmane Demagh{2}, Patrick Garda{3}, Cédric Gilbert{1}, Khalil Hachicha{3}
{1}Essilorluxottica, France; {2}EssilorLuxottica & Sorbonne Université, CNRS, LIP6, France; {3}Sorbonne Université, CNRS, LIP6, France

6689: Design of an IoT Virtual Reality-Based Wearable Multi-Sensory System for Venous Thromboembolism Prevention Through Exercises
Yongfu Wang{2}, Boon Giin Lee{2}, Hualian Pei{1}, Xiaoqing Chai{2}
{1}First Affiliated Hospital of Ningbo University, China; {2}University of Nottingham Ningbo China, China

1:30 PM - 3:30 PM
Acoustic & Ultrasonic Sensors – A (Poster Session)
Room: Kairaku
Session Chair(s): Sri-Rajasekhar Kothapalli
Hongyu YU

6055: Semantic Landmark Detection & Classification Using Neural Networks for 3D In-Air Sonar
Wouter Jansen{2}, Jan Steckel{1}
{1}Cosys-Lab, University of Antwerp, Belgium; {2}University of Antwerp, Belgium

6297: Stabilized Adaptive Steering for 3D Sonar Microphone Arrays with IMU Sensor Fusion
Wouter Jansen{2}, Dennis Laurijssen{2}, Jan Steckel{1}
{1}Cosys-Lab, University of Antwerp, Belgium; {2}University of Antwerp, Belgium

6436: Source Number Estimation Based on the Pressure and Particle Velocity Combined Processing for Acoustic Vector-Sensor Arrays
Xianglu Li{2}, Youyang Xiang{2}, Zhijiang Huang{2}, Qilong Du{2}, Peng Fei{1}, Dong Hou{3}, Jie Tian{2}
{1}High-Tech Institute, The First School, Rocket Force University of Engineering, China; {2}Institute of Electronic Engineering, China Academy of Engineering Physics, China; {3}University of Electronic Science and Technology of China, China

6442: Broadband MEMS Microphone Arrays with Reduced Aperture Through 3D-Printed Waveguides
Dennis Laurijssen{2}, Walter Daems{1}, Jan Steckel{1}
{1}Cosys-Lab, University of Antwerp, Belgium; {2}University of Antwerp, Belgium

6503: Experimental Analysis of Wind Effect in Acoustic Hail Sensors
Florencia Blasina, Sebastián Pietra, Andrés Echarri, Nicolás Pérez
Universidad de la República, Uruguay

6590: Effects of Acoustic Leakage on MEMS Directional Microphones
Jie Li, Mingchao Sun, Boyun Zhang, Bohua Liu, Chongling Sun, Wei Pang, Menglun Zhang
State Key Laboratory of Precision Measurement Technology and Instruments, Tianjin University, China

6824: Effect of Periodic Rough Surface on Ultrasonic Pulse-Echo Signal
Hiroyuki Nakamoto{2}, Kotaro Fujii{2}, Philippe Guy{1}, Tetsuya Uchimoto{3}
{1}INSA Lyon, France; {2}Kobe University, Japan; {3}Tohoku University, Japan

7085: Cantilever-Plate Piezoelectric Micromachined Ultrasonic Transducer (PMUT) for Airborne Applications with Enhanced Output and Linear Working Range
Zhou Da{2}, Rodrigo Tumolin Rocha{2}, Alessandro Stuart Savoia{1}, Chunlei Xu{2}, Tingzhong Xu{2}
{1}Roma Tre University, Italy; {2}Silicon Austria Labs GmbH, Austria

7108: Designing Capacitive Micromachined Ultrasonic Transducer (CMUT) Based Sensors for Low Frequency Airborne Applications
Sebastian Peller{1}, Rudolf Bierl{1}, Amelie Hagelauer{2}
{1}Ostbayerische Technische Hochschule Regensburg, Germany; {2}Technische Universität München, Germany

7128: Air-Coupled Piezoelectric Micromachined Ultrasonic Transducers (PMUTs) for High-Resolution Distance Sensing
Monica La Mura{1}, Domenico Giusti{2}, Carlo Luigi Prelini{2}, Marco Ferrera{2}, Alessandro Stuart Savoia{1}
{1}Roma Tre University, Italy; {2}STMicroelectronics, Italy

1:30 PM - 3:30 PM
Sensor Networks & IOT – A (Poster Session)
Room: Kairaku
Session Chair(s): Sebastian Bader
Domenico Balsamo

6041: A Binary Frequency Shift Keying Chipless RFID IoT Switch
Abdullah S. Almansouri
University of Jeddah, Saudi Arabia

6043: Finite Time Stabilization of Coupled Network by the Adaptive Event-Triggered Control
Wei Zhao, Jianquan Lu, Jinling Liang
Southeast University, China

6200: Wireless Water Activity Monitoring System for Long-Term Biomass-Based Carbon Sequestration
Jacob Louie, Joshua Varughese, Deepti Gautam, Ahmad Mohammed, Natalie Kashoro, John Acken, David Burnett
Portland State University, United States

6320: A Low-Cost RF Power Measurement System for Optimizing the Configuration of BLE Mesh Nodes
David Perez-Diaz-De-Cerio, Ana Valenzuela-Pérez, Jose Luis Valenzuela
Universitat Politecnica de Catalunya, Spain

6439: Solving Relative Measurements on Finite Graphs
Titan Yuan, Kristofer S.J. Pister
University of California, Berkeley, United States

6452: Environmentally-Aware Wireless Sensor Network Optimization for Improved Target Localization
Joseph Mockler, Sarah Wielgosz, Huan Xu
University of Maryland, United States

6616: A Practical Analysis of Persuasive and Dark Patterns for IIoT and Industrial Cyber-Physical Systems
Diego Ramil-López, Paula Fraga-Lamas, Tiago Manuel Fernández-Caramés
University of A Coruña, Spain

6788: Modular Sensor Network for Historic Buildings Structural Health Monitoring
Fábio Dias{2}, Henrique Pocinho{2}, Rita Machete{1}, Ana Paula Falcão{1}, Rita Bento{1}, Diogo Miguel Caetano{2}
{1}Instituto Superior Técnico, Universidade de Lisboa, CERIS, Portugal; {2}Instituto Superior Técnico, Universidade de Lisboa, INESC MN, Portugal

6851: Online Non-Myopic Route Planning for Airborne Sensor Networks with Multi-Target Tracking
Ye Yuan{2}, Jianwei Wei{2}, Xinwei Wei{2}, Yiru Lin{2}, Wei Yi{2}, Xinyu Liu{1}
{1}Southwest Jiaotong University, China; {2}University of Electronic Science and Technology of China, China

6858: Dwell Time Allocation for Decentralized Phased Array Radar Sensing Networks with Target Tracking
Ye Yuan{2}, Zishi Zhang{2}, Lei Zhu{1}, Jing He{1}, Wei Yi{2}
{1}National Key Laboratory of Electromagnetic Space Security, China; {2}University of Electronic Science and Technology of China, China

6892: Reconfigurable Intelligent Surface Aided Wireless Sensor Networks with Harvest-Then-Transmit Protocol
Yinman Lee, Li-Zhen Hsu
National Chi Nan University, Taiwan

7086: Low-Cost Water Level Sensor with Improved Data Quality for Flash Flood Monitoring in Urban Areas
Maria Frontera-Bergas, Francesc Mestre-Sansó, Raúl Sanchez, Eugeni Isern, Bartomeu Alorda-Ladaria
Universitat de les Illes Balears, Spain

1:30 PM - 3:30 PM
Sensor Systems: Biomedical Applications (Poster Session)
Room: Kairaku
Session Chair(s): Chang-hee Won

6017: Remote Gait Behavior Monitoring System for Older People Based on Wearable Sensor
Meiyan Zhang, Boqi Zhao, Jingxiao Liao, Qisong Wang, Dan Liu, Jinwei Sun
Harbin Institute of Technology, China

6085: Development of a Personalized Anomaly Detection Model to Detect Motion Artifacts Over PPG Data Using Catch22 Features
Andrea Valerio{1}, Danilo Demarchi{1}, Brendan O'Flynn{3}, Salvatore Tedesco{2}
{1}Politecnico di Torino, Italy; {2}Tyndall National Institute, Ireland; {3}Tyndall National Institute, University College Cork, Ireland

6274: Riding Skill Visualizing System for Motorcycle Using Multiple Zigbee Communication Line
Yukito Fukushima, Daiki Izumi, Masakazu Tomosada, Takeshi Kobuki, Masaru Katayama
National Institute of Technology, Matsue College, Japan

6321: A Fully Integrated E-Nose System with 256 Half-Virtual Gas-Sensitive Pixels for Gas Recognition
Dongliang Chen{2}, Dongcheng Xie{1}, Qiuju Wu{2}, Yujie Yang{2}, Yan Zhang{1}, Lei Xu{2}
{1}Micro Nano Sensing (Hefei) Technology CO., Ltd., China; {2}University of Science and Technology of China, China

6462: Fall Risk Prediction for Elderly Using Head-Mounted Inertial Sensors and Tree-Based Models
Yu-Zheng Chen, Fang-Yi Lin, Li-Fan Tseng, Chien-Hsu Chen, Pi-Shan Sung, Chih-Lung Lin
National Cheng Kung University, Taiwan

6905: Analysis of the Relation Between Shoulder Joint Angle and Bioelectrical Impedance on Deltoid Muscle
Hirochika Matsui, Kengo Ohnishi, Sung-Gwi Cho
Tokyo Denki University, Japan

7023: Dynamic Sensing of an Embedded Object Using Laser, Camera, and Collaborative Robot
John Bannan, Nazia Rahman, Chang-Hee Won
Temple University, United States

7188: A High-Precision Capacitive Absolute Angle Position Sensor with Improved Temperature Performance
Jiahui Shi, Bin Zhou, Qi Wei, Jianjun Ma, Rong Zhang
Tsinghua University, China

6516: Neuromorphic Touch Sensors for Pleasantness Encoding via Spike Patterns
Marian Statache{2}, Mariangela Filosa{1}, Sara Ballanti{1}, Giacomo D'Alesio{1}, Giulia Di Salvo{1}, Domenico Camboni{1}, Calogero Maria Oddo{1}
{1}Sant'Anna School of Advanced Studies, Italy; {2}Sant'Anna School of Advanced Studies, Italy

1:30 PM - 3:30 PM
Data Processing & AI for Biomedical & Healthcare Applications (Poster Session)
Room: Kairaku
Session Chair(s): Hajar Abedifirouzjaei

6483: Enhancing Non-Invasive Electroanatomical Mapping with Dynamic Sensor Arrays
Erik Engelhardt{1}, Johannes Hoffmann{1}, Moritz Boueke{1}, Norbert Frey{2}, Gerhard Schmidt{1}
{1}Christian-Albrechts-Universität zu Kiel, Germany; {2}University Medical Center Heidelberg, Germany

6592: Enhancing Bioimpedance Tissue Classification with Elastography Sensor Data via Multimodal Learning
Matthias Ege{2}, Emily Hellwich{1}, Franziska Krauß{2}, Zoltan Lovasz{2}, Johannes Schüle{2}, Carina Veil{2}, Oliver Sawodny{2}, Cristina Tarín{2}
{1}Eberhard Karls Universität Tübingen, Germany; {2}Universität Stuttgart, Germany

6607: Synthetic Electrochemical Biosensor Data with Conditional Variational Autoencoders for Enhanced Predictive Modeling
Desmond Kai Xiang Teo, Tomas Maul, Michelle Tien Tien Tan
University of Nottingham Malaysia, Malaysia

6886: Lens-Free Shadow Imaging-Based Cell Classification with Deep Learning for Improved CDC Crossmatching
Kang Choi{1}, Sanghoon Shin{1}, Hyungsik Kim{1}, Huijin Rim{1}, Minjeong Nam{2}, Yunjung Cho{2}, Sungkyu Seo{3}
{1}Korea University, Korea; {2}Korea University Anam Hospital, Korea; {3}Korea University, Metaimmunetech Inc., Korea

6989: Leveraging Large Language Models and Fuzzy Clustering for EEG Report Analysis
Chengzong Zhao{5}, Zara Cook{4}, Livia Murray{4}, Jivan Kesan{4}, Nabil Belacel{2}, Sam Doesburg{3}, George Medvedev{1}, Vasily Vakorin{3}, Pengcheng Xi{2}
{1}Fraser Health Authority, Canada; {2}National Research Council Canada, Canada; {3}Simon Fraser University, Canada; {4}University of Waterloo, National Research Council Canada, Canada; {5}University of Waterloo, University of Waterloo, Canada

7020: Simultaneous Description and Detection of Sparse Features for Deformable Intraoperative Bladder Environments
Franziska Krauß{2}, Matthias Ege{2}, Zoltan Lovasz{2}, Johannes Schüle{2}, Aleksander Kielbik{1}, Carina Veil{2}, Oliver Sawodny{2}
{1}Eberhard Karls Universität Tübingen, Germany; {2}Universität Stuttgart, Germany

7164: Speech Enhancement in Extremely Noisy Environments Based on Time-Frequency Harmonic Mask with Throat Microphone
Yonghun Song, Yeeun Kim, Yunsik Kim, Yoonyoung Chung
Pohang University of Science and Technology, Korea

1:30 PM - 3:30 PM
Sensor Systems: Advances in Integration (Poster Session)
Room: Kairaku
Session Chair(s): Chang-hee Won

6025: Companding Curve Optimization to Maximize SNDR for High Dynamic Range Image Sensors
Hojoon Lee{1}, Seunghyung Lee{1}, Oded Drori{2}, Kyungchoon Lee{1}, Youngkyun Jeong{1}
{1}Samsung Electronics, Korea; {2}Samsung Semiconductor Israel R&D Center, Israel

6028: Topology Reconstruction Approach for Distributed Blind Equalization Over Sensor Network
Sulin Chi{1}, Tetsuya Shimamura{2}
{1}Otemon Gakuin University, Japan; {2}Saitama University, Japan

6066: Development of Plane Bending Fatigue Tester for Electrode Materials of Lithium-Ion Battery by Using Strain Sensors
Atsuki Takeuchi, Yudai Furuhata, Yoshinao Kishimoto, Yukiyoshi Kobayashi, Masaya Ueda, Shiori Tagai
Tokyo City University, Japan

6145: Estimation of Stress Distribution at Adhesive Edge by Inverse Analysis of Deformed Shape Data
Toshiya Takeda, Daiki Ariyama, Yoshinao Kishimoto, Yukiyoshi Kobayashi
Tokyo City University, Japan

6786: Reflectometry Architecture for Enhanced Fault Localization Based on Low PAPR Chirp-OMTDR
Yosra Gargouri, Mariem Slimani, Nicolas Ravot, Mickael Cartron
CEA-List, Université Paris-Saclay, France

6917: Bolt Type Force Sensor with Improved Wiring for Force Measurement in Sport Climbing
Takumi Hayashida{2}, Akihiro Kawamura{2}, Ryo Kurazume{2}, Shimpei Aihara{1}
{1}Japan Institute of Sports Sciences, Japan; {2}Kyushu University, Japan

7057: A Portable Electrical Impedance Measurement System for Flexible Electrodes
Mahdi Saleh{2}, Sara Medina-Lombardero{1}, Michael Crichton{1}, Alexander Casson{2}
{1}Heriot-Watt University, United Kingdom; {2}University of Manchester, United Kingdom

7112: Target Isolation and Enhancement Through Coherent Multi-View Vital-Doppler Detection
Christopher Williams, Syed Doha Uddin, Changzhi Li
Texas Tech University, United States

7113: Hybrid Technique for Sensor Fault Diagnosis in Natural-Gas Pipelines
Khadija Shaheen{1}, Apoorva Chawla{1}, Ferdinand Uilhoorn{2}, Pierluigi Salvo Rossi{1}
{1}Norwegian University of Science and Technology, Norway; {2}University of Warsaw, Poland

7172: Simulation Methods for Lock-In Pixels Considering Gating Driver's Response
Ryosuke Suzuki, Keita Yasutomi, Keiichiro Kagawa, Shoji Kawahito
Shizuoka University, Japan

7182: Self-Coupling Laser Sensor Using Triangular Wave Chirp Modulation and Signal Intensity Detection
Daiki Sato, Norio Tsuda
Aichi Institute of Technology, Japan

1:30 PM - 3:30 PM
Live Demonstration of Sensors & Sensing Technologies (Poster Session)
Room: Kairaku
Session Chair(s): Youngwook Kim
Anna G. Mignani

6212: Live Demonstration: IoT Based Smart Spectacle Integrated with Mobile App for Tech-Neck Posture Correction
Ankita Awasthi{2}, Astha Rangare{2}, Roshni Kaushik{2}, Varad Shinde{2}, Pugazhenthan Thangaraju{1}, Jose Immanuel{2}
{1}All India Institute of Medical Sciences Raipur, India; {2}Indian Institute of Technology Bhilai, India

6245: Live Demonstration: ML-Based Smart Abnormal Detection for Electrical Equipment
You-Jian Ma{1}, Ping-Jui Yang{1}, Ming-Ren Ou{1}, Chun-Wen Ku{1}, Jyun-You Huang{1}, Shahsank Mishra{1}, Jia-Ming Liang{1}, Jen-Jee Chen{2}
{1}National University of Tainan, Taiwan; {2}National Yang Ming Chiao Tung University, Taiwan

6342: Live Demonstration: Multiparameter Optical Fibre Sensor System for Wound Healing Monitoring
Sergiy Korposh{2}, David Gomez{2}, Pizhou Wu{2}, Tamaralayefa Agbiki{2}, Ricardo Goncalves Correia{2}, Liangliang Liu{2}, Seung-Woo Lee{1}, James Ell{2}, Chenyang He{2}, Barrie Hayes-Gill{2}, Steve Morgan{2}
{1}University of Kitakyushu, Japan; {2}University of Nottingham, United Kingdom

6389: Live Demonstration: Fast, Safe, and Cost-Effective: Hetero-Core Fiber Optic Hydrogen Sensor
Yuna Nakamura, Michiko Nishiyama
Soka University, Japan

6405: Live Demonstration: Iron Detection Method Based on High-Resolution Magnetic Field Camera
Hugo Nicolas, Céline Vergne, Joris Pascal
University of Applied Sciences and Arts Northwestern Switzerland, Switzerland

6416: Live Demonstration: ELLAS- Enhancing LiDAR Perception with Location-Aware Spin Adaptation
Roger Kalkman{1}, Thymon Rhemrev{1}, Emma de Jong{1}, Gideon van Triest{1}, Jordy Pronk{1}, Ashish Pandharipande{2}, Nitin Jonathan Myers{1}
{1}Delft University of Technology, Netherlands; {2}NXP Semiconductors Inc., Netherlands

6424: Live Demonstration: A Bioinspired Artificial Tactile Interface for Telepresence and Sensory Restoration and Augmentation
Mariangela Filosa{1}, Anna Labardi{1}, Marian Statache{2}, Domenico Camboni{1}, Calogero Maria Oddo{1}
{1}Sant'Anna School of Advanced Studies, Italy; {2}Sant'Anna School of Advanced Studies, Italy

6426: Live Demonstration: A Smart Mobile App 'BRIx' for Banana Ripe Stage Detection Using a Decision Tree Model on Image Color Bucket
Ankita Awasthi{1}, Roshni Kaushik{1}, Astha Rangare{1}, Dibakar Roy{1}, Asmita Bose{2}, Avishek Adhikary{1}
{1}Indian Institute of Technology Bhilai, India; {2}National Institute of Technology Raipur, India

6435: Live Demonstration: A Wearable Closed-Loop System for Acute Stress Detection and Mitigation
Farhan Rahman{1}, Prabhkirat Bindra{1}, Afra Nawar{1}, Harrison Crane{1}, John Berkebile{1}, Jesus Sanchez-Perez{1}, Samer Mabrouk{1}, Asim Gazi{2}, Jin-Oh Hahn{3}, Omer Inan{1}
{1}Georgia Institute of Technology, United States; {2}Harvard University, United States; {3}University of Maryland, United States

6440: Live Demonstration: Smart Laptop Tracking Device Using GPS and GSM
Dennis Cherogony{2}, Alfred Miyeyi{1}
{1}Multimedia University of Kenya, Tunisia; {2}Startinev Technologies, Tunisia

6655: Live Demonstration: Magnetic Skin System for Physical Rehabilitation
Montserrat Ramirez-De Angel, Eckaard Le Roux, Khaled Nabil Salama
King Abdullah University of Science and Technology, Saudi Arabia

6986: Live Demonstration: Real-Time Underwater Monitoring System for Conservation of Caspian Seals
Eckaard Le Roux{2}, Altynay Kaidarova{1}, Jose Ilton de Oliveira Filho{2}, Adylkhan Tovasaraov{1}, Assel Tasmagambetova{1}, Khaled Nabil Salama{2}
{1}Central Asian Institute of Ecological Research, Kazakhstan; {2}King Abdullah University of Science and Technology, Saudi Arabia

7042: Live Demonstration: Synthesizing a Variety of Odors from Olfactory White for VR Applications
Haruka Matsukura{2}, Ryusuke Chida{1}, Riku Nomura{1}, Hiroshi Ishida{1}
{1}Tokyo University of Agriculture and Technology, Japan; {2}University of Electro-Communications, Japan

7110: Live Demonstration: Closed-Loop Wireless Power Transfer for an Implantable Drug Delivery System
Fabiana Del Bono{2}, Nicola Di Trani{1}, Danilo Demarchi{2}, Alessandro Grattoni{1}, Paolo Motto Ros{2}
{1}Houston Methodist Research Institute, United States; {2}Politecnico di Torino, Italy

7132: Live Demonstration- Unlimited Sensing: A New Approach to Digital Acquisition
Yuliang Zhu, Ayush Bhandari
Imperial College London, United Kingdom

1:30 PM - 3:30 PM
Bio-Digital Convergence (Poster Session)
Room: Kairaku
Session Chair(s):

6889: Investigation of NK Cell Activity in Healthy and Immunocompromised Individuals Using Lens-Free Shadow Imaging Technology
Hyeji Jang{2}, Hojin Cheon{2}, Sanghoon Shin{2}, Haehee Han{2}, Samir Kumar{2}, Inha Lee{4}, Sunmi Han{4}, Myung-Hyun Nam{1}, Ka-Won Kang{1}, Byung Soo Kim{1}, Hyun Sik Jun{3}, Sungkyu Seo{3}
{1}Anam Hospital, Korea; {2}Korea University, India; {2}Korea University, Korea; {3}Korea University, Metaimmunetech Inc., Korea; {4}Metaimmunetech Inc., Korea

1:30 PM - 3:30 PM
Sensor Applications & Systems (Poster Session)
Room: Kairaku
Session Chair(s): Anil Roy

6674: Neuro-Inspired Scalable Serial Sensor Network by Sequential Signal Propagation
Takashi Ozaki, Norikazu Ohta, Motohiro Fujiyoshi
Toyota Central R&D Labs. Inc., Japan

7232: VibroTact: Soft Piezo Vibration Fingertip Sensor for Recognition of Texture Roughness via Robotic Sliding Exploratory Procedures
Quan Guo, Gorkem Anil Al, Uriel Martinez-Hernandez
University of Bath, United Kingdom

1:30 PM - 3:30 PM
Physical Sensors, Systems and Applications (Poster Session)
Room: Kairaku
Session Chair(s): Yukio Suzuki
Cong Wang

6740: Air Bubble Detection in Water Flow by Means of AI-Assisted Infrared Reflection System
Ander Gracia Moisés{1}, Ignacio Vitoria Pascual{1}, José Javier Imas González{2}, Carlos Ruiz-Zamarreño{2}
{1}Pyroistech S.L., Spain; {2}UPNA, Spain

6868: Design of a Novel Optical Overhead Line Monitoring Sensor
Jack Marston, Grzegorz Fusiek, Pawel Niewczas
University of Strathclyde, United Kingdom

6902: Methodological Framework for Conductor Lifetime Estimation Using Optical Sag Sensors
Himanshi Singh, Grzegorz Fusiek, Pawel Niewczas
University of Strathclyde, United Kingdom

7213: Designing a Bathymetric Sensor Using Absolute Pressure Sensors Arranged on a Regular Polyhedron
Ryusei Ando{2}, Kyota Shimada{2}, Takuto Kishimoto{2}, Hidetoshi Takahashi{1}
{1}Keio University, Japan; {2}School of Integrated Design Engineering, Graduate School of Science and Technology, Keio University, Japan

7223: Event-Driven sEMG Feature Extraction for Classifying Ingestive Behavior in Ruminants
Daniel Campos{1}, André Eugenio Lazzaretti{1}, Fabio Bertotti{1}, Joao Hill{2}, Andre Silveira{2}
{1}Federal University of Technology-Paraná, Brazil; {2}IDR, Brazil

7231: Evaluation of Pulse Eddy Current for Autonomous Airborne Inspections
Taiyi Zhao, Dayi Zhang, Robert Watson, William Jackson, Charles Macleod, Ehsan Mohseni, Gordon Dobie
University of Strathclyde, United Kingdom

7249: A Precision Low-Noise Sensor Readout System with BJT Input Based Amplifier and High Input Impedance Delta-Sigma ADC
Hyungseup Kim{2}, Hyeoktae Son{1}, Hyun-Jin Shin{3}, Choul-Young Kim{1}, Hi-Deok Lee{1}, Hyoungho Ko{1}
{1}Chungnam National University, Korea; {2}Samsung Display Co., Ltd., Korea; {3}Samsung Electronics Co., Ltd., Korea

7265: Vibration Based Scour-Detection for Bridge-Piers Using a Self-Powered Magnetostrictive Vibration Sensor
Shinji Koganezawa, Shunya Terai, Hiroshi Tani, Renguo Lu, Shouhei Kawada
Kansai University, Japan

7273: Knocking Sound Detection for Acoustic Condition Monitoring in Industrial
Christof Pichler{1}, Markus Neumayer{1}, Bernhard Schweighofer{1}, Christoph Feilmayr{2}, Stefan Schuster{2}, Hannes Wegleiter{1}
{1}GraGraz University of Technology, Austria; {2}voestalpine Stahl GmbH, Austria

7284: Fault Diagnosis Algorithm for dry-Type Transformer Based on Deep Learning of small-Sample Acoustic Array Signals
Qinglu Zheng{1}, Youyuan Wang{1}, Zhanxi Zhang{2}
{1}Chongqing University, China; {2}Southern Power Grid Electric Vehicle Service Co., Ltd., China

7285: A Location-Blind Spatial Regression Framework for IoT Monitoring Systems Based on Location Distribution and Spatial Correlation
Koki Kanzaki, Koya Sato
University of Electro-Communications, Japan

7286: Thin Film Reconfigurable Intelligent Surface for Harmonic Beam Steering
Boxuan Xie, Aleksandr Kuznetsov, Lauri Mela, Jari Lietzén, Kalle Ruttik, Alp Karakoç, Riku Jäntti
Aalto University, Finland

7289: Smart Material Robotic Leg Using FBG Sensors for Proprioceptive Controller
Marcos Dinís Lavarda{2}, Renata Oliveira de Sousa{1}, Jean Carlos Cardozo Da Silva{1}, Cicero Martelli{1}
{1}Federal University of Technology-Paraná, Brazil; {2}IFPR, Brazil

7294: Integrated Microwave Resonator for Detecting Microliter Liquid Mixtures
Gabriela Méndez-Jerónimo{1}, Humberto Lobato-Morales{1}, Joel Molina-Reyes{2}
{1}cicese, Mexico; {2}inaoe, Mexico

7299: On-Chip Sensor for Monitoring Crack Propagation in Solder Joints Using RF signals: Electrical Modeling and Circuit Design
Tae Yeob Kang{4}, Yunah Her{2}, Byeongcheol Choe{3}, Gwang-Hyeon Jeong{1}
{1}Hanbat National University, Korea; {2}Hannam University, Korea; {3}Pusan National University, Korea; {4}University of Suwon, Korea

7300: Experimental Comparison of UAV-Based RSSI and AoA Localization
Davide Scazzoli{2}, Stefano Moro{2}, Vineeth Teeda{2}, Prabhat Kumar Upadhyay{1}, Maurizio Magarini{2}
{1}Indian Institute of Technology Indore, India; {2}Politecnico di Milano, Italy

1:30 PM – 3:30 PM
WiSe/YP D&I CEC Joint Session
Room: Waraku2

1:30 PM – 3:00 PM
Industrial Track: Standards Organization
Room: Ikuta

3:30 PM - 5:30 PM
Chemical Sensing and Biosensing
Room: Nojigiku
Session Chair(s): Zhihua Pu
Chih-Ting Lin

3:30 PM
7262: Novel Sensor Using ISFET and Pt Electrodes for Water Ph and Flow Speed Measurement
Tomoaki Kageyama{3}, Shiro Hara{2}, Riyanarto Sarno{1}, Tadao Matsunaga{3}, Sang-Seok Lee{3}
{1}Institut Teknologi Sepuluh Nopember, Indonesia; {2}National Institute of Advanced Industrial Science and Technology, Japan; {3}Tottori University, Japan

3:45 PM
6668: In situ Galvanic Engineering of Interior hotspots in Au@Ag/AuND Platforms for Sers Detection of Phthalates
Soo Hyun Lee, Chaewon Mun, Sung-Gyu Park
Korea Institute of Materials Science, Korea

4:00 PM
7237: Flexible Electrochemical Sensor for Interleukin-6: Towards Wearable Cytokine Monitoring
Moritz Ploner{2}, Bajramshahe Shkodra{2}, Antonio Altana{2}, Mattia Petrelli{2}, Anna Tagliaferri{2}, Daniele Resnati{1}, Paolo Lugli{2}, Martina Aurora Costa Angeli{2}, Luisa Petti{2}
{1}Empatica Srl, Italy; {2}Free University of Bozen-Bolzano, Italy

4:15 PM
6551: Detection of Urea in Adulterated Milk with 3% Fat Using Disposable Paper Sensor
Asmita Bose{2}, Agniv Tapadar{1}, Manish Kumar{1}, Avishek Adhikary{1}
{1}Indian Institute of Technology Bhilai, India; {2}NIT Raipur, India

4:30 PM
7250: Design and Fabrication of an Interdigitated Electrode (IDE) Structure for Detection of Cadmium Ions from Multiple Samples
Anju Gupta{3}, Dinesh Rotake{1}, Anand Darji{2}
{1}Indian Institute of Technology, Hyderbad, India; {2}Sardar Vallabhbhai National Institute of Technology, Ichchhanath, Surat, India; {3}Shri Ramdeobaba College of Engineering and Management Nagpur, SVNIT Surat, India

4:45 PM
7271: Drone Inspection System Based on the Electrochemical Impedance Detector by Dengue NS1 Biomarkers in Water Environments
Sung-Lin Tsai{2}, Jiunn-Jye Wey{1}, Szu-Chia Lai{1}, You-Qian Lin{2}, Chiao-Jou Chang{2}, Pao-Cheng Huang{2}
{1}National Defense Medical Center, Taiwan; {2}National Formosa University, Taiwan

5:00 PM
6544: Portable Multiplexed System Based AD5933 Impedance analyzer: Towards Multi-Selective Gas Recognition
Louis Routier{3}, Alexandre Westrelin{3}, Anthyme Cerveaux{1}, Pierre Foulon{1}, Gaël Louis{1}, Thomas Holac'H{1}, Kamal Lmimouni{3}, Sebastien Pecqueur{4}, Bilel Hafsi{2}
{1}Icam Lille, France; {2}ICAM Lille, Université de Lille, CNRS, Centrale Lille, Université Polytechnique Hauts-de-France, France; {3}Iemn laboratory, France; {4}IEMN, Université de Lille, CNRS, Centrale Lille, Université Polytechnique Hauts-de-France, Fr

5:15 PM
6856: Integrated subpixel-Patterned LSPR Gas Sensor via Inkjet Printing of Au/Ag nanoparticles and Pigments for multi-Gas Detection
Tianshu Jiang, Xiao Ye, Lingpu Ge, Hao Guo, Fumihiro Sassa, Kenshi Hayashi
Kyushu university, China; Kyushu university, Japan

3:30 PM - 5:30 PM
Acoustic & Ultrasonic Sensors
Room: Waraku1
Session Chair(s): Hongyu YU
Sri-Rajasekhar Kothapalli

3:30 PM
6150: Characterization of Vibration Sensitivity of One-Port and Two-Port MEMS Microphones
Francis Doyon-D'Amour{3}, Carly Stalder{2}, Timothy Hodges{4}, Michel Stephan{3}, Lixiue Wu{1}, Triantafillos Koukoulas{1}, Stephane Leahy{2}, Raphael St-Gelais{3}
{1}National Research Council Canada, Canada; {2}Soundskrit, Canada; {3}University of Ottawa, Canada; {4}University of Ottawa / National Research Council Canada, Canada

3:45 PM
6313: Preliminary Evaluation of Multi-Angle Spatial Compound Imaging with pMUTs
Mantalena Sarafianou{1}, Gaia Giubilei{2}, David Sze Wai Choong{1}, Duan Jian Goh{1}, Yul Koh{1}, Alberto Leotti{3}, Carla Lazzari{3}, Jason Zhigang Jia{3}, Domenico Giusti{3}
{1}Institute of Microelectronics IME, Agency for Science, Technology and Research, Singapore; {2}Politecnico di Torino, Italy; {3}STMicroelectronics, Italy; {3}STMicroelectronics, Singapore

4:00 PM
6333: Self-Referencing MEMS Resonator with Dual Mechanical Modes for Temperature-Independent Environmental Sensing
David Lynes, Hengky Chandrahalim
U.S. Air Force Institute of Technology, United States

4:15 PM
6595: Directionally Sensitive Active Helmholtz Resonator Metamaterials Enabled Through 3D-Printing
Roger Domingo-Roca{2}, Andrew Feeney{1}, James Windmill{2}, Joseph Jackson-Camargo{2}
{1}University of Glasgow, United Kingdom; {2}University of Strathclyde, United Kingdom

4:30 PM
6745: High-Q Surface Acoustic Wave Humidity Sensors Based on Tunable Fano Resonance
Mengting Wang, Jianqiu Huang, Qing-An Huang
Key Laboratory of MEMS of the Ministry of Education, Southeast University, China

4:45 PM
7193: Ultra-High Frequency Photoacoustic Sensor Design for Early Stage Melanoma Diagnosis
Elia Arturo Vallicelli{1}, Giuseppe Chirico{1}, Alessandro Michele Ferrara{2}, Mirza Hassan Baig{1}, Maurizio Marrale{2}, Lorenzo Stevenazzi{1}, Mattia Tambaro{1}, Marcello De Matteis{1}
{1}University of Milano-Bicocca, Italy; {2}University of Palermo, Italy

3:30 PM - 5:30 PM
Sensor Networks & IOT
Room: Kitano
Session Chair(s): Domenico Balsamo
Sebastian Bader

3:30 PM
7227: Energy Harvesting Strategies for Plant Microbial Fuel Cells in Sustainable IoT Applications
Maria Doglioni{2}, Roberto La Rosa{1}, Matteo Nardello{2}, Davide Brunelli{2}
{1}STMicroelectronics, Italy; {2}Università degli Studi di Trento, Italy

4:00 PM
7149: Suboptimal Joint Multi-Parameter Estimation for Wireless Sensor Networks Over κ-μ Fading Channels
Youyang Xiang{2}, Xianhua Shi{2}, Qilong Du{2}, Xianglu Li{2}, Peng Fei{1}, Dong Hou{3}, Jie Tian{2}
{1}High-Tech Institute, The First School, Rocket Force University of Engineering, China; {2}Institute of Electronic Engineering, China Academy of Engineering Physics, China; {3}University of Electronic Science and Technology of China, China

4:15 PM
7100: Collision-Avoidance LoRaWAN Network for Intermittent Sensor Systems
Firdaus Ritom{1}, Fatma Benkhelifa{2}, Sergey Mileiko{1}, Domenico Balsamo{1}
{1}Newcastle University, United Kingdom; {2}Queen Mary University of London, United Kingdom

4:30 PM
6753: Development of a 2-4 Double Arbiter PUF Design on FPGA with Enhanced Performance
Sinan Yavuz{2}, Edwin Naroska{1}, Kai Daniel{3}
{1}Niederrhein University of Applied Sciences, Germany; {2}Universität Siegen, Germany; {3}University of Applied Sciences Ruhr West, Germany

4:45 PM
6622: Node Selection for Asynchronous Multi-Target Tracking in Heterogeneous Sensor Networks
Zishi Zhang{2}, Ye Yuan{2}, Lei Zhu{1}, Jing He{1}, Wei Yi{2}
{1}National Key Laboratory of Electromagnetic Space Security, China; {2}University of Electronic Science and Technology of China, China

5:00 PM
6223: Analysis of Energy-Efficiency and Urban Coverage of Sony ELTRES LPWAN as an Emerging Technology in the UK IoT Network
Yogen Pramudita, Zheng Chew
University of Exeter, United Kingdom

5:15 PM
6049: Average Capacity Analysis and Power Allocation for Data-Gathering Wireless Sensor Networks
Youyang Xiang{2}, Qilong Du{2}, Xianglu Li{2}, Xianhua Shi{2}, Peng Fei{1}, Dong Hou{3}, Jie Tian{2}
{1}High-Tech Institute, The First School, Rocket Force University of Engineering, China; {2}Institute of Electronic Engineering, China Academy of Engineering Physics, China; {3}University of Electronic Science and Technology of China, China

3:30 PM - 5:30 PM
Optical Sensors 2
Room: Kikusui
Session Chair(s): Eric Fujiwara
Michiko Nishiyama

3:30 PM
7239: Real-Time Distributed Strain and Temperature Sensing with Single-Fiber-End Access
Yosuke Mizuno
Yokohama National University, Japan

4:00 PM
7097: Experimental Investigation of Microstructured and Capillary Optical Fibers for Refractive Index Measurement from 1.316 to 1.425 RIU
Ardi Rahman{1}, Flavien Beffara{3}, Haris Apriyanto{1}, Olivier Bernal{1}, Frederic Surre{2}, Georges Humbert{3}, Jean-Louis Auguste{3}, Han Cheng Seat{1}
{1}LAAS-CNRS, University of Toulouse, Toulouse INP, France; {2}University of Glasgow, United Kingdom; {3}XLim, Universite de Limoges, France

4:15 PM
6799: Porous Silicon-Based Absorber Using Integration of Light Trapping and Anti-Reflective Layer
Andras Kovacs, Julien Petit, Volker Bucher, Ulrich Mescheder
Hochschule Furtwangen University, Germany

4:30 PM
6877: Simultaneous Measurement of Refractive Index and Temperature by Cascading Beveled Hollow-Core Fiber and Fiber Bragg Grating
Jia-Yuan Liu{2}, Wen-Fung Liu{1}, Chin-Ping Yu{2}
{1}Feng Chia University, Taiwan; {2}National Sun Yat-sen University, Taiwan

4:45 PM
6576: Terahertz Quasi-MIM Absorber for Integrating with Thin-Film MEMS Bolometers
Zihao Zhao{2}, Kazuho Harada{2}, Chao Li{2}, Isao Morohashi{1}, Ya Zhang{2}
{1}National Institute of Information and Communications Technology, Japan; {2}Tokyo University of Agriculture and Technology, Japan

5:00 PM
6827: All-Solution Processed Organic Fiber Photodetectors
Fangchen Zhu, Xueyuan Wu, Jianhua Xiao, Jiaao Wu, Xing Zheng, Yang Wang
University of Electronic Science and Technology of China, China

5:15 PM
6936: Pulse Repetition Rate and Unwrapping Limits in ϕ-OTDR Fiber Optic Sensing Systems
Danilo Fernandes Gomes{1}, Beatriz Brusamarello{1}, Guilherme Heim Weber{1}, Daniel Rodrigues Pipa{1}, Jean Carlos Cardozo Da Silva{1}, Sérgio Taveira de Camargo Júnior{2}, Manoel Feliciano Da Silva Junior{2}, Cicero Martelli{1}
{1}Federal University of Technology-Paraná, Brazil; {2}Petrobras, Brazil

3:30 PM - 5:30 PM
Wearable Sensors: Materials & Devices
Room: Sumire/Tsutsuji
Session Chair(s): Anna Maria Pappa
Doua Kosaji

3:30 PM
7251: Sensors and System Design for Seamless, Soft Organ Interfaces for Continuous Health Insight
Philipp Gutruf
University of Arizona, United States

3:30 PM
6837: Stretchable Pulse Wave Sensor with a Laser-Induced Graphene-Formed Kirigami Structure
Shintaro Oya, Taisei Kato, Gakuto Kagawa, Rihachiro Nakashima, Hidetoshi Takahashi
Keio University, Japan

4:00 PM
6166: Flexible Electrochemical Biosensor with Graphene and Gold Nanoparticle Modification for Enhanced e-ELISA Point-of-Care Biomarker Detection
Zahrasadat Hosseini, George Jie Yuan
Hong Kong University of Science and Technology, Hong Kong

4:15 PM
6316: Silk Fibroin-Based Flexible Bio-Piezoelectric Sensor for Nasal Flaring Monitoring
Qi Li, Yichu Zhang, Xuexin Duan, Qiannan Xue
Tianjin University, China

4:30 PM
6615: Non-Invasive Real-Time Monitoring of Blood Lactate Using a Low-Power Microwave Sensor
Alex Mason{2}, Olga Korostynska{3}, Jon Dixon{1}, Rob Connell{1}
{1}Applied Monitoring Limited, United Kingdom; {2}Norwegian University of Life Sciences, Norway; {3}Olso Metropolitan University, Norway

4:45 PM
6777: A Wearable EEG Band Based on Spray-Coated Textile Bioelectrodes
Fabrizio Antonio Viola{3}, Andrea Spanu{2}, Antonio Dominguez Alfaro{1}, Miryam Criado-Gonzalez{1}, David Mecerreyes{1}, Annalisa Bonfiglio{2}
{1}POLYMAT, University of the Basque Country, Spain; {2}Scuola Universitaria Superiore IUSS Pavia, Italy; {3}University of Cagliari, Italy

3:30 PM - 5:30 PM
Biosensors 1
Room: Nunobiki
Session Chair(s): Hyejin Moon
Woo Hyoung Lee

3:30 PM
6205: Plasmonic Micropillar Based SERS-Sensing Platform for Integrin Detection of Regulated Cells
Xiaoyu Wu, Ruoyu Feng, Feng Zhu, Zhaodong Zhang, Quanning Li, Xuejiao Chen, Yanyan Wang
Tianjin University, China

3:45 PM
7064: Integrated Silicon-on-Insulator Based Mesh Membrane for Continuous Monitoring in Organs-on-a-Chip
Mariia Zakharova{2}, Mar Cóndor{1}, Sohail Shaikh{1}, Aaron Delahanty{1}, Dries Braeken{1}, Andries van der Meer{2}, Loes Segerink{2}
{1}Interuniversity Microelectronics Centre, Belgium; {2}University of Twente, Netherlands

4:00 PM
7098: Diagnosis of Interstitial Cystitis with Single-Chip Multiplexed Biosensing Array of Urine Biomarkers at the Point-of-Care
Tanzila Noushin{1}, Jinwon Jeong{1}, Muhammad Luqman Haider{2}, Jeong Bong Lee{1}
{1}Baylor University, United States; {2}University of Texas at Dallas, United States

4:15 PM
7144: AC-Driven Aptamer-Decorated Graphene FET for Cortisol Detection
Ali Gilani{1}, Ali Saeidi{3}, Johan Longo{3}, Yann Sprunger{1}, Sadegh Kamaei Bahmaei{1}, Adelina Ameti{2}, Nicolas Niederländer{2}, Nelly Pitteloud{2}, Adrian Mihai Ionescu{1}
{1}École Polytechnique Fédérale de Lausanne, Switzerland; {2}Lausanne University Hospital, Switzerland; {3}Xsensio SA, Switzerland

4:30 PM
6564: Battery-Powered Portable Multiplexed RT-PCR for HIV-1 and HIV-2 Viral Load Testing at LIMIC
Tianyi Liu, Anthony Politza, Md. Ahasan Ahamed, Aneesh Kshirsagar, Weihua Guan
Pennsylvania State University, United States

4:45 PM
6966: A Droplet Screening System for Discovery of Slow-Growing Microbes from Environment Through Long-Term Culture
Byeolnim Oh{3}, Mingyeong Kang{1}, So-Ra Ko{1}, Moon Sung Son{3}, Jaewon Park{2}, Chi-Yong Ahn{1}, Hyun Soo Kim{3}
{1}Korea Research Institute of Bioscience and Biotechnology, Korea; {2}Korea University, Korea; {3}Kwnagwoon University, Korea

5:00 PM
6185: Highly Sensitive Biosensors for Chemicals of Alcohol Metabolism
Kenta Iitani{2}, Yuki Maeno{2}, Geng Zhang{2}, Kenta Ichikawa{2}, Koji Toma{1}, Takahiro Arakawa{3}, Kohji Mitsubayashi{2}
{1}Shibaura Institute of Technology, Japan; {2}Tokyo Medical and Dental University, Japan; {3}Tokyo University of Technology, Japan

3:30 PM - 5:30 PM
Emerging Sensors for Biomedical Applications 1
Room: Sappaire
Session Chair(s): Bonnie Gray

3:30 PM
7267: Recent Progress of Flexible Optical Sensor for Biomedical Sensing
Tomoyuki Yokota
University of Tokyo, Japan

4:00 PM
6117: A Gelatin/Activated Carbon Multifunctional Coating for Future Edible Diagnostic Systems
Valerio Francesco Annese, Giulia Coco, Valerio Galli, Elda Sala, Mario Caironi
Italian Institute of Technology, Italy

4:15 PM
6165: TFT-Based Piezoelectret Sensor for Arterial Pulse Measurement
Chao Ren, Jiani Xu, Zeyuan Cao, Junchi Teng, Xiongying Ye
Tsinghua University, China

4:30 PM
6492: Sense-Based User Interface (SUI) Platforms to Detect Children's Physical and Emotional Behaviors
Sangmin Lee{3}, Jae-Hwan Jang{4}, Young-Hwan Song{3}, Byeong-Sun Park{3}, Yunhee Kim{2}, Byungho Lee{2}, Seok Lee{1}, Yong-Jun Kim{4}, Min-Gu Kim{4}
{1}CREAMO Inc, Korea; {2}Duksung Women's University, Korea; {3}Inha University, Korea; {4}Yonsei University, Korea

4:45 PM
6565: Ex-Vivo Testing of Smart Ureteral Stent Toward Hydronephrosis Monitoring via Standard Stenting
Mohammad Reza Yousefi Darestani, Dirk Lange, Ben H Chew, Kenichi Takahata
University of British Columbia, Canada

5:00 PM
6612: Shape Sensing Stretchable Sensor Grid Towards Camera-Less Motion Capture
Joseph Karam, Aiden Shaevitz, Joseph Davidson, Matthew Johnston
Oregon State University, United States

5:15 PM
6694: Ultra Miniaturized Absolute Rotary Encoder Integrated Into Hinge Joint
Massimiliano Filipozzi{2}, Céline Vergne{1}, Georg Rauter{2}, Philippe Cattin{2}
{1}University of Applied Sciences and Arts Northwestern Switzerland, Switzerland; {2}University of Basel, Switzerland

3:30 PM - 5:30 PM
Pressure Sensors
Room: Ikuta
Session Chair(s): Massood Atashbar
Yi Chiu

3:30 PM
6027: A Flexible Capacitive Pressure Sensor with Improved Sensitivity Over a Broad Pressure Range
Chunyu Lv, Siyi Wei, Ye Li, Tao Lv, Qi Li, Yang Liu, Mengying Xie
Tianjin University, China

3:45 PM
6980: Fibre Optic Interrogated Palpation Sensor for Mechanical Tissue Assessment in Minimally Invasive Surgery
Mark McDonald, Ciara Durcan, Mahmood Saleh, Robert Reuben, Duncan Hand, Yuhang Chen, William MacPherson
Heriot-Watt University, United Kingdom

4:00 PM
7133: A Resonant MEMS Pressure Sensor Utilizing Higher-Order Mode Oscillation
Wenliang Xia, Bo Xie, Yulan Lu, Junbo Wang, Deyong Chen, Jian Chen
Aerospace Information Research Institute, Chinese Academy of Sciences, China

4:15 PM
6441: Design and Test of MEMS Resonant Pressure Sensor with a Novel Membrane Structure
Zichao Zhang{1}, Cun Li{1}, Hong Xue{1}, Le Hao{1}, Kai Bu{1}, Jiabin Ai{1}, Yulong Zhao{2}
{1}Xi'an Jiaotong University, China; {2}Xi'an Jiaotong University, State Key Laboratory for Manufacturing Systems Engineering, China

4:30 PM
6322: A High-Performance Mode-Localized Vacuum Gauge Based on FPGA Closed-Loop Control
Jiaxin Qin, Mengyang Zhou, Junbo Wang, Deyong Chen, Bo Xie, Yulan Lu, Nan Li, Zhaoyuan Tan, Jian Chen
Aerospace Information Research Institute, Chinese Academy of Sciences, China

4:45 PM
6234: High-Pressure Silicon Resonant Microsensor Based on Microbeam Arrays
Pengxiang Ye, Zongze Yu, Pan Qian, Deyong Chen, Junbo Wang, Bo Xie, Yulan Lu
Aerospace Information Research Institute, Chinese Academy of Sciences, China

3:30 PM - 5:30 PM
Data Processing & AI for Automotive Applications
Room: Waraku2
Session Chair(s): Nitin Myers

3:30 PM
7256: Simulating Next-Gen Automotive Sensors: Physics Meets AI
David Van Hamme
Ghent University, IPI-imec, Belgium

4:00 PM
7067: Sparsity-Aware Occupancy Grid Mapping for Automotive Driving Using Radar-LiDAR Fusion
Peiyuan Zhai{1}, Geethu Joseph{1}, Nitin Jonathan Myers{1}, Çağan Önen{2}, Ashish Pandharipande{2}
{1}Delft University of Technology, Netherlands; {2}NXP Semiconductors Inc., Netherlands

4:15 PM
6471: Fostering Sparsity in Sparse Convolution Networks for Efficient 3D Perception via Feature-Guidance
Nico Leuze{2}, Henry Schaub{1}, Maximilian Hoh{1}, Samed Doğan{1}, Nicolas Rodriguez-Peña{1}, Nikolas Voss{1}, Alfred Schöttl{2}
{1}Munich University of Applied Science, Germany; {2}Munich University of Applied Sciences, Germany

4:30 PM
6163: Visual and Inertial Sensor Fusion Approach for Visual Inertial Odometry Used in Vehicle Localization
Hyunseup Jo{1}, Sang Won Yoon{2}
{1}Hanyang University, Korea; {2}Seoul National University, Korea

4:45 PM
7118: Low Complexity Dynamic Obstacle Detection for Intelligent Road Infrastructure
Tiana Rakotovao, Paul Ménard, Carolynn Bernier
Université Grenoble Alpes, CEA-List, France

5:00 PM
6593: Transmit Beamforming for Phased Array Radars Under Uncertain Occupancy Grid Map Information
Edoardo Focante{1}, Nitin Jonathan Myers{1}, Geethu Joseph{1}, Ashish Pandharipande{2}
{1}Delft University of Technology, Netherlands; {2}NXP Semiconductors Inc., Netherlands

5:15 PM
6484: Physically Accurate LiDAR Simulation for Automotive Digital Twins
Martin Dimitrievski{1}, David Van Hamme{2}, Wilfried Philips{2}
{1}Ghent University, Belgium; {2}Ghent University, IPI-imec, Belgium

3:30 PM – 6:00 PM
Industry Session
Room: Cosmopolitan

7:00 AM – 8:00 AM
Registration
Room: Kairaku Foyer

8:15 AM – 8:30 AM
IEEE Sensors Council Introduction by Sensors Council President
Room: Portopia Hall

8:30 AM – 9:30 AM
KN2: Prof. Andrew Cleland: Emitting and sensing individual surface acoustic wave phonons
Room: Portopia Hall

9:30 AM – 10:00 AM
Coffee Break
Room: Kairaku

10:00 AM - 11:00 AM
Gas Sensors & MEMS
Room: Nojigiku
Session Chair(s): Gou-Jen Wang
Jose Ilton De Oliveira Filho

10:00 AM
7214: Highly Selective MEMS Gas Sensor to Detect H2 and NH3 with Tunable Discrimination
Wenjun Yan{2}, Wenxin Luo{1}, Jianhao Li{1}, Mingjie Li{1}
{1}Guangdong University of Technology, China; {2}Hangzhou Dianzi University, China

10:15 AM
6772: Piezoelectric MEMS Flexural-Plate-Wave Transducer for Alignment of Microparticles in a Drying Droplet
Alessandro Nastro{3}, Marco Baù{3}, Marco Ferrari{3}, Libor Rufer{1}, Skandar Basrour{2}, Vittorio Ferrari{3}
{1}Advanced Dicing Technologies Ltd., MEMS, France; {2}CNRS, Grenoble INP, TIMA, University Grenoble Alpes, France; {3}Università degli Studi di Brescia, Italy

10:30 AM
7001: Improvement in Performance of InAs Surface Quantum Dot Heterostructure-Based H2S Gas Sensor by Introducing Buried Quantum Dot Layer
Manas Ranjan Mantri{2}, Debi Prasad Panda{1}, Deepak Punetha{3}, Sushil Kumar Pandey{5}, Vivek Pratap Singh{4}, Saurabh Kumar Pandey{4}, Subhananda Chakrabarti{2}
{1}Atomic, Molecular and Optical Physics Division, Physical Research Laboratory Ahmedabad, India; {2}Indian Institute of Technology Bombay, India; {3}Indian Institute of Technology Bombay and Motilal Nehru National Institute of Technology, India; {4}India

10:45 AM
7171: Subpixel Patterned LSPR Gas Sensor Array with Using Inkjet Printing Au/Ag Nanoparticle to Enhance the Selectivity
Tianshu Jiang, Xiao Ye, Lingpu Ge, Hao Guo, Fumihiro Sassa, Kenshi Hayashi
Kyushu University, China; Kyushu University, Japan

10:00 AM - 11:00 AM
Sensor Phenomenology, Modeling & Evaluation 1
Room: Waraku1
Session Chair(s): Arum Han
Tao Li

10:00 AM
7246: Microneedle Array Patch as Biomedical Sensors in Collecting ISF and Subsequent Biomarker Analysis
Jongho Park, Beomjoon Kim
University of Tokyo, Japan

10:30 AM
6875: Gas Sensing Kinetic Analysis: A Theoretical Approach Towards Multiple Gas Discrimination
Snehanjan Acharyya{1}, Prasanta Kumar Guha{2}, Soumyo Mukherji{1}
{1}Indian Institute of Technology Bombay, India; {2}Indian Institute of Technology Kharagpur, India

10:45 AM
6901: Phenomenological Model for a Light-Activated Gas Sensor
Juan Luis Soler-Fernández{2}, Olga Casals{2}, Cristian Fàbrega{2}, Angel Diéguez{2}, Juan Daniel Prades{1}, Oscar Alonso{2}
{1}Technische Universität Braunschweig, Germany; {2}Universitat de Barcelona, Spain

10:00 AM - 11:00 AM
Signal Processing in Specific Applications
Room: Kitano
Session Chair(s): Kam Weng Tam
Takashi Ozaki

10:00 AM
7260: GajGamini: Mitigating man-Animal Conflict by Detecting Moving Elephants Using Ground vibration-Based Seismic Sensor
Chandan Chandan{1}, Mainak Chakraborty{1}, Sahil Anchal{1}, Bodhibrata Mukhopadhyay{2}, Subrat Kar{1}
{1}Indian Institute of Technology Delhi, India; {2}Indian Institute of Technology Roorkee, India

10:15 AM
7244: New Sensory Method for Neural Activity by Frequency Upconversion with Non-Linear Element
Andrea Bontempi{2}, Ali Meimandi{1}, Gian Luca Barbruni{1}, Paolo Stefano Crovetti{2}, Danilo Demarchi{2}, Sandro Carrara{1}, Paolo Motto Ros{2}
{1}EPFL, Switzerland; {2}Politecnico di Torino, Italy

10:30 AM
7242: Analysis of Recorded Surface Electromyography Signals Under Varied Muscle Fiber Proportions Using Fractal Dimension
Abhijith M, Remya R. Nair, Venugopal G.
N.S.S. College of Engineering, Palakkad, India

10:45 AM
7277: Impact of Scaling Up the Sensor Sampling Frequency on the Reliability of Edge Processing Systems in Tolerating Soft Errors Caused by Neutrons
Matheus Minelli de Carvalho{2}, Luiz Henrique Laurini{3}, Emmanuel Atukpor{1}, Lirida Naviner{2}, Rodrigo Possamai Bastos{3}
{1}Institut Laue-Langevin, France; {2}Telecom Paris, France; {3}Université Grenoble Alpes, France

10:00 AM - 11:00 AM
Imaging Technologies 1
Room: Kikusui
Session Chair(s): Kaili Wang
Hyeon-June Kim

10:00 AM
6539: In the Realm of Aerial Deception: UAV Classification via ISAR Images and Radar Digital Twins for Enhanced Security
Ahmed Sayed, Omar Ramahi, George Shaker
University of Waterloo, Canada

10:15 AM
7195: HFR-video-Based 3D Software Sensor for Bridge Displacement Monitoring
Feiyue Wang{1}, Wenxiang Qin{1}, Kohei Shimasaki{1}, Idaku Ishii{1}, Hiroshi Matsuda{2}
{1}Hiroshima University, Japan; {2}Nagasaki University, Japan

10:30 AM
7224: Region Selective Stereo Vision
Partha Gouda, Uzma Ahmed Din, Henry Leung
University of Calgary, Canada

10:00 AM - 11:00 AM
Optical Sensors 4
Room: Sumire/Tsutsuji
Session Chair(s): Kodai Kikuchi

10:00 AM
6278: Dynamic Compensation of Quasi-Static Magnetic Field for Array Optically Pumped Magnetometers
Yaqiong Niu, Longsheng Cheng, Sitong Chen, Yutong Wei, Chaofeng Ye
ShanghaiTech University, China

10:15 AM
6529: Optical Long Base Hydrostatic Tiltmeter for Slow Earthquake Detection
Han Cheng Seat{4}, Michel Cattoen{4}, Haris Apriyanto{4}, Frédérick Boudin{2}, Yasmine Nmili{1}, Pascal Bernard{3}, El-Madani Aissaoui{3}, Alexandra Mavroeidi{5}, Efthimios Sokos{6}
{1}Geology Laboratory, École Normale Supérieure – PSL, France; {2}Geology Laboratory, École Normale Supérieure de Lyon – PSL, France; {3}Institut de Physique du Globe de Paris, Université Paris Cité, France; {4}LAAS-CNRS, University of Toulouse, Toulouse

10:30 AM
6720: Development of Microfluidic Platform for Refractive Index Measurement of Liquid
Taeyeong Kim, Minwoo Choi, Bong Jae Lee, Jungchul Lee
Korea Advanced Institute of Science and Technology, Korea

10:00 AM - 11:00 AM
Sensor Systems: Applications 1
Room: Nunobiki
Session Chair(s): Kengo Ohnishi
Chang-hee Won

10:00 AM
6415: Portable Intelligent Multi-Channel Electrochemical Analytical System with Self-Reconstruction Strategy and Edge Computing
Zhuoheng Li{3}, Hongyi Sun{1}, Tao Wang{2}, Wangze Ni{3}, Jiaqing Zhu{4}, Weiwei Cheng{4}, Bowei Zhang{2}, Fuzhen Xuan{2}, Jianhua Yang{3}, Min Zeng{3}, Nantao Hu{3}, Zhi Yang{3}
{1}East China Normal University, China; {2}East China University of Science and Technology, China; {3}Shanghai Jiao Tong University, China; {4}Shanghai University of Engineering Science, China

10:15 AM
6836: A Plug-In OCT Module for in Situ Live Monitoring of Laser Processing
Jinhan Zhao, Chaoliang Zhang, Jiangshan Ai, Yaoyu Ding
University of Electronic Science and Technology of China, China

10:30 AM
6848: Extraction of Voluntary Muscle Contraction Based on PCA Reconstruction Error with a Reference of Skin Deformation at Passive Movement
Sung-Gwi Cho, Takuya Shimomura, Kengo Ohnishi
Tokyo Denki University, Japan

10:45 AM
6919: Signal Response Investigation of Skin Deformation and sEMG on the Biceps Brachii Muscle During Isometric Elbow Flexion
Takuya Shimomura, Sung-Gwi Cho, Hirochika Matsui, Kengo Ohnishi
Tokyo Denki University, Japan

10:00 AM - 11:00 AM
Chemical, Electrochemical & Gas Sensors 4
Room: Sappaire
Session Chair(s): Hamida Hallil
Jeong-O Lee

10:00 AM
6934: High Performance Hydrogen Sensors Based on Tellurium Nanobelt Field-Effect Transistors
Yu Guo, Jianping Zhang, Zhen Yuan, Huiling Tai
University of Electronic Science and Technology of China, China

10:15 AM
6203: Incorporation of C-Coated V2O5 Nanoballs with TiO2 Nanorod Arrays for Self-Powered Electrochemical Broadband Photodetectors
Zexiang Luo{2}, Hongyu Chen{2}, Shangyu Liu{2}, Xue Li{1}, Lifeng Zhang{1}, Haisheng San{2}
{1}China Institute of Atomic Energy, China; {2}Xiamen University, China

10:30 AM
7010: UV Irradiated MoO3 Thin Film for Sensing of Dibutyl Sulfide: A Mustard Gas Simulant
Jatinder Pal Singh, Anjali Sharma, Monika Tomar, Arijit Chowdhuri
University of Delhi, India

10:45 AM
6294: Ni3S2 -HCSs Modified Polyaniline: Enhanced Ethanol Detection at Room Temperature
Clinton M. Masemola{1}, Paul Fadojutimi{1}, Manoko Maubane-Nkadimeng{1}, Zikhona N. Tetana{1}, Nosipho Moloto{1}, Siziwe Gqoba{1}, Ella C. Linganiso-Dziike{2}
{1}University of the Witwatersrand, South Africa; {2}University of the Witwatersrand / Sefako Makgatho Health Science University, South Africa

10:00 AM - 11:00 AM
Flow Sensors
Room: Ikuta
Session Chair(s): Massood Tabib-Azar
Sarafianou Mantalena

10:00 AM
6922: SiC Micro-Hot Wires for Flow Measurement in Harsh Environments
Sylvain Kern{2}, Aurélien Mazzamurro{2}, Cécile Ghouila-Houri{2}, Thomas Arnoult{4}, Romain Viard{1}, Djamila Hourlier{2}, Laure Tandt{2}, Philippe Pernod{2}, Marc Portail{3}, Abdelkrim Talbi{2}
{1}Endress Hauser, Germany; {2}IEMN, Université de Lille, CNRS, Centrale Lille, Université Polytechnique Hauts-de-France, France; {3}Research Center for Heteroepitaxy and its Applications, CNRS, Université Côte d'Azur, France; {4}von Karman Institute for

10:15 AM
6092: Harnessing the Fourth Dimension Through Nonlinear Damping in Optical Fiber Flow Sensing
Jeremiah Williams, Hengky Chandrahalim
U.S. Air Force Institute of Technology, United States

10:30 AM
6504: Hot Microtube Flowmetry with Heater-Integrated Microchannel Resonators
Juhee Ko, Jungchul Lee
Korea Advanced Institute of Science and Technology, Korea

10:45 AM
6572: Dual-Measurement Pitot Tube Type Airflow and Waterflow Speed Sensor for Seabird Biologging
Kyota Shimada, Takuto Kishimoto, Hidetoshi Takahashi
Keio University, Japan

10:00 AM – 3:30 PM
WS: Body Sensing for advanced Human Machine Interface
Room: Topaz

11:00 AM - 12:00 PM
Physical Sensors & Tactile Sensors
Room: Nojigiku
Session Chair(s): Changzhi Li
Manuchehr Soleimani

11:00 AM
7189: Design, Fabrication, and Validation of a Flexible Tactile Sensor for a Hand Prosthesis
Dai-Dong Nguyen{2}, Wu-Chi Xie{2}, Shun-Feng Su{2}, Chung-Hsien Kuo{1}
{1}National Taiwan University, Taiwan; {2}National Taiwan University of Science and Technology, Taiwan

11:15 AM
7211: Design, Fabrication, and Characterization of a Multi-Curved Surface Fusion Metal Resonant Gyroscope
Qi Cai{2}, Xiaoming Zhang{2}, Xue Liu{2}, Weiqiang Wei{2}, Chong Shen{2}, Chong Li{3}, Huafeng Liu{1}, Huiliang Cao{2}
{1}Huazhong University of Science and Technology, China; {2}North University of China, China; {3}Ocean University of China, China

11:30 AM
7216: A Novel Vanadium Dioxide-Based Dual-Heater Microfluidic Thermal Flow Sensor with Record High Sensitivity
Yunqi Cao{2}, Yushan Zhou{2}, Shuyu Fan{2}, Haozhen Chi{2}, Nelson Sepúlveda{1}, Dibo Hou{2}, Hongjian Zhang{2}
{1}Michigan State University, United States; {2}Zhejiang University, China

11:00 AM - 12:00 PM
Magnetic Sensors
Room: Waraku1
Session Chair(s): Jung Keun Lee
Ye Chaofeng

11:00 AM
6538: Flat Magnetic X–Y Alignment Sensor
Pavel Ripka{1}, Mehran Mirzaei{2}, Jiri Maier{2}
{1}Czech Technical University in Prague, Czech Rep.; {2}Faculty of Electrical Engineering, Czech Technical University in Prague, Czech Rep.

11:15 AM
7243: Generation of Absolute Patterns for Magnetic Encoders of Arbitrary Size with De-Bruijn Sequences
Jen-Yuan Chang, Kai-Yang Peng
National Tsing Hua University, Taiwan

11:30 AM
7272: Strain Modulated, Multiferroic Magnetic Field Sensor for Operation Up to 500C
Sydney Acosta{2}, Jonathan Tan{2}, Muhammed Zubair Aslam{2}, Zekun Li{2}, Thomas Mion{1}, Margo Staruch{1}, Michael D'Agati{2}, Peter Finkel{1}, Konrad Bussmann{1}, Mark Allen{2}, Roy Olsson{2}
{1}U.S. Naval Research Laboratory, United States; {2}University of Pennsylvania, United States

11:45 AM
7290: Estimation of Tension Force in Tension Members Using GRU Algorithm Based on Yoke Type Elasto-Magnetic Sensor Data
Ho-Jun Lee, Sae-Byeok Kyung, Sung-Won Kim, Eun-Yul Lee, Ju-Won Kim
Dongguk University WISE, Korea

11:00 AM - 12:00 PM
Sensor Electronics and Systems
Room: Kitano
Session Chair(s): Toshikazu Nishida
Mariangela Filosa

11:00 AM
6556: A Capacitive Sensor Readout IC with Antenna-Integrated Sensor for Proximity Detection in Handheld Mobile Devices
Ting-Li Hsu{2}, Amelie Hagelauer{2}, Valentyn Solomko{1}
{1}Infineon Technologies AG, Germany; {2}Technische Universität München, Germany

11:15 AM
7266: Ripe Stage Classification of Chausa and Banganapallle Mango Using Fractional Order Colpitts Oscillator
Agniv Tapadar, Dibakar Roy, Avishek Adhikary
Indian Institute of Technology Bhilai, India

11:30 AM
7268: Study of Triboelectric Potential for Tunable contact-Electrification Field Effect Transistors
Michael McKinlay{1}, Mahdieh Shojaei Bagh{1}, Manuel Pelayo Garcia{2}, Bhavani Yalagala{1}, Hadi Heidari{1}, Des Gibson{2}, Carlos Garcia Nunez{1}
{1}University of Glasgow, United Kingdom; {2}University of the West of Scotland, United Kingdom

11:45 AM
6914: Low-Power radar-Based System for real-Time Object Recognition
Anna Coletti{1}, Alessio Sanna{2}, Christian Cipriani{1}, Enzo Mastinu{1}
{1}BioRobotics Institute, Scuola Superiore Sant'Anna, Italy; {2}Politecnico di Torino, Turin, Italy

11:00 AM - 12:00 PM
Imaging Technologies 2
Room: Kikusui
Session Chair(s): Pietro Ibba

11:00 AM
6579: Clear Image Acquisition by 3D High-Speed Vibration Tracking of Object with Various Shapes Under High Magnification
Shinnosuke Yonezu{2}, Yuji Yamakawa{1}
{1}Institute of Industrial Science, The University of Tokyo, Japan; {2}Persol Cross Technology Co., Ltd./Institute of Industrial Science, The University of Tokyo, Japan

11:15 AM
7241: LIDAROC: Realistic Lidar Cover Contamination Dataset for Enhancing Autonomous Vehicle Perception Reliability
Grafika Jati{2}, Martin Molan{2}, Francesco Barchi{2}, Andrea Bartolini{2}, Giuseppe Mercurio{1}, Andrea Acquaviva{2}
{1}FEV Italia s.r.l., Italy; {2}University of Bologna, Italy

11:30 AM
7245: A Quantum-dot-Coated Image Sensor with a Wide-Spectral Sensitivity from X-Rays to SWIR Photons
Chun-Min Zhang{1}, Riccardo Quaglia{1}, Artem Shulga{2}, Vincent Goossens{2}, Paula Blanca Cruz{1}, Pierre-François Rüedi{1}
{1}CSEM S.A., Switzerland; {2}QDI Systems, Netherlands

11:45 AM
6586: Detection of Honeybee Flower-Visiting Activities in Wide Areas Using High-Speed Vision
Junhao Li{1}, Kohei Shimasaki{1}, Idaku Ishii{1}, Mari Ogihara{2}, Mikio Yoshiyama{2}
{1}Hiroshima University, Japan; {2}National Agricultural Research Organization, Japan

11:00 AM - 12:00 PM
Medical Applications
Room: Sumire/Tsutsuji
Session Chair(s): Olga Korostynska
Tomoyuki Yokota

11:00 AM
7210: Human Activity Understanding Through Explainable Audio-Visual Features
Julio Valdes{2}, Zara Cook{4}, Jack Wang{3}, Bruce Wallace{1}, Brady Laska{1}, James Green{1}, Rafik Goubran{1}, Pengcheng Xi{2}
{1}Carleton University, Canada; {2}National Research Council Canada, Canada; {3}University of Waterloo, Canada; {4}University of Waterloo, National Research Council Canada, Canada

11:15 AM
7233: Formulating a Knee Pain Risk Metric Using an in-Shoe Motion Sensor Compatible with the Implicit Knowledge of Clinical Experts
Kazuki Ihara, Chenhui Huang, Fumiyuki Nihey, Hiroshi Kajitani, Kentaro Nakahara
NEC Corporation, Japan

11:30 AM
7238: Assessment of Emotion Elicitation Using Multimodal Physiological Sensors and Phase Synchronization
Sourabh Banik{2}, Himanshu Kumar{2}, Nagarajan Ganapathy{1}, Ramakrishnan Swaminathan{2}
{1}Indian Institute of Technology Hyderabad, India; {2}Indian Institute of Technology Madras, India

11:45 AM
7296: Multiclass Gait Phase Classification from the Temporal Convolutional Network of Wireless Surface Electromyography Measurements
V Mallikarjuna Reddy M{1}, Pandian P S{1}, Karthick P A{2}
{1}DRDO, India; {2}National Institute of Technology Tiruchirappalli, India

11:00 AM - 12:00 PM
Emerging Microwave, Wireless, & Telemetry Sensors
Room: Nunobiki
Session Chair(s): Pai-Yen Chen

11:00 AM
6491: Microwave Filtering Sensor for Simultaneous Materials Characterization and Wireless Communication
Zhuowei Zhang{4}, Kam-Weng Tam{4}, Gang Zhang{3}, Chi-Hou Chio{4}, Desen Li{4}, Xin Zhou{4}, Qiwei Chen{5}, Junxiao Liu{5}, Kong Ngai{4}, Cheng Teng{1}, Hon-Pan Sio{2}
{1}Laxen Technology Ltd, China; {2}Macao Science Centre, China; {3}Nanjing Normal University, China; {4}University of Macau, China; {5}Zhuhai Wujing Technology Ltd, China

11:15 AM
7094: Multi-Modal Photo-Responsive Planar Microwave Resonant-Based Colorimetric Analysis of Liquid-Color Compound for Biomedical Applications
Zahra Sarpanah Sourkouhi, Vishal Balasubramanian, Mohammad Zarifi
University of British Columbia, Canada

11:30 AM
6880: Estimating Suture Needle Size via Selective Detuning of Chipless RFID Tags
Florian Geiss, Rahul Bhattacharyya, Denise Tellbach, Sanjay Sarma
Massachusetts Institute of Technology, United States

11:45 AM
6522: Integrated Acoustic-Optic-Magnetic Sensing: Enabling Telemetry via Submarine Cables
Shaojian Yang{3}, Yiran Wei{5}, Xingbin Tu{3}, Ke Jing{4}, Yijin Xie{5}, Tao Zhu{1}, Mingjiu Zuo{2}, Fengzhong Qu{5}
{1}Chongqing University, China; {2}Naval University of Engineering, China; {3}Ocean College, Zhejiang University, China; {4}University of Science and Technology of China, China; {5}Zhejiang University, China

11:00 AM - 12:00 PM
Chemical, Electrochemical & Gas Sensors 5
Room: Sappaire
Session Chair(s): Hamida Hallil
Jeong-O Lee

11:00 AM
6480: Metal-Oxide-Semiconductor Nanostructured Sensors with P-N Heterojunctions on Metal Foil for Ionic Solution Detection
Yoshinari Kimura, Hironori Tohmyoh
Tohoku University, Japan

11:15 AM
6486: Onion Spoilage Detection Using PEDOT Coated Paper Based Sensor
Satish Kumar{1}, Snehanjan Acharyya{1}, Debasmita Mondal{2}, Shubhi Soni{1}, Suparna Mukherji{1}, Soumyo Mukherji{1}
{1}Indian Institute of Technology Bombay, India; {2}Thapar Institute of Engineering and Technology, India

11:30: AM
7101: Multiarray Gas Sensors Based on Nanoporous Layers Produced à la Carte by Spark Ablation Using Metal Oxides, Binary and Ternary Alloys
Leandro Sacco{3}, Niels Schouten{3}, Larissa Egger{1}, Maxim Popov{1}, Anton Köck{1}, Christoph Dösinger{2}, Lorenz Romaner{2}
{1}Materials Center Leoben Forschung GmbH, Austria; {2}Montanuniversität Leoben, Austria; {3}VSParticle B.V, Netherlands

11:45 AM
6855: Nd Modified Bismuth Ferrite Perovskite for Efficient Subtle NO2 Monitoring
Abhijit Narayan Eshore, Bidesh Mahata, Dipak Kumar Goswami, Prasanta Kumar Guha
Indian Institute of Technology Kharagpur, India

11:00 AM - 12:00 PM
Inertial Sensors
Room: Ikuta
Session Chair(s): Yi Chiu

11:00 AM
6796: An Ultra-High Bandwidth Piezoelectric MEMS Accelerometer Towards Condition-Based Monitoring
Yiyao Liu{2}, Ye Yuan{2}, Yi Gong{2}, Boyun Zhang{1}, Danyang Zheng{2}, Wei Pang{1}, Menglun Zhang{1}
{1}State Key Laboratory of Precision Measurement Technology and Instruments, Tianjin University, China; {2}Tianjin University, China

11:15 AM
7148: A New Nonlinear Micromechanical Structure Used in MEMS Inertial Sensors
Milad Seifnejad Haghighi, Peyman Firoozy, Mikhail Kanygin, Emad Esmaeili, Behraad Bahreyni
Simon Fraser University, Canada

11:30 AM
6303: A Novel Phase Error Quantitative Characterization Method for Whole-Angle Micro Hemispherical Resonant Gyroscope
Weiyou Chen, Anlan Ding, Xukai Ding, Hongsheng Li
Southeast University, China

11:45 AM
6403: Low Noise Temperature Compensation Strategy for North-Finding MEMS Gyroscope
Chongyang Ma, Jie Lin, Yang Zhao, Qin Shi, Guoming Xia, Anping Qiu, Jinyang Huang
Nanjing University of Science and Technology, China

11:00 AM - 12:00 PM
Data Processing & AI for Electronic Nose & Gas Sensing
Room: Waraku2
Session Chair(s): André Lazzaretti

11:00 AM
6410: Portable and Versatile Electronic Nose System Based on Edge Computing and Multi-Task Model
Wangze Ni{3}, Tao Wang{1}, Jiaqing Zhu{4}, Zhuoheng Li{3}, Lechen Chen{3}, Weiwei Cheng{4}, Haixia Mei{2}, Fuzhen Xuan{1}, Jianhua Yang{3}, Min Zeng{3}, Nantao Hu{3}, Zhi Yang{3}
{1}East China University of Science and Technology, China; {2}Key Lab Intelligent Rehabil & Barrier free Disable (Ministry of Education), Changchun University, China; {3}Shanghai Jiao Tong University, China; {4}Shanghai University of Engineering Science,

11:15 AM
6254: Ensemble Learning-Based Pork Freshness Classification with a Batteryless Sensor Tag
Yudi April Nando, Ngoc-Dau Mai, Wan-Young Chung
Pukyong National University, Korea

11:30 AM
6903: A Data Driven Correction Algorithm for Inverse Problems with Application to Spectral Reconstruction
Jonathan Laubmann{2}, Stefan Saloman{2}, Julio Wissing{2}, Wladimir Tschekalinskij{1}, Sebastian Hettenkofer{2}, Alessio Stefani{2}, Teresa Scholz{2}
{1}DUALQUANT GmbH, Germany; {2}Fraunhofer Institute for Integrated Circuits IIS, Germany

11:45 AM
6411: DMGAN: Bridging AI and Chemistry with Enhanced GC-MS Data Generation
Namkyung Yoon, Hwangnam Kim
Korea University, Korea

12:00 PM – 1:30 PM
Lunch
Room: Ohwada

12:00 PM – 1:30 PM
WiSe Networking Lunch
Room: Ohwada

1:30 PM - 3:30 PM
Optical Sensor & Measurement Technologies
Room: Nojigiku
Session Chair(s): Shunsuke Yoshimoto
Aloysius Adya Pramudita

1:30 PM
6648: A Novel Sers Substrate Containing Silver Nanoparticle-Deposited Photoresist Microcone Array for Sensitive Biosensing
Ying-Ting Lin, Sheng-Hsiang Wang, Yu-Hsin Tseng, Jyun-Tu Chen, Cheng-Chung Chang
National Chung-Hsing University, Taiwan

1:45 PM
6741: Al0.5Zn0.5O:In-Based Photodetectors: Metal-Semiconductor-Metal and Heterojunction for Deep-UV Sensing
Han-Yin Liu{2}, Yi-Jie Liu{1}, Zhen-Yuan Huang{1}
{1}National Sun Yae Sen University, Taiwan; {2}National Sun Yat-sen University, Taiwan

2:00 PM
7018: Time-Resolved Dosimetry of Pulsed Photon Beams for Radiotherapy Based on Diamond Detector
Sara Pettinato{2}, Marco Girolami{1}, Riccardo Olivieri{5}, Antonella Stravato{4}, Cristina Caruso{3}, Stefano Salvatori{2}
{1}Istituto di Struttura della Materia, Consiglio Nazionale delle Ricerche (ISM-CNR), Italy; {2}Niccolo' Cusano University, Italy; {3}U.O.C. Radioterapia, Azien-da Ospedaliera “San Giovanni – Addolorata”, Italy; {4}U.O.C. Radioterapia, Azienda Ospedaliera

2:15 PM
7140: Pattern-Recognition-Based Dual-Point Fiber Temperature Sensor Using a Reliable Synthetic Database
Jonathan Esquivel-Hernandez{1}, Rodolfo Martinez-Manuel{1}, Luis Valentin-Coronado{1}, David Barrera{2}, Salvador Sales{2}
{1}Centro de Investigaciones en Optica, A.C., Mexico; {2}Universitat Politècnica de València, Spain

2:30 PM
7194: An Optimized Integrated Optical Coupled Micro Ring Resonator for Low Pressure Sensing
Venkateswara Kolli{2}, Srinivas Talabattula{1}
{1}Indian Institute of Science,Bangalore, India; {2}Malnad College of Engineering, Hassan, India

2:45 PM
6619: A Low-Cost Multiplexed Relative Humidity Sensor Using Polymer Optical Fiber Based on Intensity Variation
Abdul Ghaffar{4}, Sadam Hussain{4}, Sayed Hyder Abbas Musavi{3}, Mujahid Mehdi{2}, Noor Ummi Hazirah Hani Zalkepali{5}, Jie Lin{4}, Jianping Yu{4}, Muhammad Chattal{1}, Kun Lan{4}, Lei Cao{4}
{1}Aror University, China; {2}Aror University of Art Architecture Design & Heritage Sindh, Pakistan; {3}Mehran University of Engineering & Technology Shaheed Zulfiqar Ali Bhutto Campus, Khairpur Mir's, Pa, Pakistan; {4}Quzhou University, China; {5}Univers

3:00 PM
6825: Experimental Demonstration of Peak Wavelength Measurement of Multiplexing Fiber Bragg Gratings Using Convolutional Neural Network
Tatsuya Yamaguchi, Hiroto Kawashima, Hiroki Matsuda, Yukitaka Shinoda
Nihon University, Japan

3:15 PM
7150: Performance Enhancement of an Ag–Au Bimetallic SPR Sensor: a Theoretical and Experimental Study
Roshni Babu{2}, Hamish Colenso{3}, Gideon Gouws{3}, Baptiste Auguié{3}, Ciaran Moore{1}
{1}University of Canterbury, New Zealand; {2}University of Southampton, United Kingdom; {3}Victoria University of Wellington, New Zealand

1:30 PM - 3:30 PM
Acoustic, Piezoelectric, and Wireless Sensors and Technologies
Room: Waraku1
Session Chair(s): Jian Luo
André Eu Lazzaretti

1:30 PM
7274: Inductive Sensor Based on Micromachined Coil for Conductive Target Detection
Alessandro Nastro{2}, Marco Baù{2}, Marco Ferrari{2}, Fabrizio Cerini{1}, Dario Paci{1}, Silvia Adorno{1}, Francesco Foncellino{1}, Vittorio Ferrari{2}
{1}STMicroelectronics, Italy; {2}Università degli Studi di Brescia, Italy

1:45 PM
6584: Local Maximum Capacitance at non-Zero lift-Off for Underwater Capacitive Sensing
Ruixuan Qi{3}, Doekle Yntema{2}, Guangda Lei{2}, Ming Cao{1}
{1}University of Groningen, Netherlands; {2}Wetsus, Netherlands; {3}Wetsus/University of Groningen, Netherlands

2:00 PM
7004: Force Myography for Motion Intention Detection Based on 3D-Printed Piezoelectric Sensors
Stephan Schaumann{3}, Bastian Latsch{3}, Niklas Schäfer{3}, Omar Ben Dali{3}, Julian Seiler{3}, Jennifer Raynaud{1}, Martin Grimmer{3}, Herta Flor{1}, Philipp Beckerle{2}, Mario Kupnik{3}
{1}Central Institute of Mental Health, Germany; {2}Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany; {3}Technische Universität Darmstadt, Germany

2:15 PM
6602: A High-Dynamic-Range Ultrasound Receiver with Dual-Mode Time Gain Compensation
Guan-Yu Chen{1}, Tsung-Heng Tsai{2}
{1}National Chung Cheng University, Taiwan; {2}National Yang Ming Chiao Tung University, Taiwan

2:45 PM
7209: Highly Sensitive Flexible Pressure Sensor Based on PVDF-TrFE-BaTiO3 Piezoelectric Nanofibers
Qinrong He{1}, Hadi Heidari{2}, Dagou Zeze{1}, Ensieh Hosseini{1}
{1}Durham University, United Kingdom; {2}University of Glasgow, United Kingdom

3:00 PM
7295: Photoacoustic Sensing System for non-Invasive and real-Time Measurement of Paint's Viscosity in Flowing Conditions
Abhijeet Gorey, Rajat Das, Chirabrata Bhaumik, Tapas Chakravarty, Arpan Pal
Tata Consultancy Services, Research, India

1:30 PM - 3:30 PM
Mechanical Sensors
Room: Kitano
Session Chair(s): Joseph Andrews
Patrick French

1:30 PM
7222: Moisture-Resilient and Temperature-Insensitive Graphene-Coated Thread-Based Strain Sensor with Waterborne Polyurethane Encapsulation
Kwong Long Wong, Pei Song Chee, Chun Hui Tan, Eng Hock Lim
Universiti Tunku Abdul Rahman (UTAR), Malaysia

1:45 PM
7225: Force Distribution Sensor Based on Externally Observable Three-Dimensional Shape Deformation Information
Ryuichi Ikeya, Yoshifumi Nishida
Tokyo Insititute of Technology, Japan

2:15 PM
7257: Embedding PVDF-Based Force Sensors in Stacked Printed Circuit Boards
Sebastian Lang{2}, Wolfgang Hilber{2}, Herbert Enser{1}, Tina Mitteramskogler{2}, Bernhard Jakoby{2}
{1}EundE Elektronik GmbH, Austria; {2}Johannes Kepler University Linz, Austria

2:30 PM
7254: Nature-Inspired Dual-Sensor Thread for Independent Measurement of Internal Temperature and Strain in Cast Parts or Fabrics
Wolfgang Hilber{1}, Hanny Albrecht{2}, Bernhard Jakoby{1}
{1}JKU Linz, Austria; {2}Pro2Future GmbH, Austria

3:00 PM
7288: A Skin Tension Controller for Chronic Skin Wound Enabled by Flexible Strain Gauges
Tong Guan, Siyu Deng, Shudong Wang, Huicong Du, Maoguo Shu, Yunjia Li
Xi'an Jiaotong University, China

3:15 PM
7240: Learning Pressure Sensor Drifts from Zero Deployability Budget
Francesco Saccani{2}, Danilo Pau{1}, Michele Amoretti{2}
{1}STMicroelectronics, Italy; {2}University of Parma, Italy

1:30 PM - 3:30 PM
Microfluidics 1
Room: Sumire/Tsutsuji
Session Chair(s): Jeong Bong Lee
Arum Han

1:30 PM
7229: Development of Unit Functions of Electrowetting-on-Dielectric Digital Microfluidics
Hyejin Moon
University of Texas at Arlington, United States

2:00 PM
6505: A Quantitative Microfluidic Flow Cytometer Based on Spaced Uniform Optical Fields
Chiyuan Gao{1}, Long Fan{1}, Guang Yang{1}, Junbo Wang{1}, Xiaosu Zhao{2}, Xiaoye Huo{1}, Jian Chen{1}
{1}Aerospace Information Research Institute, Chinese Academy of Sciences, China; {2}Peking University People's Hospital, Peking University Institute of Hematology, China

2:15 PM
6328: Impedance Flow Cytometer Tailored to the Real-Time Detection and Characterization of Microorganisms
Mohadeseh Mozafari, Peer Erfle, Jonathan Block, Rainer Krull, Andreas Dietzel
Technische Universität Braunschweig, Germany

2:30 PM
6065: Development of Virtual Lock-In Amplifier for Fluorescent Flow Cytometry
Yongfan Chen, Chiyuan Gao, Junbo Wang, Deyong Chen, Xiaoye Huo, Jian Chen
Aerospace Information Research Institute, Chinese Academy of Sciences, China

2:45 PM
6443: An Electrochemical Biosensor Enhanced by Surface Acoustic Waves for Point-of-Care Testing
Wenjun Li{2}, Liangya Han{2}, Dachao Li{1}, Zhihua Pu{2}
{1}State Key Laboratory of Precision Measurement Technology and Instruments, Tianjin University, China; {2}Tianjin University, China

3:00 PM
6571: On-Chip Integration of Acoustic Streaming Tweezers and Coulter Counter for Simultaneously Particles Focusing and Sensing
Yongqi Chen, Ziyu Han, Wei Wei, Xuexin Duan
Tianjin University, China

3:15 PM
6603: A Microfluidic Platform Based on Magnetic Labels for Rapid Mixing, Trapping and Detection of Biomarkers
Bo Bao, Xinran Tian, Ridong Wang, Dachao Li
State Key Laboratory of Precision Measurement Technology and Instruments, Tianjin University, China

1:30 PM - 3:30 PM
Sensor Systems: Advanced Signal Processing
Room: Nunobiki
Session Chair(s): Christoph Grandauer
Rafael Villalba-Bravo

1:30 PM
6148: A >70dB Digital Readout Circuit Implemented in 65nm CMOS for 10 µm SWIR InGaAs Pixels
Rico Jossel Maestro{1}, Patrick Merken{2}, Filip Tavernier{1}
{1}Katholieke Universiteit Leuven, Belgium; {2}Xenics, Belgium

1:45 PM
6461: Sideslip Angle Estimation Based on a Kinematics Model Using an Unscented Kalman Filter
Chi-Sheng Wu, Bo-Chiuan Chen
National Taipei University of Technology, Taiwan

2:00 PM
6601: A Low Speed Sampling Method Applicable to IoT Data Analysis
Yumeto Oda{1}, Toshihiro Okajima{2}, Yukihiro Kamiya{1}
{1}Aichi Prefectural University, Japan; {2}Aichi Synchrotoron Raditation Center, Japan

2:15 PM
6982: A 40-kS/s In-Plane Stress Sensing ΔΣ Frontend Integrated Into a 2×48 Needle-Shaped Array
Christoph Grandauer, Daniel De Dorigo, Daniel Wendler, Roman Willaredt, Michael Kult, Yiannos Manoli, Matthias Kuhl
IMTEK / University of Freiburg, Germany

2:30 PM
6170: Adaptive Filter to Remove Motion Artifacts from GSR Sensor Embedded on Handle Cane
Rafael Villalba-Bravo, Andrés Trujillo-León, Fernando Vidal-Verdú
Universidad de Málaga, Spain

2:45 PM
6100: A 0.45°/h Lissajous Frequency-Modulated MEMS Gyroscope
Wenyuan Tong{2}, Xudong Zheng{2}, Xuetong Wang{2}, Lina Ju{1}, Fu Wang{1}, Ming Zhou{1}, Yaojie Shen{2}, Chen Fang{2}
{1}East China Institute of Photo-Electron IC, China; {2}Zhejiang University, China

3:00 PM
7050: Constant Envelope Orthogonal Frequency-Division Multiplexing with Selective Mapping
Hao Chen, Yanrui Wang, Lilin Dan, Juan Zhang, Yue Xiao
University of Electronic Science and Technology of China, China

3:15 PM
6963: Sixteen-Micromachined-Gyroscopes Array Beyond Accuracy Limit by 1.9 Times Without Bandwidth Reduction
Jiayu Li{2}, Honglong Chang{2}, Junzhe Yun{2}, Jiyao Liu{2}, Wenjie Lv{1}, Yan Wang{2}, Jie Zhang{1}, Bin Han{3}, Qiang Shen{2}
{1}China Flight Test Establishment, China; {2}Northwestern Polytechnical University, China; {3}Xi'an Modern Control Technology Research Institute, China

1:30 PM - 3:30 PM
Chemical, Electrochemical & Gas Sensors 1
Room: Sappaire
Session Chair(s): Hamida Hallil
Jeong-O Lee

1:30 PM
7230: Early Screening of Lung Cancer Through Multi-Modal Gas Sensors-Based Breath Analysis Sensor System and Machine Learning
Dae-Sik Lee
Electronics and Telecommunications Research Institute, Korea

2:00 PM
6617: Evaluation of Background Odor Influence on Mold Odor Detection Using Multiple Insect Olfactory Receptor-Based Sensor Arrays
Yuji Sukekawa, Rui Zhou, Sawako Niki, Eri Kuroda, Ryohei Kanzaki, Hidefumi Mitsuno
University of Tokyo, Japan

2:15 PM
6805: Joint Outdoor Ozone and Carbon Monoxide Prediction with a Carbon Nanotube Sensor Array Calibrated Using a Bayesian Framework
Marine Dumon, Guillaume Perrin, Bérengère Lebental
Université Gustave Eiffel, France

2:30 PM
6546: Features Regression Analysis of CNT-FET NO2 Sensor
Cristina Gentili, Cosmin Roman, Christofer Hierold
ETH Zürich, Switzerland

2:45 PM
7055: Four-Channel NFC System for Electrochemical Sensing of Fluids
Giulio Maria Bianco, Vincenzo Mazzaracchio, Luca Fiore, Fabiana Arduini, Gaetano Marrocco, Cecilia Occhiuzzi
University of Rome Tor Vergata, Italy

3:00 PM
6367: In Situ Raman Multi-Gas Sensing During Formation and Residual Gas Impact on Cycling Performance of Pouch Lithium-Ion Batteries
Qilu Nie, Zhixiong Liu, Mengen Cheng, Shilong Pei, Dexun Yang, Cheng Cheng, Donglai Guo, Minghong Yang
Wuhan University of Technology, China

3:15 PM
6598: Verilog-A Modelling of Electrochemical Sensors for Combined Simulation of Biosensors and Interfaces
Aakash Jog{2}, Ankit Gupta{2}, Ariel Shapira{1}, Yizhak Shifman{1}, Pinchas Tandeitnik{1}, Joseph Shor{1}, Yosi Shacham-Diamand{2}
{1}Bar-Ilan University, Israel; {2}Tel Aviv University, Israel

1:30 PM - 3:30 PM
Miscellaneous Physical Sensors
Room: Ikuta
Session Chair(s): Massood Tabib-Azar
Sarafianou Mantalena

1:30 PM
7146: Microacoustic Shear Horizontal Lithium Niobate Leaky SAWs for Harsh Environment Sensing
Walter Gubinelli{1}, Luca Colombo{2}, Ryan Tetro{2}, Wen Sui{3}, Nicol Maietta{2}, Yvonne Sautriot{2}, Pietro Simeoni{2}, Philip Feng{3}, Matteo Rinaldi{2}
{1}Institute for NanoSystems Innovation, Northeastern University, United States; {2}Northeastern University, United States; {3}University of Florida, United States

1:45 PM
6476: Enhanced Magneto-Mechanical Coupling with FeGaB/AlN Thin Films in Mesoscopic Silicon-Free Coupled-Structure Magnetoelectric Resonators
Haoqi Lyu{1}, Wuhao Yang{1}, Yuxi Wang{3}, Mingye Du{3}, Zheng Wang{2}, Xingyin Xiong{1}, Tao Wu{3}, Xudong Zou{1}
{1}Aerospace Information Research Institute, Chinese Academy of Sciences, China; {2}QiLu Aerospace Information Research Institute Aerospace Information Research Institute, China; {3}ShanghaiTech University, China

2:00 PM
7137: A MEMS Gravimeter with Buckling-Beam Nonlinear Springs for Enhanced Sensitivity and Dynamic Range
Peyman Firoozy, Milad Seifnejad Haghighi, Mikhail Kanygin, Emad Esmaeili, Behraad Bahreyni
Simon Fraser University, Canada

2:15 PM
6430: TMR Angle Sensor Calibration with 3D Misalignment Compensation
Tim Samuel Winter{1}, Martin Cornils{2}, Laurent Osberger{2}, Oliver Paul{1}
{1}Albert-Ludwigs-Universität Freiburg, Germany; {2}TDK-Micronas GmbH, Germany

2:30 PM
6454: Self-Driven Frequency Sensing Mechanism Based on Magnetoelectric Composites
Haomin Wu, Yikun Yang, Tian Xia, Bintang Yang
Shanghai Jiao Tong University, China

2:45 PM
6828: Ultrasensitive Tilt Sensor Using Liquid Metal
Jinwon Jeong{1}, Tanzila Noushin{1}, Muhammad Luqman Haider{2}, Jeong Bong Lee{1}
{1}Baylor University, United States; {2}University of Texas at Dallas, United States

3:00 PM
7091: Temperature Sensor Fabricated via Direct Laser Writing on Copper Nanoparticles Coated Paper Substrates
Ciro Allarà{1}, Sahira Vasquez Baez{1}, Mukhtar Ahmad{2}, Pietro Ibba{1}, Martina Aurora Costa Angeli{1}, Antonio Altana{1}, Almudena Rivadeneyra{4}, Niels Benson{3}, Paolo Lugli{1}, Luisa Petti{1}
{1}Free University of Bozen-Bolzano, Italy; {2}Free University of Bozen-Bolzano / ABB Corporate Research Center, Poland; {3}Universität Duisburg-Essen, Italy; {4}University of Granada, Italy

3:15 PM
6109: Structure Deformation Measurement Based on Magnetoelectric Effect
Yikun Yang, Yahui Zhang, Haomin Wu, Tian Xia, Bintang Yang
Shanghai Jiao Tong University, China

1:30 PM - 3:30 PM
Data Processing & AI for Human Sensing
Room: Waraku2
Session Chair(s): David Van Hamme

1:30 PM
6111: YOLO-ICP: Deep Learning Integrated Pose Estimation for Bin-Picking of Multiple Objects
Huajian Li{2}, Ivan Kraljevski{2}, Paul Meyer{2}, Constanze Tschöpe{2}, Matthias Wolff{1}
{1}Brandenburgische Technische Universität Cottbus-Senftenberg, Germany; {2}Fraunhofer Institute for Ceramic Technologies and Systems IKTS, Germany

1:45 PM
6142: Thermal Image-Based Bed Monitoring System Using VLP Model for Elderly Fall Prevention
Ping-Hung Hsieh, Po-Ting Lee, Jia-Han Yang, Pi-Shan Sung, Chih-Lung Lin
National Cheng Kung University, Taiwan

2:00 PM
6255: End-to-End Processing-on-Chip Wearable Ear EEG Device with Tiny Neural Network for Multilevel Stress Detection
Ngoc-Dau Mai, Yudi April Nando, Wan-Young Chung
Pukyong National University, Korea

2:15 PM
6276: EmoHEAL: A Fusion-Based Framework for Emotion Recognition Using Wearable Sensors
Omer Tariq, Yookyung Oh, Dongsoo Han
Korea Advanced Institute of Science and Technology, Korea

2:30 PM
6355: Multimodal Stress and Boredom Detection via Smartwatch Sensors and Hybrid Deep Residual Network with CBAM
Sakorn Mekruksavanich{2}, Anuchit Jitpattanakul{1}
{1}King Mongkut's University of Technology North Bangkok, Thailand; {2}University of Phayao, Thailand

2:45 PM
6407: FERT: Real-Time Facial Expression Recognition with Short-Range FMCW Radar
Sabri Mustafa Kahya, Muhammet Sami Yavuz, Eckehard Steinbach
Technische Universität München, Germany

3:00 PM
6686: A Respiratory Disease Diagnosis Method of Electronic Nose Based on Pyramid Pooling and Self-Attention Mechanism
Jingyi Peng{2}, Haixia Mei{2}, Tao Wang{1}, Min Zeng{3}, Dongdong Xu{2}, Xiaoxue Xing{2}, Lijuan Shi{2}, Keyu Meng{2}, Hongwu Qin{2}, Jian Zhao{2}, Bowei Zhang{1}, Fuzhen Xuan{1}
{1}East China University of Science and Technology, China; {2}Key Lab Intelligent Rehabil & Barrier free Disable (Ministry of Education), Changchun University, China; {3}Shanghai Jiao Tong University, China

3:15 PM
6754: Decoding Brain Age: A Self-Supervised Graph Neural Network Framework for EEG Analysis
Zara Cook{4}, Chengzong Zhao{5}, Livia Murray{4}, Jivan Kesan{4}, Nabil Belacel{2}, Sam Doesburg{3}, George Medvedev{1}, Vasily Vakorin{3}, Pengcheng Xi{2}
{1}Fraser Health Authority, Canada; {2}National Research Council Canada, Canada; {3}Simon Fraser University, Canada; {4}University of Waterloo, National Research Council Canada, Canada; {5}University of Waterloo, University of Waterloo, Canada

3:30 PM – 4:00 PM
Coffee Break
Room: Kairaku

4:00 PM - 5:00 PM
Wireless & Magnetic Sensing Technologies
Room: Nojigiku
Session Chair(s): Ciaran Moore
Chung-Hsien Kuo

4:00 PM
6891: Shape Self-Sensing with Mutual Inductance Sensor Array
Manuchehr Soleimani, Gavin Dingley, Ella Semaj, Maria P
University of Bath, United Kingdom

4:15 PM
6654: Multimodal Wireless Wound Sensors via Higher-Order Parity-Time Symmetry
Zhilu Ye{3}, Minye Yang{3}, Mohamed Farhat{1}, Mark M.-C. Cheng{2}, Pai-Yen Chen{3}
{1}King Abdullah University of Science and Technology (KAUST), United States; {2}University of Alabama, United States; {3}University of Illinois Chicago, United States

4:45 PM
7196: Analysis of Magnetic Signatures for Vehicle Detection Using Dual-Axis Magneto-Impedance Sensors
Ruixuan Yao, Tsuyoshi Uchiyama
Nagoya University, Japan

4:00 PM - 5:00 PM
Sensor Phenomenology, Modeling & Evaluation 2
Room: Waraku1
Session Chair(s): Tao Li
Arum Han

4:00 PM
6845: A Disposable Sensor for PM2.5 and PM10 Based on Wireless Magnetoelastic Resonators
Zeyu Li, Haowen Li, Yogesh Gianchandani
University of Michigan, Ann Arbor, United States

4:15 PM
6964: Exploring pH Sensing in MoS2-Based ISFETs with 2D-3D Gate Oxide Stacks
Sarath S{2}, Rajendra P. Shukla{3}, Chandan Yadav{1}, Gopi Krishna Saramekala{2}
{1}Indian Institute of Technology Jammu, India; {2}National Institute of Technology Calicut, India; {3}North Carolina State University, United States

4:30 PM
6406: Characterization of Damping and Stiffness Mismatch on a Dual Foucault Pendulum Structure Manufactured in 30-µm-Thick Epitaxial Polysilicon
Riccardo Nastri{2}, Stefano Zoia{1}, Davide Pavesi{2}, Paolo Frigerio{2}, Pietro Peliti{1}, Valentina Zega{2}, Gabriele Gattere{3}, Giacomo Langfelder{2}
{1}Northrop Grumman Italia, Italy; {2}Politecnico di Milano, Italy; {3}STMicroelectronics, Italy

4:45 PM
6816: Parametric Physics-Based Snow Model for Automotive Cameras
Pak Hung Chan, Kurt Debattista, Valentina Donzella
WMG, University of Warwick, United Kingdom

4:00 PM - 5:00 PM
Sensor Materials, Fabrication & Packaging 1
Room: Kitano
Session Chair(s): Dong-Weon Lee
Schmid Ulrich

4:00 PM
7252: Integrated Carbon Nanotubes for MEMS Applications
Jongbaeg Kim
Yonsei University, Korea

4:30 PM
6570: Flexible Conducting Wire Based on Liquid Metal and Carbon Nanotubes
Lijie Kong{2}, Weizhi Zhang{2}, Ziyang Fan{2}, Jiaqi Zhang{2}, Keying Wu{2}, Chentao Wang{2}, Jianqiu Huang{1}, Huiyang Yu{2}
{1}Key Laboratory of MEMS of the Ministry of Education, Southeast University, China; {2}Nanjing Tech University, China

4:45 PM
7151: Towards Fabrication of Next-Generation Physical Sensors Through Integrating Suspended Sub-Micron Silicon Nanowires with Microelectromechanical Systems
Basit Ali{1}, Mehdi Bostan Shirin{1}, Muhammad Muzammil{1}, Ege Nacarkucuk{1}, Sina Zare Pakzad{2}, Umut Kerimzade{1}, B. Erdem Alaca{1}
{1}Koç University, Turkey; {2}Technische Universität Wien, Austria

4:00 PM - 5:00 PM
Imaging Technologies 3
Room: Kikusui
Session Chair(s): Shunsuke Okura
Tae-Hoon Eom

4:00 PM
7280: Visualization Study for Enhancing the Efficiency of Local Damage Diagnosis on Flat Belts Based on MFL Technology
Sung-Won Kim, Sae-Byeok Kyung, Eun-Yul Lee, Ju-Won Kim
Dongguk University, Korea

4:15 PM
7297: Coarse-to-Fine Sparse 3D Reconstruction in THz Light Field Imaging
Abdulraouf Kutaish
Bergische Universität Wuppertal, Germany

4:30 PM
6606: Sampling-moiré-Method Force Plate Utilizing smartphone Camera
Ohga Nomura{3}, Ami Ogawa{1}, Hidetoshi Takahashi{2}
{1}Faculty of Science and Technology, Keio University, Japan; {2}Keio University, Japan; {3}School of Integrated Design Engineering, Graduate School of Science and Technology, Keio University, Japan

4:45 PM
7201: Adaptive Image Reconstruction for Optoacoustic Tomography: a Partial FPGA Reconfiguration Approach
Federico Villani{1}, Çağla Özsoy{2}, Christian Vogt{1}, Andrea Cossettini{1}, Xosé Luís Deán-Ben{2}, Michele Magno{1}, Daniel Razansky{2}, Luca Benini{1}
{1}ETH Zurich, Switzerland; {2}ETH Zurich, University of Zurich, Switzerland

4:00 PM - 5:00 PM
Microfluidics 2
Room: Sumire/Tsutsuji
Session Chair(s): Weihua Guan

4:00 PM
6472: A Magnetofluidic Nucleic Acid Cartridge for Multiplexed Detection of Respiratory Pathogens
Tianping Zhou, Nan Li, Xiaoye Huo, Deyong Chen, Junbo Wang
Aerospace Information Research Institute, Chinese Academy of Sciences, China

4:15 PM
6354: Highly Sensitive, Multiplexed, and Accessible Digital Protein Measurement with MagDroplex
Jiumei Hu, Joseph Choy, Joon Soo Park, Pengfei Zhang, Hanran Lei, Bradley Downs, Hai-Quan Mao, Tza-Huei Wang
Johns Hopkins University, United States

4:30 PM
6532: High-Risk Human Papillomavirus Detection: Towards Multiplex Point-of-Care Detection of HPV Using an Easy-to-Use Device
Jeanne Elisabeth van Dongen{3}, Laura Folkertsma-Hendriks{2}, Renske Steenbergen{1}, Loes Segerink{3}
{1}Amsterdam UMC, Netherlands; {2}Micronit, Netherlands; {3}University of Twente, Netherlands

4:45 PM
7291: Microfluidic High-Power Electroosmotic Pumps Based on Glass Fiber Filters
Rafael Ecker, Tina Mitteramskogler, Andreas Fuchsluger, Bernhard Jakoby
Johannes Kepler University Linz, Austria

4:00 PM - 5:00 PM
Wearable Sensors: Applications
Room: Nunobiki
Session Chair(s): Anna Maria Pappa
Philipp Gutruf

4:00 PM
6485: Flexible, Non-Invasive, and Wearable Fish Heart Rate Monitoring Tag for Guiding Aquaculture in Marine Ranching
Hai Zhang{1}, Zihong Wei{1}, Diye Wu{1}, Zhuhang Dai{1}, Danny Hughes{2}, Tohru Sugahara{4}, Shintaro Izumi{3}, Yang Yang{1}
{1}Institute of Deep-sea Science and Engineering, Chinese Academy of Sciences, China; {2}Katholieke Universiteit Leuven, Belgium; {3}Kobe University, Japan; {4}Kyoto Institute of Technology, Japan

4:15 PM
6553: Smart Mattress Cover for Unobtrusive Monitoring of Sleep-Quality Correlates in Real-Life
Carlotta Marinai{2}, Lucia Arcarisi{2}, Francesco Bossi{2}, Pasquale Bufano{1}, Francesco Di Rienzo{2}, Eleonora Melissa{1}, Gianluca Rho{2}, Michele Zanoletti{1}, Alberto Greco{2}, Marco Laurino{1}, Carlo Vallati{2}, Nicola Carbonaro{2}, Alessandro Togne
{1}National Research Council, Institute of Clinical Physiology, Italy; {2}University of Pisa, Italy

4:30 PM
6657: A Wearable ECG System with Printed Electrodes for Heart Health Monitoring and Diagnosis
Sakandar Rauf, Rana Muhammad Bilal, Mohammad Vaseem, Atif Shamim
King Abdullah University of Science and Technology, Saudi Arabia

4:45 PM
7070: Soft Capacitive Sensor and Wearable Sleeve Towards Measuring Fluid Retention
Damla Leblebicioglu, Henry Gao, Immanuel Ampomah Mensah, Muhammad Saad Khan, Kristen L. Dorsey
Northeastern University, United States

4:00 PM - 5:00 PM
Sensor Systems: Applications 2
Room: Sappaire
Session Chair(s): Siddharth Tallur
Chang-hee Won

4:00 PM
6474: An Underwater Multipath Channel Azimuth Estimation Method Based on Sweep-Spread Carrier
Hongjiang Chen{1}, Zhipeng Li{1}, Shaojian Yang{1}, Xingbin Tu{1}, Fengzhong Qu{2}
{1}Ocean College, Zhejiang University, China; {2}Zhejiang University, China

4:15 PM
6744: An Efficient Wrist Photoplethysmogram Quality Assessment Method Based on Wristwatches
Yumin Li{2}, Li Ling{2}, Chao Chen{2}, Zhijun Xiao{2}, Chenxi Yang{2}, Junjie Pan{1}, Chaohong Liu{1}, Huan Li{1}, Yanan Zhou{1}, Chenghao Sui{1}, Jianqing Li{2}, Chengyu Liu{2}
{1}Goertek Technology Co., China; {2}Southeast University, China

4:30 PM
6840: A Closed-Loop Control System with Ultrafast Monitoring Based on a Photoelectric Sensor
Yuanming Yang{2}, Qinhe Peng{2}, Xinxing Yuan{1}, Panyu Hou{2}, Binxiang Qi{2}, Luming Duan{2}
{1}HYQ Company, China; {2}Tsinghua University, China

4:45 PM
7011: Sensing and Localization of Multiple Defects in Pipes with Pulse-Echo Mode Torsional Guided Wave Ultrasonics
Sheetal Patil, Sauvik Banerjee, Siddharth Tallur
Indian Institute of Technology Bombay, India

4:00 PM - 5:00 PM
Emerging Sensors for Navigation & Object Detection
Room: Ikuta
Session Chair(s): David Van Hamme

4:00 PM
6664: Monocular Camera and IMU Integration for Pedestrian Trajectory Prediction
Yu-Jou Chen, Chui-Hong Chiu, Yu-Chen Lin, Pao-Kai Wang
Feng Chia University, Taiwan

4:15 PM
6727: Smooth Speed Control for an Autonomous Vehicle and On-Road Verification
Hui-Wen You, Mao-Jen Ko, Yu-Chen Lin, Jia-Yi Zhao, Yu-Jou Chen
Feng Chia University, Taiwan

4:30 PM
6781: Alternative Navigation Solutions with Gravity Gradient Quantum Sensors
Andrew Hinton, Adam Seedat, Kevin Ridley, Michael Holynski
University of Birmingham, United Kingdom

4:45 PM
7066: Event Intensity Decay with Event Cameras for Efficient Object Detection
Pieter Meiresone, David Van Hamme, Wilfried Philips
Ghent University, IPI-imec, Belgium

4:00 PM - 5:00 PM
Sensor Data Processing: Applications
Room: Waraku2
Session Chair(s): André Lazzaretti

4:00 PM
6229: Improving Resolution of Translated Infrared Images
Michiya Kibe, Takeru Inoue, Junya Morioka, Ryusuke Miyamoto
Meiji University, Japan

4:15 PM
6295: Intrusion Detection of Accelerator Pedal Sensor Using a Scalable Data-Based Diagnostic Concept
Andreas Schmitz{3}, Felix Heimann{1}, Marco Decker{1}, Clemens Gühmann{2}, Roland Serway{1}
{1}IAV GmbH, Germany; {2}Technische Universität Berlin, Germany; {3}Technische Universität Berlin / IAV GmbH, Germany

4:30 PM
6536: Edge AI Algorithm for FBG-Based e-Skin Touch Localization on Embedded Electronics
Elisabetta Leogrande{1}, Francesco Dell'Olio{1}, Stefano Mazzoleni{1}, Calogero Maria Oddo{2}, Mariangela Filosa{2}
{1}Polytechnic University of Bari, Italy; {2}Sant'Anna School of Advanced Studies, Italy

4:45 PM
6597: Reference-Free Multi-Species Gas Detection via Unsupervised Learning
Mohamed Sy, Emad Al Ibrahim, Ali Elkhazraji, Aamir Farooq
King Abdullah University of Science and Technology, Saudi Arabia

6:00 PM – 8:30 PM
Gala Dinner
Room: Portopia Hall

8:00 AM – 9:00 AM
Registration
Room: Kairaku Foyer

9:00 AM – 10:00 AM
KN3: Dr. Chris Van Hoof: Agriculture 5.0, Food 5.0 and Health 5.0 - How technology and AI can enable this radical transformation
Room: Portopia Hall

10:00 AM – 10:30 AM
Coffee Break
Room: Kairaku

10:30 AM - 12:00 PM
Acoustic & Electromagnetic Sensors & Sensing Technologies for Extreme Environments
Room: Nojigiku
Session Chair(s): Akira Nagakubo
Pai-Yen Chen

10:30 AM
7221: Remote Sensing of Multiple Gases Emitted from Industrial Plants by an Ultra-Lightweight Gas Chromatograph Installed on a Drone
Kazushi Yamanaka{2}, Takamitsu Iwaya{1}, Shingo Akao{1}, Tatsuhiro Okano{1}, Nobuo Takeda{1}, Takahiro Kusama{4}, Kanji Yamanashi{4}, Hirokatsu Hirayama{4}, Yasunori Kikuchi{5}, Hideo Itoh{3}
{1}Ball Wave Inc., Japan; {2}Ball Wave Inc. / Tohoku University, Japan; {3}Industrial Technology Institute of the Fukushima Prefectural Government, Japan; {4}jDrones & Co., Ltd., Japan; {5}RTF, Fukushima Innovation Coast Framework, Japan

11:00 AM
6684: High Quality Factor Surface Acoustic Wave Temperature Sensor with Impedance Adjustment
Kai Cheng, Guangyao Pei, Yunzhe Liu, Jianing Zhang, Chuqiao Wang, Xingxu Zhang, Binghe Ma, Jian Luo
Northwestern Polytechnical University, China

11:15 AM
6397: Quantum Sensing of Phonons and Nuclear Spins in an Electromechanical Resonator
Yuma Okazaki
National Institute of Advanced Industrial Science and Technology, Japan

10:30 AM - 12:00 PM
Bio-Digital Convergence Technology for Sensors & Data Analytics
Room: Waraku1
Session Chair(s): Yixin Liu
Tai Hyun Park

10:30 AM
6463: Skin-Interfaced Wearable Biosensors
Wei Gao
California Institute of Technology, United States

11:00 AM
6306: In Situ Linker of Protein for the Immobilization on the Carbon-Based Sensor Materials
Jin Yoo{3}, Tae Shin Park{2}, Hwi Jin Ko{2}, Myung Jin Kim{2}, Tai Hyun Park{1}
{1}Ewha Womans University, Korea; {2}RecepTech Inc., Korea; {3}Seoul National University, Korea

11:15 AM
6489: A Normative Way to Implement ISO/IEC 23005 Between Olfactory Capturing and Displaying Device Applicable to Bio-Digital Convergence Technology
Hyung-Gi Byun
Kangwon National University, Korea

11:30 AM
6887: Cellytics: A Digital Inline Holography Platform for Single Cell Analysis in Biomedical and Environmental Applications
Hojin Cheon{1}, Sanghoon Shin{1}, Hyungsik Kim{1}, Huijin Rim{1}, Hyeji Jang{1}, Haehee Han{1}, Kang Choi{1}, Samir Kumar{1}, Inha Lee{3}, Sunmi Han{3}, Hyun Sik Jun{2}, Sungkyu Seo{2}
{1}Korea University, India; {1}Korea University, Korea; {2}Korea University, Metaimmunetech Inc., Korea; {3}Metaimmunetech Inc., Korea

10:30 AM - 12:00 PM
Sensor Materials, Fabrication & Packaging 2
Room: Kitano
Session Chair(s): Dong-Weon Lee
Schmid Ulrich

10:30 AM
7160: A Novel Flexible Blood Pressure Sensor Based on Ultrathin Silicon for Continuous Monitoring
Yi Zeng, Hao Liu, Michitaka Yamamoto, Seiichi Takamatsu, Toshihiro Itoh
University of Tokyo, Japan

10:45 AM
6908: Improving the Reliability of Wireless Pressure Sensors by Optimizing the Fabrication Process
Jinliang Wei{1}, Nomin-Erdene Oyunbaatar{1}, Dong-Su Kim{3}, Lei Wang{1}, Yun-Jin Jeong{2}, Dong-Weon Lee{1}
{1}Chonnam National University, Korea; {2}Chosun College of Science & Technology, Korea; {3}Korea Institute of Industrial Technology, Korea

11:00 AM
6379: An Individually Addressable Microneedle Array for Continuous Real-Time Monitoring of Glucose in Interstitial Fluid
Wanying Chen, Yukun Ma, Zhen Dai, Shanshan Zhang, Yixin Zhao, Bo Liang
Zhejiang University, China

11:15 AM
6580: Integration of EMG Electrodes by Disruptive 3D Printing Into a Mandibular Brace
Maximilian Leo Amberg, Sven Suppelt, Alexander Anton Altmann, Florian Gerhard Freidinger, Felix Herbst, Bastian Latsch, Mario Kupnik
Technische Universität Darmstadt, Germany

11:30 AM
6299: Single-Step 3D Printing of Flexible Ferroelectret Sensors with Large Air Cavities
Alexander Anton Altmann, Sven Suppelt, Omar Ben Dali, Bastian Latsch, Dieter Spiehl, Sergey Zhukov, Felix Herbst, Jan Helge Dörsam, Andreas Blaeser, Mario Kupnik
Technische Universität Darmstadt, Germany

11:45 AM
6273: Single-Step Laser Fabrication of 3D Free-Standing Origami MEMS Thermal Sensor
Mohammad Nizar Mohamed Zukri, Muhammad Salman Al Farisi, Yoshihiro Hasegawa, Mitsuhiro Shikida
Hiroshima City University, Japan

10:30 AM - 12:00 PM
Biomedical Sensing
Room: Kikusui
Session Chair(s): Alessandro Nastro
Gou-Jen Wang

10:30 AM
7212: Facile In-Tube-Center Packaging of Flexible Airflow Rate Microsensor for Simultaneous Respiration and Heartbeat Measurement
Muhammad Salman Al Farisi{1}, Yang Wang{1}, Yoshihiro Hasegawa{1}, Miyoko Matsushima{2}, Tsutomu Kawabe{2}, Mitsuhiro Shikida{1}
{1}Hiroshima City University, Japan; {2}Nagoya University, Japan

11:00 AM
7028: Comparison of Aptamer and Antibody Bioreceptors in the OEGFET Biosensor Platform for Detecting α-Synuclein, a Parkinson's Biomarker
Roslyn Massey, Srishti Johri, Dennis Chan, Matthew Holahan, Ravi Prakash
Carleton University, Canada

11:15 AM
7199: Urinary Bladder Volume Reconstruction Based on Bioimpedance Measurements: Ex Vivo and in Vivo Validation Through Implanted Patch and Needle Electrodes
Federica Semproni{2}, Veronica Iacovacci{2}, Stefania Musco{1}, Arianna Menciassi{2}
{1}Neuro-Urology of Azienda Ospedaliero Universitaria Careggi, Italy; {2}Scuola Superiore Sant'Anna, Italy

11:30 AM
6649: An Electrochemical HbA1c Immunosensor with a Simple Electrode of Gold Nanoparticle Monolayer
Chun-Chiang Tseng, Ying-Ting Lin, Gou-Jen Wang
National Chung-Hsing University, Taiwan

11:45 AM
7217: Very Accurate Flexible Ph Microsensor Based on Nanoporous Titanium Nitride Material for In-Vivo Application
Thuy Nguyen{2}, Gaelle Lissorgues{2}, Hakim Takhedmit{2}, Lionel Rousseau{2}, Bernard Journet{1}, Audrey Ridoux{3}, Edouard Lecarpentier{3}
{1}ENS Paris Saclay, LUMIN, France; {2}Université Gustave-Eiffel, CNRS, ESYCOM, Vietnam; {2}Université Gustave-Eiffel, CNRS, ESYCOM, France; {3}Université Paris-Est Créteil, IMRB, France

10:30 AM - 12:00 PM
Optical Sensors 3
Room: Sumire/Tsutsuji
Session Chair(s): Andras Kovacs
Jia-Yuan Liu

10:30 AM
6239: Portable Chromatographic Analysis with Micro-Spectrometer for Real-Time Detection
Po-Yen Hsieh{1}, Ciao-Ming Tsai{2}, Guan-Yi Lin{2}, Weileun Fang{2}, Cheng-Hao Ko{1}
{1}National Taiwan University of Science and Technology, Taiwan; {2}National Tsing Hua University, Taiwan

10:45 AM
6269: Demonstration of Field Curvature Aberration Correction Using Curved CMOS Image Sensors
Shigeyuki Imura, Masahide Goto, Hiroto Sato
NHK (Japan Broadcasting Corporation), Science & Technology Research Laboratories, Japan

11:00 AM
6348: A 1.25 µm 59.3 Mpixel 60 fps CIS with 2×1 Multi-Directional Phase-Detection Pixels
Kodai Kikuchi{1}, Kohei Tomioka{1}, Takenobu Usui{1}, Akira Honji{1}, Hiroshi Shimamoto{2}, Tomonari Kenzaki{3}, Sota Hida{3}, Takeo Ushinaga{3}, Kenichi Nagai{3}, Kazuya Kitamura{1}
{1}NHK (Japan Broadcasting Corporation), Science & Technology Research Laboratories, Japan; {2}NHK Foundation, Japan; {3}Sharp Semiconductor Innovation Corporation, Japan

11:15 AM
7030: Can QR Codes Be Used to Readout Colorimetric Gas Sensors? a Back-Compatible Color QR Code with an Embedded CO2 Sensor Dye
Ismael Benito-Altamirano{5}, Laura Engel{2}, Ferran Crugeira{4}, Miriam Marchena{1}, Cristian Fàbrega{5}, Jürgen Wöllenstein{2}, Joan Daniel Prades{3}
{1}ColorSensing SL, Spain; {2}Fraunhofer Institute for Physical Measurement Techniques IPM, Germany; {3}Institute of Semiconductor Technology and Laboratory for Emerging Nanometrology , Germany; {4}Universitat Autonoma de Barcelona, Spain; {5}Universitat

11:30 AM
6404: Optodevice-in-Sphere for Biaxial Tilt Sensing
Ruoyao Huang{2}, Tingxuan Chen{2}, Ling Zhu{1}, Kwai Hei Li{2}
{1}Shenzhen University, China; {2}Southern University of Science and Technology, China

11:45 AM
6988: Effect of Metallic Ion Implantation on Dark Current Distributions of Silicon-Based CMOS Image Sensors
Juan Esteban Montoya Cardona{2}, Sylvain Joblot{4}, Pierre Kermagoret{4}, Grégoire Ducotey{4}, Stéphane Hardillier{4}, Guillaume Dupeux{4}, Yannick Borde{4}, Jean-Pierre Carrère{4}, Sandrine Lhostis{4}, Richard Monflier{3}, Olivier Marcelot{1}, Vincent Go
{1}ISAE-SUPAERO, France; {2}ISAE-SUPAERO, LAAS-CNRS, STMicroelectronics, France; {3}LAAS-CNRS, France; {4}STMicroelectronics, France

10:30 AM - 12:00 PM
Sensor Systems & Processing: Radar
Room: Nunobiki
Session Chair(s): Changzhi Li
Nicole Pham

10:30 AM
6956: Simultaneous Non-Contact Vital Sign Monitoring on Multiple Moving Targets for Daily In-Home Healthcare with a Single FMCW Radar
Yuxiang Qiu, Michitaka Yamamoto, Seiichi Takamatsu, Toshihiro Itoh
University of Tokyo, Japan

10:45 AM
6977: Gain and Distortion Optimization for Fast-Startup AC-Coupled Baseband Amplifiers in Motion-Sensing Radar
Aaron Carman, Christopher Williams, Changzhi Li
Texas Tech University, United States

11:00 AM
7022: ISAR Imaging of Near-Shore Maritime Vessels Using a Low-Cost X-Band Radar
Nicole Pham, Dylan Wesen, John Mower, Matthew S. Reynolds
University of Washington, United States

11:15 AM
7107: Bridge Vibration Measurements from Very High-Resolution Spaceborne SAR
Aleksanteri Vattulainen{2}, Finlay Rollo{2}, Alessandro Lotti{3}, Daniel Tonelli{3}, Sebastian Diaz Riofrio{2}, Enrico Tubaldi{2}, Daniele Zonta{3}, Christos Ilioudis{2}, Pietro Milillo{1}, Carmine Clemente{2}
{1}University of Houston, United States; {2}University of Strathclyde, United Kingdom; {3}University of Trento, Italy

11:30 AM
7191: Free Space Detection Using Automotive Radar
Seongyo Jeong{2}, Sung-Joo Lee{1}, Seul-Ki Han{3}, Won-Sang Ra{1}
{1}Handong Gloabla University, Korea; {2}Handong Global University, Korea; {3}Hyundai Motor Company, Korea

10:30:00 AM - 12:00:00 PM
Chemical, Electrochemical & Gas Sensors 2
Room: Sappaire
Session Chair(s): Bérengère Lebental
Daesik Lee

10:30 AM
6531: Improved Selectivity of Impedimetric K+ Sensors
Eva-Maria Korek{2}, Bajramshahe Shkodra{1}, Antonio Altana{1}, David Herbig{2}, Paolo Lugli{1}, Luisa Petti{1}, Ralf Brederlow{2}
{1}Free University of Bozen-Bolzano, Italy; {2}Technische Universität München, Germany

10:45 AM
6785: A New Frontier in CO2 Sensing: A Comparative Study of Thermal and Light Activation in Na:In2O3 Nanostructured Materials
Arianna Rossi{4}, Barbara Fabbri{4}, Andrea Gaiardo{1}, Matteo Ferroni{3}, Gabriele Vola{2}, Matteo Ardit{4}, Vincenzo Guidi{4}
{1}Bruno Kessler Foundation, Sensors and Devices Center, Italy; {2}Cimprogetti Srl Lime Technologies, Italy; {3}Institute for Microelectronics and Microsystem IMM-CNR, Italy; {4}University of Ferrara, Italy

11:00 AM
7114: IoT-Enabled hBN/AlGaN/GaN High Electron Mobility Transistor for Carbon Dioxide Monitoring
Vikas Pandey{1}, Ankur Gupta{1}, Sudhiranjan Tripathy{2}, Mahesh Kumar{1}
{1}Indian Institute of Technology Jodhpur, India; {2}Institute of Materials Research and Engineering, Agency for Science, Technology and Research, Singapore

11:15 AM
6077: Copolymerized Ion-Gel for Dimethyl Methylphosphonate Sensing: From Material to Multi-Type Sensor Applications
Yubin Yuan{2}, Qianyi Yang{2}, Qiang Wu{2}, Long Hu{2}, Li Ni{1}, Yang Zhou{1}, Chuanyu Han{2}, Xin Li{2}, Weihua Liu{2}
{1}SOOK High Tech (JiangSu) Co. Ltd., China; {2}Xi'an Jiaotong University, China

10:30 AM - 12:00 PM
Emerging Sensors for Biomedical Applications 2
Room: Ikuta
Session Chair(s): Joost Lötters

10:30 AM
6690: A Perceptive Soft Finger for Shape and Texture Recognition
Tonglin Li, Yufeng Wang, Yingao Xu, Jiayuan Zhang, Hongbo Wang
University of Science and Technology of China, China

10:45 AM
6751: Grating-Coupled Silver Nanoparticle Arrays for Point-of-Care PCR Platform
Eunjeong Byun, Seung Hyun Song
Sookmyung Women's University, Korea

11:00 AM
6331: Visible Light-Induced Organic Artificial Synaptic Transistors Based on Protein-Ag Nanoparticle Composite
Riya Sadhukhan{1}, Asima Pradhan{2}, Abhirup Das{1}, Rajdeep Banerjee{1}, Richeek Nayak{1}, Madhuchanda Banerjee{2}, Dipak Kumar Goswami{1}
{1}Indian Institute of Technology Kharagpur, India; {2}Midnapore College, India

11:15 AM
6175: Thin Film Reconfigurable Intelligent Surface Assisted Device-Free Fall Detection
Boxuan Xie, Yu Bai, Xinze Li, Lauri Mela, Tommi Rimpiläinen, Riku Jäntti
Aalto University, Finland

11:30 AM
6890: Airflow Optimization for Olfactory Display Using Inkjet Device
Nilava Debabhuti{2}, Dani Prasetyawan{2}, Takamichi Nakamoto{1}
{1}Institute of Innovative Research, Tokyo Institute of Technology, Japan; {2}Tokyo Institute of Technology, Japan

11:45 AM
6638: Passive Acoustic Temperature Sensor Characterization with Animal Tissue
Lucrezia Maini{1}, Roman Furrer{2}, Christofer Hierold{1}, Cosmin Roman{1}
{1}ETH Zürich, Switzerland; {2}Transport at Nanoscale Interfaces/EMPA Dubendorf, Switzerland

10:30 AM - 12:00 PM
Force Sensors
Room: Waraku2
Session Chair(s): Behraad Bahreyni
Massood Atashbar

10:30 AM
6626: Compact GaN-Based Optical Force Sensors with Hemispherical Reflectors
Yumeng Luo{2}, Yuqi Liu{2}, Jiahao Yin{2}, Hongyu Yu{1}, Kwai Hei Li{2}
{1}Hong Kong University of Science and Technology, China; {2}Southern University of Science and Technology, China

10:45 AM
6691: A Miniature Self-Decoupled Multiaxis Force Sensor via 3D Orthogonal Configuration
Yingao Xu{2}, Xinxin Chang{2}, Jiayuan Zhang{2}, Yueyang Wang{1}, Hongbo Wang{2}
{1}University of Science and Technology, China; {2}University of Science and Technology of China, China

11:00 AM
6497: Force Sensor for Versatile Single-Step Sensor Integration in 3D-Printed Parts
Felix Herbst, Esan Sundaralingam, Bastian Latsch, Sven Suppelt, Julian Seiler, Alexander Anton Altmann, Mario Kupnik
Technische Universität Darmstadt, Germany

11:15 AM
7129: A Passive Wireless Quasi-Harmonic Strain Sensor for Eternal Structural Health Monitoring
Luca Colombo{2}, Hussein Hussein{2}, Walter Gubinelli{1}, Ryan Tetro{2}, Nicolas Casilli{2}, Alessandro Banfi{3}, Pietro Simeoni{2}, Matteo Rinaldi{2}, Cristian Cassella{2}
{1}Institute for NanoSystems Innovation, Northeastern University, United States; {2}Northeastern University, United States; {3}TEQNIUM S.r.l., Italy

11:30 AM
6153: Magnetoelastic Torque Sensor with GaAs Hall Plates for E-Bikes
Enrico Gasparin, Bruno Brajon, Lucian Barbut, Nicole Yazigy, Gaël Close
Melexis Technologies SA, Switzerland

12:00 PM – 1:00 PM
Lunch
Room: Ohwada

1:30 PM - 3:00 PM
Sensor Phenomenology, Modeling & Evaluation – B (Poster Session)
Room: Kairaku
Session Chair(s): Tao Li
Arum Han

6496: Evaluation of Sensor Sets of Autonomous Vehicles Using Phenomenological Sensor Models
Philipp Hafemann, Thomas Blomeyer, Markus Lienkamp
Technische Universität München, Germany

6559: Reliable Setup for Contact Separation Mode Measurements of Triboelectric Materials and TENGs
Björn Niklas Ewald, Uwe Pelz, Peter Woias
Albert-Ludwigs-Universität Freiburg, Germany

6811: Enhanced Antibody Immobilization with Cold-Plasma-Modified Graphene Sensors and Functionalized Gold Nanoparticles
Felipe Longaray Kadel{3}, Bruna Ferri Serafini{4}, Duane Da Silva Moraes{3}, Mariana Rost Meireles{3}, Julia Konzen Moreira{3}, Thomas Sponchiado Pastore{4}, Milleny Germann Souza{4}, Giovana Dalpiaz{4}, Susana Maria Kakuta{1}, Thuany Garcia Maraschin{2}
{1}Biosens Tech, Brazil; {2}Pontifícia Universidade Católica do Rio Grande do Sul, Biosens Tech, Brazil; {3}Universidade Federal do Rio Grande do Sul, Biosens Tech, Brazil; {4}Universidade Vale do Rio dos Sinos, Biosens Tech, Brazil

6916: Field Evaluation of a High-Resolution NDIR Sensor System for Measurement of Methane in Water
Bakhram Gaynullin{3}, Henrik Rödjegård{2}, Claes Mattsson{1}, Christine Hummelgård{2}, Göran Thungström{1}
{1}Mid Sweden University, Sweden; {2}SenseAir AB, Sweden; {3}SenseAir AB / Mid Sweden University, Sweden

6946: A Method to Boost the Sensitivity in Transmission-Mode Phase-Variation Planar Microwave Sensors
Xavier Canalias, Paris Vélez, Pau Casacuberta, Lijuan Su, Ferran Martín
Universitat Autònoma de Barcelona, Spain

6985: A DFT Study and In-Situ Analysis of Hydrogen Adsorption on Palladium Alloys
Jianping Zhang, Junge Liang, Yu Guo, Zhen Yuan, Huiling Tai
University of Electronic Science and Technology of China, China

7000: Theory and Design of Tunable Localized Plasmonic Biosensors Using Au-Ag Bimetallic Alloy Nanoparticles
Mochamad Januar, Bei Liu, Kou-Chen Liu
Chang Gung University, Taiwan

7059: Shielding of Eddy Current Displacement Sensors with a Single Backside Shield
Gabriel Gruber, Markus Neumayer, Bernhard Schweighofer, Hannes Wegleiter
Graz University of Technology, Austria

7063: Deep RL Based Obstacle Avoidance for UAVs with Time Varying Sensor Bias
Aditya Kurande{1}, Bhaskar Joshi{2}, Harikumar Kandath{2}
{1}Birla Institute of Technology and Science, Pilani – Goa, India; {2}International Institute of Information Technology, Hyderabad, India

6010: Quality Factor Optimization and Thermal Noise Analysis of Silicon MEMS Resonators
Zheng Fan{2}, Zhu Li{2}, Renguang Tang{2}, Guanhua Wu{2}, Shanqing Yang{2}, Liangcheng Tu{1}, Yuan Wang{3}, Pui-In Mak{3}
{1}Huazhong University of Science and Technology & Sun Yat-sen University, China; {2}Sun Yat-sen University, China; {3}University of Macau, China

1:30 PM - 3:00 PM
Sensor Materials, Fabrication & Packaging – B (Poster Session)
Room: Kairaku
Session Chair(s): Dong-Weon Lee
Schmid Ulrich

6019: NiO-Doped Laser-Induced Graphene: A High-Performance Flexible Temperature Sensor
Shaogang Wang{1}, Chunjian Tan{2}, Qihang Zong{2}, Avik Sett{1}, Huaiyu Ye{2}, Paddy French{1}
{1}Delft University of Technology, Netherlands; {2}South University of Science and Technology of China, China; {2}South University of Science and Technology of China, Netherlands

6090: Thin Film Strain Sensors with Significantly Improved Piezoresistive Stability at High Temperatures by Introducing Insulating Phase
Tao Zhang, Yilin Fan, Yu Lei, Xingxu Zhang, Jian Luo, Jinjun Deng, Tao Ye, Binghe Ma
Northwestern Polytechnical University, China

6275: PDMS Micro-Patterning on Wafer Based on Etch-Back Lift-Off for Microsystems Fabrication
Xuchen Wang{2}, Yukio Suzuki{2}, Tatsuya Matsumoto{2}, Toshiyuki Kikuta{2}, Chung-Min Li{1}, Shuji Tanaka{2}
{1}AAC Technologies PTE.LTD, Singapore; {2}Tohoku University, Japan

6418: Fabrication of Conductive Nanomaterial Patterns on Polymeric Substrates Using Laser and Adhesive Tape
Mehraneh Tavakkoli Gilavan, Peter Kruse, P. Ravi Selvaganapathy
McMaster University, Canada

6475: Optimising the Fabrication of Reduced Graphene Oxide Electrodes by Laser Reduction
Thanaphon Surabunditthip, Neil Keegan, John Hedley
Newcastle University, United Kingdom

6494: The Impact of Outgassing of Molding Compound on Graphene for Gas Sensing
Tiance An, Mudassir Husain, Sten Vollebregt
Delft University of Technology, Netherlands

6704: Monolithic Vacuum Packaging for a CMOS MEMS Resonator Oscillator
Cheng-Yang Chang, Chin-Te Hsin, Ying-Zong Juang, Sheng-Hsiang Tseng
Taiwan Semiconductor Research Institute, Taiwan

6736: Polymer-Free Batch Production and Application of Metal Foil-Based Thin-Film Strain Gauges
Rico Ottermann, Eileen Müller, Marvin Keßler, Folke Dencker, Daniel Klaas, Marc Christopher Wurz
Leibniz University Hanover, Germany

6758: A Green and Facile Approach of Graphite Conductive Ink Preparation for Electrochemical Sensing Application
Smriti Sinha, Soumen Das
Indian Institute of Technology Kharagpur, India

6847: TFT Active Pixel Sensors with Organic Photoconductive Films for Flexible Sensor Applications
Koki Imamura, Kazunori Miyakawa, Shigeyuki Imura, Hiroto Sato
NHK (Japan Broadcasting Corporation), Science & Technology Research Laboratories, Japan

6979: Fabrication and Temperature Test of a Multi-Physics Coupling MEMS Sensor Chip
Jing Sun, Guodong Zhang, Wanming Wang, Tengjiang Hu, Yulong Zhao
Xi'an Jiaotong University, State Key Laboratory for Manufacturing Systems Engineering, China

6997: Design Aspects for Eddy Current Displacement Sensors in High Temperature Environments
Gabriel Gruber, Markus Neumayer, Bernhard Schweighofer, Hannes Wegleiter
Graz University of Technology, Austria

7139: High Conductivity Graphene-Based Composite EMI Shielding for RF Device Protection
Xingzhe Zhang, Dinesh Maddipatla, Simin Masihi, Seb Hajian, Binu Narakathu, Massood Atashbar
Western Michigan University, United States

6012: Homo-Thermocouple Fabricated by Selective Laser Sintering and Melting of Semiconductor Nanoparticles
Xiangyu Chen, Jianqin Zhu, Lu Qiu
Beihang University, China

6334: 3D Printing of Electrically Conductive Silver Nanoparticle-Embedded Foams for Pressure Sensor Applications
Guanxing Kuang, Olivier Jérémie Nguon, Mohammad Mehrali, Johan Evert Ten Elshof, Wilko Rohlfs, Claas Willem Visser
University of Twente, Netherlands

6681: A MXene@Pt Nanocomposite-Based Wearable Epidermal Patch for Real-Time Glucose and pH Monitoring
Ye Young Lee, Md Asaduzzaman, Ahmad Abdus Samad, Jae Yeong Park
Kwangwoon University, Korea

7122: Flexible Stretch-Free, Liquid-Sealed Packaging Method for Ultra-Thin Silicon-Based Bending Sensor
Hao Liu, Michitaka Yamamoto, Seiichi Takamatsu, Toshihiro Itoh
University of Tokyo, Japan

1:30 PM - 3:00 PM
Chemical, Electrochemical & Gas Sensors – B (Poster Session)
Room: Kairaku
Session Chair(s): Hamida Hallil
Jeong-O Lee

6201: Biocompatible, Dual-Purpose Electrochemical Aptamer Based Sensor for Real-Time Phenylalanine and pH Monitoring
Yiling Yang, Xumei Gao, Bryce Widdicombe, Jana Zielinski, Alastair Stewart, Ranjith Unnithan
University of Melbourne, Australia

6232: An Integrated Triple Sensing Electrode Design for Biochemical Applications
Yu-Quan Chen, Hung-Hsiang Wang, Chih-Ting Lin
National Taiwan University, Taiwan

6515: Utilizing Electropolymerized Polyaniline Films for Acetic Acid Detection: A Proof of Concept
Akashlina Basu, Souvik Biswas, Soumen Das
Indian institute of Technology Kharagpur, India

6693: Humidity Detection Based on Inorganic Topological Insulator Bi2Se3-Organic PEO Composite Film
Mengqing Wang{1}, Yongcai Guo{1}, Xiaogang Lin{1}, Lei Xie{1}, Cheng Zou{1}, Hongping Liang{2}, Yong Zhou{1}
{1}Chongqing University, China; {2}Huizhou University, China

6952: Electrolyte-Gated Field-Effect Transistor-Based Sensor for Nanoplastic Detection: A Sensitivity Investigation of Two Nanoplastic Models
Giulia Elli, Manuela Ciocca, Bajramshahe Shkodra, Pietro Ibba, Paolo Lugli, Luisa Petti
Free University of Bozen-Bolzano, Italy

7072: Optimization and Application of Laser-Induced Graphene Electrodes with Nickel Hydroxide Nanoparticles for Ultrasensitive Non-Enzymatic Glucose Sensing
Rourke Sylvain, Tyler Waslawski, Verdict Vera, Grace Dykstra, Georgia Heintz, Smitha Rao, Yixin Liu
Michigan Technological University, United States

7077: Design and Characterization of a Printed Circuit Board-Based Gas Chromatography Column for Greenhouse Gas Analysis
Ashur Rael, Ezekiel Garcia, Nathan Wolff, Antonio Rubio, Haley Bennett, Joshua Whiting, Philip Miller
Sandia National Laboratories, United States

7105: Polarized IrOx Enables Novel Referencing for Biocompatible L-Glutamate Sensors
Mohamed Benomar, Mao-Hsiang Huang, Sung Sik Chu, Xing Xia, Hung Cao
University of California, Irvine, United States

6263: Development of Potassium Ion Sensor with Integrated Striped Gate Electrodes Into Membrane for Long-Term Soil Potassium Ion Monitoring
Islam Md Muztahidul{1}, Tatsunori Kamiya{1}, Satoshi Tsuruta{1}, Satoshi Ota{1}, Satoshi Koike{3}, Madoka Takai{2}, Masato Futagawa{1}
{1}Shizuoka University, Japan; {2}University of Tokyo, Japan; {3}Vegetalia, inc, Japan

6702: Enhancing Ozone Gas Sensor Performance with Polypyrrole-Coated Metal-Oxide Semiconductors
Chiu-Hsien Wu{1}, Wan-Yu Lin{1}, Utkarsh Kumar{3}, Zu-Yin Deng{3}, Kuang Yao Lo{2}, Kuen-Lin Chen{1}
{1}Institute of Nanoscience, National Chung Hsing University, Taiwan; {2}National Cheng Kung University, Taiwan; {3}National Chung Hsing University, Taiwan

6746: Nanozyme-Assisted Quantitative Estimation of Cholesterol Using Ultrathin Silver Nanosheet
Pratyusa Mohapatra, Thuria Hasan, Soumen Das
Indian Institute of Technology Kharagpur, India

6863: Zirconia-Based Electrochemical Sensor Utilizing Au-Based Electrodes for Rapid Hydrogen Detection
Sri Ayu Anggraini, Yuki Fujio
National Institute of Advanced Industrial Science and Technology, Japan

6419: Potassium and Sodium Ion Concentration Sensors for Intracranial Monitoring Based on Solid-State Electrode
Tiezhu Liu{3}, Yan Miao{2}, Zixuan Song{6}, Xuan Sun{1}, Yuqi Luo{1}, Chengyu Zhuang{5}, Jun Zhou{7}, Chunxiu Liu{6}, Ning Xue{4}
{1}Beijing Tiantan Hospital, Capital Medical University, China; {2}Central South University, Capital Medical University, China; {3}Chinese Academy of Sciences, Harbin Institute of Technology, China; {4}Lingang Laboratory, China; {5}Ruijin Hospital, Shangh

1:30 PM - 3:00 PM
Data Processing & AI for Detection, Estimation & Navigation (Poster Session)
Room: Kairaku
Session Chair(s): David Van Hamme

6241: VelObPoints: A Neural Network for Vehicle Object Detection and Velocity Estimation for Scanning LiDAR Sensors
Lukas Haas{3}, Nico Leuze{1}, Arsalan Haider{3}, Matthias Kuba{3}, Thomas Zeh{3}, Alfred Schöttl{1}, Martin Jakobi{2}, Alexander W. Koch{2}
{1}Munich University of Applied Sciences, Germany; {2}Technische Universität München, Germany; {3}University for Applied Sciences Kempten, Germany

6369: Doppler Radar-Based Recognition and Prediction of Cycling Behaviors
Ryoya Hayashi, Kenshi Saho, Masao Masugi
Ritsumeikan University, Japan

6557: Robust Centroid and Apparent Diameter Extraction via Convex Optimization for Optical Spacecraft Navigation
Natnael Zewge, Hyochoong Bang
Korea Advanced Institute of Science and Technology, Korea

6569: High Dynamic Range Object Detection System with Image Fusion Network Using High-Illumination Specialized Binary Image
Hyeongung Byeon, Taehoon Eom, Hyeonjune Kim
Seoul National University of Science and Technology, Korea

6854: Anchor-Free Relative 3D Pose Estimation Using Ultra-Wideband and Inertial Data Fusion
Xiaodong Cai, Lu Wang, Shouwei Sun, Hemin Han, Ke Han
Intel Corporation, China

7083: Uncertainty-Based Semi-Supervised Object Detection in Autonomous Driving Environment
Chongqiang Shen{2}, Xiangyun Ren{1}, Dongfang Yang{1}, Yang Chen{3}, Lihong Qiu{1}, Ke Wang{3}
{1}Chongqing Changan Automobile Co., Ltd, China; {2}Chongqing Changan Automobile Co., Ltd, Chongqing University, China; {3}Chongqing University, China

6058: Increasing the Diversity in RGB-to-Thermal Image Translation for Automotive Applications
Kaili Wang{2}, Leonardo Ravaglia{2}, Roberto Longo{2}, Lore Goetschalckx{2}, David Van Hamme{1}, Julie Moeyersoms{2}, Ben Stoffelen{2}, Tom De Schepper{2}
{1}Ghent University, IPI-imec, Belgium; {2}imec, Belgium

6537: Wave Dynamic Time Warping Algorithm for Periodic Signal Similarity Estimation
Evgenia Slivko{1}, Gianfranco Mauro{1}, Kay Bierzynski{1}, Lorenzo Servadei{2}, Robert Wille{2}
{1}Infineon Technologies AG, Germany; {2}Technische Universität München, Germany

6558: Multi-Modal Sensor Fusion in Latent Embedding Space for Robust Autonomous Navigation
Niels Balemans{2}, Ali Anwar{3}, Jan Steckel{1}, Siegfried Mercelis{3}
{1}Cosys-Lab, University of Antwerp, Belgium; {2}IDLab, Cosys-Lab, University of Antwerp - imec, Belgium; {3}IDLab, University of Antwerp - imec, Belgium

1:30 PM - 3:00 PM
Biosensors – B (Poster Session)
Room: Kairaku
Session Chair(s): Hyejin Moon
Yoshikazu Hirai

6130: Aptamer Assisted Simultaneous Detection of Lead and Arsenic in Water Using a Handheld System
Swati Mohanty, Partha P Goswami, Gajendranath Chowdary, Shiv Govind Singh
Indian Institute of Technology, Hyderabad, India

6366: Electrochemical Biosensor Using Methylene Blue as an Electrochemical Mediator Coupling with DNA Aptamer
Koki Yamashita, Tomohiro Shimizu, Shoso Shingubara, Hitoshi Ishida, Akinori Kuzuya, Takeshi Ito
Kansai University, Japan

6703: Towards Highly Selective Enzymatic Microwave Sensing: A Lactate Sensor Case Study
Firas Fatani, Sakandar Rauf, Atif Shamim
King Abdullah University of Science and Technology, Saudi Arabia

6731: Electrochemical Sensing of the Colorectal Cancer BRAF p.V600E Mutation Using a Lab-on-Chip Integrated DNA Amplification Analysis Method
Calista Adele Yapeter{2}, Katerina-Theresa Mantikas{3}, Costanza Gulli{3}, Nicolas Moser{3}, Constantinos Simillis{1}, Melpomeni Kalofonou{3}, Pantelis Georgiou{3}
{1}Cambridge University Hospitals NHS Foundation Trust, United Kingdom; {2}Centre for Bio-Inspired Technology, Imperial College London, United Kingdom; {3}Imperial College London, United Kingdom

6802: Sensitivity-Enhanced Planar Microwave Sensor for Rapid Human Fibrinogen Concentration Monitoring
Adam Junck, Maryam Badv, Zahra Abbasi
University of Calgary, Canada

6893: Rapid and Field Portable Water Quality Monitoring Using Lens-Free Shadow Imaging Technology and Machine Learning
Hyungsik Kim{2}, Sanghoon Shin{2}, Huijin Rim{2}, Haehee Han{2}, Kang Choi{2}, Samir Kumar{2}, Hoon Choi{1}, Wonsoo Kang{1}, Moonjin Lee{1}, Sungkyu Seo{3}
{1}Korea Research Institute of Ships & Ocean Engineering, Korea; {2}Korea University, India; {2}Korea University, Korea; {3}Korea University, Metaimmunetech Inc., Korea

7008: An Ultra Sensitive Malaria Detection Platform Based on Magnetic Biosensors
Yuanxi Cheng{3}, Rik van Haren{1}, Huxi Wang{2}, Lisa Ranford Cartwright{3}, Nosrat Mirzai{3}, Hadi Heidari{3}
{1}Eindhoven University of Technology, Netherlands; {2}James Watt School of Engineering, University of Glasgow, United Kingdom; {3}University of Glasgow, United Kingdom

7161: Highly Sensitive and Highly Specific Biomedical Sensing Device Development for Lung Cancer Tumor Marker
Chia-Hsu Hsieh, Cheng-Chuan Chou, Guan-Hong Chen, I-Yu Huang
National Sun Yat-sen University, Taiwan

1:30 PM - 3:00 PM
Optical Sensors – B (Poster Session)
Room: Kairaku
Session Chair(s): Michiko Nishiyama

6244: Design of Microfluidic Refractive Index Sensor Based on Phase Shift Grating
Pei Wang, Han Song, Zhi Kang He, Enlong Yao
Wuhan University of Technology, China

6247: Relative Measurement of Micro-UAVs Based on a Miniaturized 2D Profile Sensor System
Chengsong Xiong, Wenshuai Lu, Chao Yao, Jiaqi Wan, Lingyun Zhang, Chi Zhang, Fei Xing, Zheng You
Tsinghua University, China

6249: Impact of Al Content on the Photoresponse Characteristics of Ultrasonic Spray Pyrolytically Deposited (AlxGa1−x)2O3 Solar-Blind Photodetectors
Shun-Cheng Shih{1}, Zhao-Qin Hong{1}, Han-Yin Liu{2}, Wei-Chou Hsu{1}
{1}Institute of Microelectronics, National Cheng Kung University, Taiwan; {2}National Sun Yat-sen University, Taiwan

6326: A Simple Cascaded Fiber-Optic Fabry Perot Interferometer System with Vernier Effect for Sensitivity Enhanced Strain Measurements
Dhyana Challeparambil Bharathan{1}, Martijn Wagterveld{2}, Herman Offerhaus{1}
{1}University of Twente, Netherlands; {2}Wetsus, Netherlands

6349: Highly Sensitive Open-Cavity Fiber Mach-Zehnder Interferometer Sensor Based on Beveled No-Core Fibers
Hao-Chien Cheng, Chin-Ping Yu
National Sun Yat-sen University, Taiwan

6695: Significantly Improved Front Side Illuminated Photodiodes: Integrated in a 0.18 µm Modular CMOS Foundry Technology
Daniel Gäbler{1}, Pablo F. Siles{1}, Ai Qiang{2}
{1}X-FAB Global Services GmbH, Germany; {2}X-FAB Sarawak Sdn. Bhd., Malaysia

6991: A Bias-Tunable Dual Band Photodetector for Plastic Material Classification
Anju Manakkakudy Kumaran{3}, Andrea De Iacovo{3}, Andrea Ballabio{1}, Jacopo Frigerio{2}, Giovanni Isella{2}, Lorenzo Colace{3}
{1}Eye4NIR S.r.l, Italy; {2}Politecnico di Milano, Italy; {3}Roma Tre University, Italy

6992: Experimental Investigation on Phase Noise Induced Interference in Coherently-Detected OTDR
Zexu Liu, Muyang Wang, Weiqi Lu, Lei Liu, William Shieh
Westlake University, China

7031: A High Resolution Phase Shift Detection System for a Differential Multimode Fiber Refractometer
Olivier Bernal{1}, Ardi Rahman{1}, Haris Apriyanto{1}, Frederic Surre{3}, Saroj Pullteap{2}, Han Cheng Seat{1}
{1}LAAS-CNRS, University of Toulouse, Toulouse INP, France; {2}Silpakorn University, Thailand; {3}University of Glasgow, United Kingdom

6445: AI-Driven rPPG Heart Rate Detection for In-Vehicle Monitoring
Martina Pierri, Alessandro Gumiero, Nicola Picozzi
STMicroelectronics, Italy

1:30 PM - 3:00 PM
Physical Sensors 2 (Poster Session)
Room: Kairaku
Session Chair(s): Behraad Bahreyni

6116: Imaging of Sr-90 Radionuclide Sources Based on Diamond Pixel Detectors
Marco Girolami{1}, Sara Pettinato{3}, Daniele Trucchi{1}, Stefano Salvatori{2}
{1}CNR - Consiglio Nazionale delle Ricerche, Italy; {2}Università degli Studi Niccolò Cusano, Italy; {3}Università degli Studi Roma Tre, Italy

6123: Effective Compensation of the Piezo-Hall Effect in CMOS-Integrated 3D Hall Sensors
Anja Fleck{1}, Martin Cornils{2}, Laurent Osberger{2}, Oliver Paul{1}
{1}Albert-Ludwigs-Universität Freiburg, Germany; {2}TDK-Micronas GmbH, Germany

6224: A Novel System Design of Eddy Current Testing Robot for Metal Defect Detection
Ruilin Lyu, Tian Meng, Lei Xiong, Fengkuan Zhu, Xue Bai, Wuliang Yin
University of Manchester, United Kingdom

6309: Electric Field Micro Mill in the Nonlinear Regime with Enhanced Noise Density and Sensitivity
Lifang Ran{3}, Guijie Wang{3}, Shenglin Hou{1}, Qianzhen Su{3}, Jianhua Li{3}, Bo Zhang{3}, Xiaolong Wen{3}, Najib Kacem{2}, Ashwin A. Seshia{1}
{1}University of Cambridge, United Kingdom; {2}University of Franche-Comté, France; {3}University of Science and Technology Beijing, China

6335: Iron Detection Method Based on High-Resolution Magnetic Field Camera
Hugo Nicolas, Céline Vergne, Joris Pascal
University of Applied Sciences and Arts Northwestern Switzerland, Switzerland

6400: Real-Time Gas-Compensated Thermal Flow Sensor
Shirin Azadi Kenari, Remco J. Wiegerink, Remco G. P. Sanders, Joost C. Lötters
University of Twente, Netherlands

6446: A Mode-Localized DC Electric Field Microsensor with 0.4 V/M Resolution
Pengfei Yang{2}, Ruohang Wang{2}, Zhaozhi Chu{3}, Xiaolong Wen{4}, Chunrong Peng{1}
{1}Aerospace Information Research Institute, Chinese Academy of Sciences, China; {2}Beijing Information Science and Technology University, China; {3}Institute of Microelectronics of Chinese Academy of Sciences, China; {4}University of Science and Technolo

6448: Highly Sensitive and Moisture-Resistant 3D DC Electric Field Meter Based on Microsensors
Pengfei Yang{2}, Xiaolong Wen{4}, Zhaozhi Chu{3}, Chunrong Peng{1}
{1}Aerospace Information Research Institute, Chinese Academy of Sciences, China; {2}Beijing Information Science and Technology University, China; {3}Institute of Microelectronics of Chinese Academy of Sciences, China; {4}University of Science and Technolo

6624: Toward Large-Scale Application of a Bio-Inspired MEMS Optical Hair Flow Sensor Array
Lansheng Zhang, Zheyi Hang, Huan Hu
Zhejiang University, China

6765: Paper-Based PEDOT:PSS Sensors for Cure Process Monitoring of Epoxy Resin
Sarah Bornemann{1}, Yicheng Zhou{2}, Reiner Jedermann{1}, Björn Lüssem{1}
{1}Universität Bremen, Germany; {2}University of Bremen, Germany

6911: GaN Monolithic Chips for Rapid Temperature Sensing
Hongying Yang, Yumeng Luo, Kwai Hei Li
Southern University of Science and Technology, China

7147: Bimodal Surface Acoustic Wave Sensor Based on Vanadium-Doped Zinc Oxide Film for High-Precise Pressure Measurement Enabled with Temperature Compensation
Chuqiao Wang{2}, Wei Gao{1}, Guangyao Pei{2}, Yunzhe Liu{2}, Kai Cheng{2}, Zheng Guo{2}, Jian Luo{2}, Binghe Ma{2}
{1}Harbin Engineering University, China; {2}Northwestern Polytechnical University, China

7174: Comparison of Optical and Capacitive Dew Point Detection Using COTS Components
Malte Nilges, David Riehl, Klaus Hofmann, Ferdinand Keil
Technische Universität Darmstadt, Germany

1:30 PM - 3:00 PM
Emerging Sensor Technologies & Applications – B (Poster Session)
Room: Kairaku
Session Chair(s): Joost Lötters

6782: Understanding Electrostatic Sensing with Graphene
Jules Maistret, Pierre Lavenus
ONERA, France

6812: High-Precision Fabrication of Graphene Nanoplatelet-Based Piezoresistive Strain Sensors Using PμSL 3D Printing Technology
Engincan Tekin, Ming Cao, Ajay Giri Prakash Kottapalli
University of Groningen, Netherlands

6857: Effects of Annealing Temperature on Morphology and LSPR Sensing Performance of Au Nanostructures
Chih-Ching Ho, Chih-Jen Yu, Chia-Ming Yang
Chang Gung University, Taiwan

6879: Controllable Starching Treatment for High-Performance Strain Sensors and EMG Electrodes in Smart Garments
Wentian Yi, Chenyu Tang, Muzi Xu, Luigi Occhipinti
Occhipintigroup, Cambridge Graphene Centre, University of Cambridge, United Kingdom

6960: High-Precision Prediction of NOx, NO2 and C6H6 by Multiple Gas Sensors Using a Novel Cascaded MLP-LSTM Model
Kai Yang Ng{1}, Duc Thang Ngo{1}, Paul C.-P. Chao{1}, Ray Hua Horng{1}, Jia-Min Shieh{2}
{1}National Yang Ming Chiao Tung University, Taiwan; {2}Taiwan Semiconductor Research Institute, Taiwan

6981: Flexible Coils Localization Using Optically Pumped Magnetometers for Biomedical Applications
Céline Vergne, Hugo Nicolas, Simon Lemoigne, Joris Pascal
University of Applied Sciences and Arts Northwestern Switzerland, Switzerland

6998: A Dual Port Low Reflection Microwave Angular Displacement Sensor Based on Transversal Signal Interference Principle
Desen Li{3}, Kam-Weng Tam{3}, Zhuowei Zhang{3}, Chi-Hou Chio{3}, Xin Zhou{3}, Qiwei Chen{4}, Junxiao Liu{4}, Ngai Kong{3}, Cheng Teng{1}, Hon-Pan Sio{2}
{1}Laxen Technology Ltd, China; {2}Macao Science Centre, Macau; {3}University of Macau, China; {3}University of Macau, Macau; {4}Zhuhai Wujing Technology Ltd, China; {4}Zhuhai Wujing Technology Ltd, Macau

7037: Size-Resolved Concentration Estimation of Nano- and Micro-Plastics for Different Water Salinity with Nanoelectrode Array Sensors
Daniele Goldoni, Luigi Rovati, Luca Selmi
University of Modena and Reggio Emilia, Italy

7138: High Speed SPAD Active Quenching and Reset Chipset in 55nm BCDLite Process for Quantum Applications
Jun Zhang{2}, Yuqi Su{1}, Bin Zhao{2}, Moe Thar Soe{3}, Ahn Tuan Do{2}, Alexander Ling{3}, Yuan Gao{2}
{1}Agency for Science, Technology and Research, Singapore; {2}Institute of Microelectronics IME, Agency for Science, Technology and Research, Singapore; {3}National University of Singapore, Singapore

7142: Human Presence and Attention Detection Through Stand-Alone Low Resolution Time-of-Flight Sensor
Lu Wang, Hemin Han, Ke Han, Shouwei Sun, Xiaodong Cai, Zheng Wan, Lili Ma
Intel Corporation, China

7153: Multi-Modal Sensing for Enhanced Surface Roughness Prediction in CNC Machining Using an Intelligent Vise
Ho-Chuan Hsu, Shang-Yu Lin, Po-Han Chen, Pei-Zen Chang, Wei-Chang Li
National Taiwan University, Taiwan

1:30 PM - 3:00 PM
Wearable Sensors & Systems – B (Poster Session)
Room: Kairaku
Session Chair(s): Anna Maria Pappa
Doua Kosaji

6339: Wireless Readout System for Pressure Monitoring Using FFF-Printed Mold Fabricated Flexible Piezoresistive Sensors
Sai Peng, Arthur Camelbeke, Kevin Deschamps, Veerle Vandeginste, Hans Hallez
Katholieke Universiteit Leuven, Belgium

6717: Toward Automatic Cardiovascular and Respiratory Assessment Using Automatic 6-Minute Walking Test
Katri Karhinoja, Tuukka Panula, Matti Kaisti
University of Turku, Finland

6722: ResSense: A Modern Pipeline for Respiratory Arousal Detection Using PPG Signals
Nattawat Soontreekulpong{2}, Phairot Autthasan{2}, Thitikorn Kaewlee{3}, Wansiri Worawitayanon{2}, Tanut Choksatchawathi{3}, Nattapong Jaimchariyatam{1}, Busarakum Chaitusaney{1}, Theerawit Wilaiprasitporn{4}
{1}King Chulalongkorn Memorial Hospital, Thai Red Cross Society, Thailand; {2}Vidyasirimedhi Institute of Science and Technology, Thailand; {3}Vidyasirimedhi Institute of Science and Technology / Sense AI Company Limited, Thailand; {4}Vidyasirimedhi Insti

6733: A Phonocardiogram Quality Assessment Method Using Multi-Domain Feature
Li Ling{3}, Yumin Li{3}, Yuchan Lv{2}, Xinru Qin{2}, Yamei Bai{2}, Chenxi Yang{3}, Junjie Pan{1}, Huan Li{1}, Chenghao Sui{1}, Yanan Zhou{1}, Jianqing Li{3}, Chengyu Liu{3}
{1}Goertek Technology Co., China; {2}Nanjing University of Chinese Medicine, China; {3}Southeast University, China

6787: An Ultra-Light and Flexible sEMG Active Probe for Patch-Like Muscle Activity Monitoring
Letizia Cantore, Fabio Rossi, Andrea Mongardi, Danilo Demarchi
Politecnico di Torino, Italy

6814: System Integration of an Implantable Drug Delivery Device for Long-Term In-Vivo Experiments
Fabiana Del Bono{2}, Nicola Di Trani{1}, Danilo Demarchi{2}, Alessandro Grattoni{1}, Paolo Motto Ros{2}
{1}Houston Methodist Research Institute, United States; {2}Politecnico di Torino, Italy

6838: Impact of Finger Contact Force on Aortic Waveform Parameters Derived from Finger Photoplethysmography Using a Transfer Function
James Cox{2}, Mark Butlin{2}, Ehad Akeila{1}, Gisele Bentley{2}, Alberto Avolio{2}, Ahmad Qasem{1}
{1}Cardiex Limited, Australia; {2}Macquarie University, Australia

6894: Integration of Single-Foot Impedance Plethysmography and Ballistocardiography on an Shoe Insole for Robust Heartbeat Detection
José Alberto García-Limón{2}, Ramon Casanella{2}, Carlos Alvarado-Serrano{1}, Oscar Casas{2}
{1}CINVESTAV, Mexico; {2}Universitat Politècnica de Catalunya, Spain

6900: Snowflake-Patterned CNT/LIG@SEBS-Based Dry Electrodes for Reliable Arrhythmia Diagnosis
Moon Seong Jo, Gagan Bahadur Pradhan, Seung Jae Lim, Jae Yeong Park
Kwangwoon University, Korea

6954: A Low-Power Intelligent Wearable System with Multi-Sensors and Lightweight Machine Learning Algorithm for Motion-Status Monitoring
Ziyue Kong{1}, Hailing Fu{1}, Yeyun Cai{1}, Dong Jiang{2}, Fang Deng{1}
{1}Beijing Institute of Technology, China; {2}Peking University Third Hospital, China

7075: Photonic-Based Wearable Sensor for Upper Limb Rehabilitation
Nour Al-Rahmani{1}, Noora A. Alhashmi{1}, Showq Alhammadi{1}, Alanood Alameri{1}, Fatema Almarzooqi{1}, Doua Kosaji{1}, Mohammad Awad{1}, Kinda Khalaf{1}, Maria de Fatima Domingues{2}
{1}Khalifa University, U.A.E.; {2}Khalifa University & University of Aveiro, U.A.E.

7099: Integration of Ballistocardiogram with PPG and ECG Using a CNN-LSTM Model for Cuff-Less Blood Pressure Estimation
Nadia Yaghoobi, Mohammad Narimani, Edward J. Park
Simon Fraser University, Canada

7145: A Smart, Energy-Efficient, and Low Cost Portable Device for Continuous Breath Analysis
Rifaa Qadri, Geng Liu, Faizan Wajid, Mara Cai, Ashok Agrawala
University of Maryland, United States

7152: Performance Evaluation of MEMS Vibration Sensors for Throat Microphones
Che-Yu Hsu{2}, Po-Han Chen{2}, Ting-Yi Chen{2}, Shang-Yu Lin{2}, Ching-Jen Wang{1}, Chingwei Yeh{1}, Tay-Jyi Lin{1}, Pei-Zen Chang{2}, Wei-Chang Li{2}
{1}National Chung Cheng University, Taiwan; {2}National Taiwan University, Taiwan

7181: Towards Wearable Acute Stress Detection and Mitigation via Real-Time Photoplethysmogram Feature Detection
Farhan Rahman{1}, Prabhkirat Bindra{1}, Jesus Sanchez-Perez{1}, Afra Nawar{1}, Harrison Crane{1}, John Berkebile{1}, Asim Gazi{2}, Jin-Oh Hahn{3}, Omer Inan{1}
{1}Georgia Institute of Technology, United States; {2}Harvard University, United States; {3}University of Maryland, United States

1:30 PM - 3:00 PM
Actuators, Energy Harvesters & Powering Sensors – A (Poster Session)
Room: Kairaku
Session Chair(s): Hongsoo Choi

6129: Creep Property of Polyvinylidene Fluoride in Water When Used as Binder for Battery Electrodes
Shiori Tagai, Masaya Ueda, Yoshinao Kishimoto, Yukiyoshi Kobayashi, Atsuki Takeuchi, Yudai Furuhata
Tokyo City University, Japan

6167: Radioluminescent Nuclear Battery for the Application of Self-Powered Sensors
Tongxin Jiang{2}, Sijie Li{1}, Xin Li{1}, Xue Li{1}, Lifeng Zhang{1}, Haisheng San{2}
{1}China Institute of Atomic Energy, China; {2}Xiamen University, China

6332: Moisture-Induced Energy Harvesting Devices with Biocompatible Albumin-MXene Composites
Abhirup Das{1}, Riya Sadhukhan{1}, Asima Pradhan{2}, Priyanka Rani{1}, Subharthi Saha{1}, Madhuchanda Banerjee{2}, Dipak Kumar Goswami{1}
{1}Indian Institute of Technology Kharagpur, India; {2}Midnapore College, India

6743: Deep-N-Well-Assisted CMOS Photovoltaic Micro-Cells for Powering the Wearable Sensors
Roghaieh Parvizi, Fiheon Imroze, Jinwei Zhao, Martin Weides, Muhammad Ali Imran, Hadi Heidari
University of Glasgow, United Kingdom

6939: The Development of Rumen Bacteria Microbial Fuel Cell in Anaerobic Environments
Yasutaka Shimizu{2}, Jarred Fastier-Wooller{2}, Yoshihiro Muneta{1}, Hiroshi Sawada{1}, Michitaka Yamamoto{2}, Seiichi Takamatsu{2}, Shozo Arai{1}, Toshihiro Itoh{2}
{1}National Institute of Animal Health, National Agriculture and Food Research Organization, Japan; {2}University of Tokyo, Japan

6978: Design of Micro-Security Device Based on Three-Stage Electric-Thermal Mechanism
Wanming Wang, Tengjiang Hu, Jing Sun, Yulong Zhao
Xi'an Jiaotong University, State Key Laboratory for Manufacturing Systems Engineering, China

6996: A Dual Input Five Output Solar Energy Harvester with 93.46% Peak Efficiency for Heterogeneous Wireless Sensor Node Applications
Murali K Rajendran{2}, Gajendranath Chowdary{1}
{1}Indian Institute of Technology, Hyderabad, India; {2}National Institute of Technology, Trichy, India

7058: Analysis of Energy Harvesting in Beyond Diagonal-RIS-Enabled WSNs
Amit Kr Pandit, Kunal Agham, Ajeet Singh Shekhawat, Yatindra Nath Singh
Indian Institute of Technology Kanpur, India

7104: Empowering Energy-Aware Task Operations and Timekeeping with Intermittent Sensor Systems
Sergey Mileiko, Firdaus Ritom, Domenico Balsamo
Newcastle University, United Kingdom

7106: Characterization of Graphene-Based Flexible One-Side-Coil NFC Tag for Temperature Sensing
Najwa Mohd Faudzi{5}, Ahmad Rashidi Razali{2}, Asrulnizam Abd Manaf{3}, Nurul Huda Abd Rahman{5}, Ahmad Azlan Abd Azia{4}, Amiruddin Ibrahim{5}, Aiza Mahyuni Mozi{5}, Syed Muhammad Hafiz{1}, Suraya Sulaiman{1}, A. Rashid{1}
{1}MIMOS Berhad, Malaysia; {2}UiTM Cawangan Pulau Pinang, Malaysia; {3}Universiti Sains Malaysia, Malaysia; {4}Universiti Teknologi Brunei, Malaysia; {5}Universiti Teknologi MARA, Malaysia

1:30 PM - 3:00 PM
Sensors in Industrial Practices – A (Poster Session)
Room: Kairaku
Session Chair(s): Amit Kumar
Anil Roy

6035: Helios, a Contactless Optical Sensor for the Assessment of Transmission Line Conductors Peripheral Solar Absorptivity
Jonathan Bellemare{2}, Vincent Quenneville-Guay{1}, Marion Nourry{2}, Pierre-Luc Richard{2}, Michel Doucet{3}, Ovidiu Pancrati{3}, Nicolas Pouliot{2}
{1}Collaborator, Canada; {2}Hydro-Quebec IREQ, Canada; {3}Institut National d'Optique, Canada

6046: Channel Assessment for a Sensor System for Status Detection of Miniature Circuit Breakers
Andreas Port, David Salido-Monzú
ABB Corporate Research, Switzerland

6183: Measurement of DC Bias Current of Transformer Using Integrated TMR Sensors
Xueqiong Zhu{1}, Zhen Wang{1}, Chengbo Hu{1}, Zhengyu Liu{1}, Jinggang Yang{1}, Peng Fan{2}, Zhen Wei{2}
{1}State Grid Jiangsu Electric Power Company Ltd. Research Institute, China; {2}Wuhan NARI Limited Liability Company, State Grid Electric Power Research Institute, China

6248: In-Line Portable Moisture Sensor
Diego Barrettino{2}, Denis Ferreira{2}, Markus Thalmann{1}
{1}Lucerne University of Applied Sciences and Arts, Switzerland; {2}SensDRB Ltd., Switzerland

1:30 PM - 3:00 PM
Sensor Systems: Advances in Signal Processing
Room: Kairaku
Session Chair(s): Jubong Lee
Noriko Tsuruoka

6110: Analysis of Effects of Sensor Error Factors on Attitude and Heading Errors for Inertial/Magnetic Sensor-Based Stationary Alignment
Chang June Lee, Jung Keun Lee
Hankyong National University, Korea

6376: Evaluation of Automatic Irrigation System for Regulating Intrapelvic Pressure During Instrument Insertion and Removal for Flexible Ureteroscopy
Noriko Tsuruoka{2}, Takashi Yoshida{4}, Yoichi Haga{2}, Hidefumi Kinoshita{1}, Sang-Seok Lee{3}, Tadao Matsunaga{3}
{1}Kansai Medical University, Japan; {2}Tohoku University, Japan; {3}Tottori University, Japan; {4}Tottori University, Kansai Medical University, Osaka Saiseikai-Noe Hospital, Japan

6552: Investigation of Environmental Influences on Radar Measurements in the W- and D-Band
Tobias Körner, Jonas Wagner, Artur Chertkov, Jan Barowski, Ilona Rolfes, Christian Schulz
Ruhr-Universität Bochum, Germany

6646: Sensing-Oriented ISAC with OTFS: Effective IRCI-Free Target Range Reconstruction
Xinyu Liu{1}, Ye Yuan{2}, Zhengquan Zhang{1}, Zheng Ma{1}, Pingzhi Fan{1}
{1}Southwest Jiaotong University, China; {2}University of Electronic Science and Technology of China, China

6683: Frequency Measurement Using Frequency Control to Improve Distance Resolution of FMCW LiDAR
Jubong Lee, Youngjoon Cho, Kyihwan Park
Gwangju Institute of Science and Technology, Korea

6953: UWB-Visual-Inertial Fusion Localization with Fast and Robust UWB Extrinsic Calibration
Zhongqi Yin, Wengqiang Li, Feng Shen
Harbin Institute of Technology, China

7061: Generalised Spatial Modulation Assisted Constant Envelope OFDM
Yanrui Wang, Hao Chen, Lilin Dan, Juan Zhang, Yue Xiao
University of Electronic Science and Technology of China, China

6099: Active Sensing Based Quaternary Mixture Odor Quantification Using Viscous Coated QCM Sensor Array with Multiple Harmonic Responses
Ziteng Bao{2}, Manuel Aleixandre{1}, Takamichi Nakamoto{1}
{1}Institute of Innovative Research, Tokyo Institute of Technology, Japan; {2}Tokyo Institute of Technology, Japan

6199: An Ultra-Low Power System-on-Chip for IoT Sensing Nodes
Juan Luis Soler-Fernández{2}, Omar Romera{2}, Angel Diéguez{2}, Juan Daniel Prades{1}, Oscar Alonso{2}
{1}Technische Universität Braunschweig, Germany; {2}Universitat de Barcelona, Spain

1:30 PM - 3:00 PM
Data Processing & AI Methods & Applications (Poster Session)
Room: Kairaku
Session Chair(s): André Lazzaretti

6020: Fruity Twin – A Digital Platform for Processing Sensor Data in Food Cool Chains
Reiner Jedermann{2}, Tuany Gabriela Hoffmann{1}, Akshay D. Sonawane{1}, Pramod V. Mahajan{1}, Björn Lüssem{2}
{1}Leibniz Institute for Agricultural Engineering and Bioeconomy, Germany; {2}Universität Bremen, Germany

6061: Pipelines Leak Localization Through Acoustic Emission and Deep Learning
Felipe Messias Priotto, Diego Siedel Bertolini, José Jair Alves Mendes Júnior, André Eugenio Lazzaretti, Lúcia Valéria Ramos Arruda, Raphael Marinho Teixeira
Federal University of Technology-Paraná, Brazil

6243: All-Sky Near-Infrared Star Identification
Shunmei Dong{2}, Qinglong Wang{1}, Haiqing Wang{1}, Qianqian Wang{2}
{1}Beijing Institute of Control and Electronic Technology, China; {2}Beijing Institute of Technology, China

6341: Fast Crosstalk Compensation in Resistive Sensor Arrays Using Feed-Forward Neural Networks
Sergio Domínguez-Gimeno, Raúl Igual-Catalán, Carlos Medrano-Sánchez, Inmaculada Plaza-García
University of Zaragoza, Spain

6371: Single-Shot Efficient Depth Imaging Based on Time-Compressive CMOS Image Sensor
Michitaka Yoshida{1}, Daisuke Hayashi{3}, Lioe De Xing{3}, Keita Yasutomi{3}, Shoji Kawahito{3}, Keiichiro Kagawa{3}, Hajime Nagahara{2}
{1}Japan Society for the Promotion of Science, Shizuoka University, Japan; {2}Osaka University, Japan; {3}Shizuoka University, Japan

6477: Energy-Efficient Implementation of Explainable Feature Extraction Algorithms for Smart Sensor Data Processing
Julian Schauer, Payman Goodarzi, Andreas Schütze, Tizian Schneider
Universität des Saarlandes, Germany

6587: Banana Ripeness Estimation Using a Non-Destructive Approach Composed of an Array of Multimodal Sensors and Machine Learning
Kristian Callaghan, Uriel Martinez-Hernandez
University of Bath, United Kingdom

6688: Identification of Varieties of Agricultural Products Based on a Machine Olfactory System and a Lightweight Multiscale Convolutional Neural Network
Jia Yan, Zhe Li, Mingye Han, Yong Chen, Songqi Gao, Shuangjing Yang
Southwest University, China

6464: Exploration of Flavor Sample for Odor Reproduction in Mass Spectrum Space
Hanqing Zhao{2}, Dani Prasetyawan{2}, Takamichi Nakamoto{1}
{1}Institute of Innovative Research, Tokyo Institute of Technology, Japan; {2}Tokyo Institute of Technology, Japan

6337: Environmental Variation or Instrumental Drift? a Probabilistic Approach to Gas Sensor Drift Modeling and Evaluation
Cheng Yang, Gustav Bohlin, Tobias Oechtering
KTH Royal Institute of Technology, Sweden

6832: A Novel TimesNet Based Electronic Nose Data Recovery Method
Cong Gao, Guangfen Wei, Aixiang He, Shasha Jiao, Wei Zhang
Shandong Technology and Business University, China

1:30 PM - 3:00 PM
Actuators, Energy Harvesters & Powering Sensors – B (Poster Session)
Room: Kairaku
Session Chair(s): Hongsoo Choi

6105: Monolithic Integration of Audio Filters for Frequency Response and THD Modulation in MEMS Microspeaker
Yu-Chen Chen, Hsu-Hsiang Cheng, Ming-Ching Cheng, Zih-Song Hu, Weileun Fang
National Tsing Hua University, Taiwan

6217: Vertical-Axis Rotary Triboelectric Nanogenerator with a Dual-Shaft Design for Enhanced Performance
Jingu Jeong, Soonjae Pyo
Seoul National University of Science and Technology, Korea

6242: A Planar Architecture with Polarity-Reversible Solenoid for High Power Density of MEMS Vibration Energy Harvester
Kai Wang{1}, Xiaojian Xiang{2}, Ran Zhang{1}, Dengyin Zhang{1}
{1}Nanjing University of Posts and Telecommunications, China; {2}Research Institute of Tsinghua University in Shenzhen, China

6629: Electromagnetic Vibration Energy Harvester with Replaceable Ortho-Planar Springs
Tra Nguyen Phan, Ye Xu, Bengt Oelmann, Sebastian Bader
Mid Sweden University, Sweden

6656: Modeling and Optimization of Multi-Terraced-Plate Electrostatic Actuator
Biyun Ling{1}, Minli Cai{3}, Biqing Zhou{2}, Xiaoyue Wang{1}, Yuhu Xia{1}, Yuwei Han{3}, Yaming Wu{1}
{1}Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences, China; {2}Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences, UCAS, China; {3}University of Chinese Academy of Sciences, C

6710: Inkjet-Printed Electrohydraulic Actuator
Chinmay Gupta, Wessel Hogenboom, Bayu Jayawardhana, Ajay Giri Prakash Kottapalli
University of Groningen, Netherlands

6792: Performance Analysis of a Rotational Energy Harvester with a Dynamically Changing Potential Energy Function
Carlo Trigona{2}, Suhail Ahmed Almani{2}, Giuliano Salerno{2}, Salvatore Baglio{2}, Damian Gąska{1}, Jerzy Margielewicz{1}
{1}Silesian University of Technology, Poland; {2}University of Catania, Italy

7054: Design and Optimization of Wideband MEMS Energy Harvester Using Graph Neural Network
Aylar Abouzarkhanifard, Ting Zou, Mohammad Al Janaideh, Lihong Zhang
Memorial University, Canada

7103: Harvesting Kinetic Energy from Rain Gauge Tipping Motion Using Electromagnetic Induction
Ma Aida James, Mark Dutton, Sergey Mileiko, Domenico Balsamo
Newcastle University, United Kingdom

1:30 PM - 3:00 PM
Sensors for Climate: Smart Agriculture – A (Poster Session)
Room: Kairaku
Session Chair(s): Danilo Demarchi
Umberto Garlando

6927: In-Situ Characterization of Stainless Steel Probes-Based Soil Electrical Conductivity Sensor
Sheng Ding{1}, Shad Roundy{1}, Ramesh Goel{1}, Cody Zesiger{2}, Darrin J Young{1}
{1}University of Utah, United States; {2}Utah State University, United States

1:30 PM - 3:00 PM
Sensor Applications for Industry (Poster Session)
Room: Kairaku
Session Chair(s): Amit Kumar

6072: Optimization Design of Artificial Lateral Line Sensing Arrays Based on CRLB
Renfeng Gong, Kehong Lv, Qiang Guo, Jing Qiu, Guanjun Liu, Yong Zhang
National University of Defense Technology, China

6108: Study on Vibration Characteristics of Bolted and Bonded Joints by Using Acceleration Sensors
Shogo Isobe, Tristan Britton, Yoshinao Kishimoto, Yukiyoshi Kobayashi, Keisuke Inoue
Tokyo City University, Japan

6136: A Novel High-Performance Miniaturized MEMS Gyroscope North Finding System Utilizing Rotation Modulation Technique
Xueling Zhao, Haixia Li, Rong Zhang
Tsinghua University, China

6172: Evaluating 3D Depth Sensors: A Study and an Open Source Data Set of Logistic Scenarios
Sebastian Hoose{1}, Felix Warmuth{2}, Jan Finke{1}, Christopher Rest{1}, Jonas Stenzel{1}, Jana Jost{1}
{1}Fraunhofer Institute for Material Flow and Logistics IML, Germany; {2}SICK AG, Germany

6184: Composite and Stretchable Silicone for Niche Profiling Applications
Padmanabh Pancham{2}, Anupam Mukherjee{1}, Teng-Chung Liu{2}, Kun-Han Lin{2}, Wen-Hsin Chiu{2}, Chiang Liu{3}, Cheng-Yao Lo{2}
{1}General Silicones, Taiwan; {2}National Tsing Hua University, Taiwan; {3}University of Taipei, Taiwan

6327: Contactless In-Bed Detection Using a Low-Cost Low-Resolution Radar
Hajar Abedi, Ahmad Ansariyan, George Shaker
University of Waterloo, Canada

6361: A Conductivity-Compensated Liquid Film Thickness Measurement Scheme Using Segmented Electrode Arrays
Souvik Mandal, Prasanta Kumar Das, Karabi Biswas
Indian Institute of Technology Kharagpur, India

6613: Digital Model-Based Approach for Predicting Gearbox Remaining Useful Life Using Response Surface Methodology
Li-Te Huang{1}, Jen-Yuan Chang{2}
{1}Industrial Technology Research Institute, Taiwan; {2}National Tsing Hua University, Taiwan

6660: Detection of Out-of-Plane Waviness in Carbon-Fibre Reinforced Plastics - Comparing Different Non-Destructive Evaluation Modalities
Rylan Gomes{4}, Ehsan Mohseni{4}, Gareth Pierce{4}, Kenneth Burnham{4}, Amine Hifi{4}, Charles Macleod{4}, Vincent Maes{3}, Matthew Chandler{3}, Andy Barnes{1}, Gavin Munro{2}
{1}Adaptix NDE, United Kingdom; {2}Spirit Aerosystems, United Kingdom; {3}University of Bristol, United Kingdom; {4}University of Strathclyde, United Kingdom

6967: Toward Continuous Monitoring of Concrete Health via PVDF Receiver
Heejin Hwang, Shinyeon Kim, Minjeong Kim, Seungyeon Lee, Moonjung Kwak, Soomin Kwon, Youngjun Joo, Seung Hyun Song
Sookmyung Women's University, Korea

1:30 PM - 3:00 PM
Innovative Smart Sensors for E-Skin – A (Poster Session)
Room: Kairaku
Session Chair(s): Hossein Cheraghi Bidsorkhi
Alessandro Giuseppe D'Aloia

7080: Graphene-PVDF Aerogel Composites for Humidity Sensing Applications
Negin Faramarzi, Saeed Ur Rahman, Samira Lakouraj Mansouri, Babar Ali, Hossein Cheraghi Bidsorkhi, Alessandro Giuseppe D'aloia, Maria Sabrina Sarto
Sapienza University of Rome, Italy

1:30 PM - 3:00 PM
Biological, Chemical and Medical Sensors and Applications (Poster Session)
Room: Kairaku
Session Chair(s): Sung Jae Kim
Alessio Tamburrano

6253: Graphene Field Effect Transistor Based Gas Sensor with Functionalized Olfactory Receptors Immobilized in Solid Phase for Household Odor Detection
Wanseop Choi, Yunguk Jang, Hyekyoung Seo, Oedong Kim, Yongho Cho, Wonhyeog Jin, Eunhwa Choi, Sunghee Lee, Seonghyok Kim
LG Electronics, Korea

6621: Silver Dendrites Decorated AAO Membrane for Sers Sensing of Lactic Acid in Artificial Sweat
Chia-Ling Sung{1}, Tzung-Ta Kao{2}, Yu-Cheng Lin{1}
{1}National Cheng Kung University, Taiwan; {2}National Kaohsiung University of Science and Technology, Taiwan

7208: Modification of CuO Nanorods on SPCE for EIS Measurement of Organophosphate Pesticides
Noppasit Thianngoen{2}, Nutthun Thanajantaporn{2}, Jiraphat Pongpoon{2}, Siwagorn Limwathanag{2}, Sittinadh Wanotayan{1}, Chanchana Thanachaya{3}, Porpin Pungetmongkol{2}
{1}BCGeTEC, Chulalongkorn University, Thailand; {2}NANO Engineering, Faculty of Engineering, Chulalongkorn University, Thailand; {3}National Metal and Materials Technology Center (MTEC), NSTDA, Thailand

7219: Fundamental Study on Novel Biological Indicator Using DNA-Labeled Microbeads for Evaluating Nonthermal Plasma Sterilization
Michihiko Nakano, Takamasa Okumura, Masafumi Inaba, Pankaj Attri, Kazunori Koga, Masaharu Shiratani, Junya Suehiro
Kyushu University, Japan

7263: Enhanced Localized Surface Plasmon Resonance Gas Sensing Using Metal-Organic Frameworks Combined with PEDOT: PSS Films
Hao Guo
Kyushu University, Japan

7264: Generating Synthetic Mechanocardiograms for Machine Learning Based Peak Detection
Jonas Sandelin, Ismail Elnaggar, Olli Lahdenoja, Matti Kaisti, Tero Koivisto
University of Turku, Finland

7293: Revealing the Capability of an LMR Microfluidic Biosensor for Celiac Disease Diagnosis via Label-Free Detection of Anti-Gliadin Antibodies
Melanys Benitez, Pablo Zubiate, Abián Bentor Socorro, Ignacio Raul Matías
Public University of Navarre, Spain

7298: An Affordable Hardware-Aware Neural Architecture Search for Deploying Convolutional Neural Networks on Ultra-Low-Power Computing Platforms
Andrea Mattia Garavagno{3}, Edoardo Ragusa{2}, Antonio Frisoli{1}, Paolo Gastaldo{2}
{1}Scuola Superiore Sant'Anna, Italy; {2}University of Genoa, Italy; {3}University of Genoa and Scuola Superiore Sant'Anna, Italy

7301: Steep-Subthreshold Bilayer Tunnel Field-Effect Transistor-Based Efficient Ph Sensing: Performance Characterization and Optimization
Prateek Kumar{3}, Naveen Kumar{4}, Ankit Dixit{4}, Navjeet Bagga{1}, Sudeb Dasgupta{2}, Vihar Georgiev{4}
{1}IIT Bhubaneswar, India; {2}IIT Roorkee, India; {3}National Institute of Technology Jalandhar, India; {4}University of Glasgow, United Kingdom

1:30 PM – 3:00 PM
WiSe/YP BIP
Room: Waraku2

3:00 PM - 4:30 PM
Imaging & Tomography
Room: Nojigiku
Session Chair(s): Han-Yin Liu
Hajar Abedi

3:00 PM
6620: CMOS-Compatible Dual-Column Linear Image Sensor with a Gain of 10^5 and Dynamic Range of 120 dB
Xin Jin, Chao Gao, Kuiren Su, Zhou Zhou, Tao Ma, Xiaolin Liu, Qian Li, Kai Wang
SUN YAT-SEN UNIVERSITY, China

3:15 PM
6685: Fabrication of Stacked CMOS Image Sensor with NiO/Ga2O3 UV photoconversion Films Using low-Oxygen RF-Sputtered NiO for Transparent Image Sensor
Masahide Goto, Shigeyuki Imura, Yuji Miyamoto
NHK (Japan Broadcasting Corporation), Science & Technology Research Laboratories, Japan

3:30 PM
7052: A Multimode CMOS Vision Sensor with On-Chip Motion Direction Detection and Simultaneous Energy Harvesting Capabilities
Jiangchao Wu{2}, Xin Lu{2}, Man-Kay Law{2}, Yang Jiang{2}, Liyuan Liu{1}, Pui-In Mak{2}, Rui P. Martins{2}
{1}Chinese Academy of Sciences, China; {2}University of Macau, China

3:45 PM
7204: Quantitative Prediction of a Moving Axisymmetric Void Using Parallel Wire-Type Capacitive Sensor
Souvik Mandal, Prasanta Kumar Das, Karabi Biswas
Indian Institute of Technology Kharagpur, India

4:00 PM
6614: Noncontact 2-D Temperature Imaging of Metallic Foils Using Electromagnetic Tomography
Sanetomo Hayashi, Shunsuke Yoshimoto, Akio Yamamoto
University of Tokyo, Japan

4:15 PM
6762: Planar Array of Electrical Capacitance Tomography with Rotation
Maomao Zhang{1}, Yijun Liu{2}, Manuchehr Soleimani{3}
{1}Shenzhen Institute for Advanced Study, University of Electronic Science and Technology of China, China; {2}Tsinghua Shenzhen International Graduate School, China; {3}University of Bath, United Kingdom

3:00 PM - 4:30 PM
Radar Sensors & Applications
Room: Waraku1
Session Chair(s): Sara Pettinato
Pai-Yen Chen

3:00 PM
6663: Mutual Compensation Range Detection Method Using Multimodulation Radar for Precision Range Detection
Jae Young Sim{2}, In-Seong Lee{1}, Yuna Park{1}, Jong-Ryul Yang{1}
{1}Konkuk University, Korea; {2}Yeungnam University, Korea

3:15 PM
6969: Deep Learning-Based In-Cabin Monitoring and Vehicle Safety System Using a 4-D Imaging Radar Sensor
Hajar Abedi{3}, Martin Ma{1}, James He{3}, Jennifer Yu{2}, Ahmad Ansariyan{3}, George Shaker{3}
{1}Harvard University, United States; {2}University of Toronto, Canada; {3}University of Waterloo, Canada

3:30 PM
7197: Automated Violin Bowing Gesture Recognition Using FMCW-Radar and Machine Learning
Hannah Gao{1}, Changzhi Li{2}
{1}Harriton High School, United States; {2}Texas Tech University, United States

3:45 PM
7198: Quadrature and Single-Channel Low-Cost Monostatic Radar Based on a Novel 2-Port Transceiver Chain
Daniel Rodriguez{1}, Davi Rodrigues{4}, Ashish Mishra{2}, Mohammad Saed{3}, Changzhi Li{3}
{1}Intel, United States; {2}Magna International, United States; {3}Texas Tech University, United States; {4}University of Texas at El Paso, United States

4:00 PM
7203: Human Activity Classification Based on Cognitive Doppler Radar to Optimize Carrier Frequency and Sampling Rate Using Reinforcement Learning
Amin Hong{1}, Young-Hoon Chun{2}, Sangyeol Oh{2}, Youngwook Kim{3}
{1}Korea Institute of Advanced Science and Technology, Korea; {2}LIG-Nex1, Korea; {3}Sogang University, Korea

4:15 PM
7220: Radar System for Detecting Respiration Vital Sign of Live Victim Behind the Wall
Aloysius Adya Pramudita{3}, Ding-Bing Lin{2}, Harfan Hian Ryanu{3}, Sung-Nien Hsieh{1}
{1}National Taiwan University, Taiwan; {2}National Taiwan University of Science and Technology, Taiwan; {3}Telkom University, Indonesia

3:00 PM - 4:30 PM
Thermal Sensing Technologies
Room: Kitano
Session Chair(s): Cheng-Yang Liu
Hao-Chiao Hong

3:00 PM
7279: Reference-Free Calibration for Wearable Core Body Temperature Sensor Based on Single-Heat-Flux Method
Yuki Hashimoto, Soto Tada, Yoshifumi Nishida
Tokyo Institute of Technology, Japan

3:15 PM
6541: Inkjet Printed Temperature Sensor from eco-Friendly Edge Oxidized graphene Oxide Ink on Biodegradable Polyvinyl Alcohol Substrate
Junaid Khan{2}, Martin Weis{1}, M. Mariatti{2}
{1}Institute of Electronics and Photonics, Slovak University of Technology, Ilkovicova 3, Bratislava, 8, Slovakia; {2}School of Materials and Mineral Resources Engineering, Universiti Sains Malaysia, Malaysia

3:30 PM
6773: High-Q Wireless SAW Sensors Based on AlN/Sapphire Bilayer Structure, Operating at 2.45 GHz Range for High-Temperature Applications
Ulrich Youbi{2}, Sami Hage-Ali{2}, Qiaozhen Zhang{1}, Yang Yang{1}, Demba Ba{2}, Hamid M'jahed{2}, Thierry Aubert{2}, Omar Elmazria{2}
{1}Shanghai Normal University, China; {2}Université de Lorraine, CNRS, IJL UMR 7198, France

3:45 PM
7226: Screen Printing Silver Shielded ITO-In2O3 Thin-Film Thermocouples for Electromagnetic Interference Reduction
Shuimin Li{3}, Zhongkai Zhang{2}, Jiaming Lei{3}, Zhaojun Liu{3}, Jiangjiang Liu{3}, Meng Wang{3}, Qing Tan{1}, Rui Qi{1}, Bian Tian{3}
{1}Nano & New Materials Research Division, CISDI Research & Development Co., Ltd., China; {2}School of Mechanical Engineering, Xi'an Jiaotong University, China; {3}Xi'an Jiaotong University, China

4:00 PM
7281: Photovoltaic-Energy-Powered Temperature-Sensing Chip with Digital Output and Built-in Energy Harvesting Circuit
Yen-Ju Lin, Jian-Zhou Yan, Kai-Min Chang, Chia-Ling Wei
National Cheng Kung University, Taiwan

4:15 PM
6670: Information Fusion Based Temperature Sensing with Passive UHF RFID Tags
Xu Zhang{2}, Zhiyun Lin{2}, Jing Guo{1}, Youxin Zhang{1}
{1}Foshan University, China; {2}Southern University of Science and Technology, China

3:00 PM - 4:30 PM
Sensor Systems & Applications
Room: Kikusui
Session Chair(s): Jong-Ryul Yang
Yunqi Cao

3:00 PM
6651: Rule the Joule: an Energy Management Design Guide for Self-Powered Sensors
Daniel Monagle, Eric Ponce, Steven Leeb
Massachusetts Institute of Technology, United States

3:15 PM
7202: Predicting Soldier Performance on Structured Military Training Marches with Wearable Accelerometer and Physiological Data
David Lin{2}, Aprameya Satish{3}, Kristine Richardson{2}, Sungtae An{2}, Cem Yaldiz{2}, Mark Buller{4}, Kyla Driver{4}, Emma Atkinson{4}, Timothy Mesite{4}, Christopher King{1}, Omer Inan{2}, Alessio Medda{3}
{1}Combat Capabilities Development Command (DEVCOM), United States; {2}Georgia Institute of Technology, United States; {3}Georgia Tech Research Institute, United States; {4}United States Army Research Institute of Environmental Medicine, United States

3:45 PM
6948: On the Treatment of Measurement Errors for Magnetic Angular Sensors with Neural Networks
Phil Meier, Kris Rohrmann, Marvin Sandner, Marcus Prochaska, Oussama Ferhi
Ostfalia University of Applied Sciences, Germany

4:00 PM
7215: Self-Powered Flexible Wearable Sensing Platform for Ascorbic Acid Detection in Sweat
Jose Ilton de Oliveira Filho{2}, Daísy Camargo Ferreira{1}, Murilo Calil Faleiros{1}, Khaled Nabil Salama{2}
{1}KAUST, Saudi Arabia; {2}King Abdullah University of Science and Technology, Saudi Arabia

4:15 PM
7218: Prediction of Glucose Sensor Sensitivity in the Presence of Biofouling Using Machine Learning and Electrochemical Impedance Spectroscopy
Hrishita Sharma, Deepjyoti Kalita, Ujjal Naskar, Bikash Kumar Mishra, Prasoon Kumar, Khalid Baig Mirza
National Institute of Technology, Rourkela,India, India

3:00 PM - 4:30 PM
MEMS
Room: Sumire/Tsutsuji
Session Chair(s): Nouha Alcheikh
Behraad Bahreyni

3:00 PM
7275: Air-Coupled Whispering Gallery Mode On-Chip Microspherical Shell Resonator for High-Frequency Ultrasound Detection
Chichen Huang{1}, Jiayuan Zhang{2}, Srinivas Tadigadapa{1}
{1}Northeastern university, United States; {2}Northeastern university, Office of the Provost, United States

3:15 PM
7287: Expanding Limit of Detection and Increasing Operating Resonant Frequency via Larger Anchor Widths for Capacitive Micromachined Resonator-Based Mass Sensors
Annalise Gignac, Akib Shamsuddin, Haleh Nazemi, Muhammad Umair Nathani, Arezoo Emadi
University of Windsor, Canada

3:30 PM
6555: A Machine Learning Enhanced MEMS Thermal Anemometer for Detection of Flow, Angle of Attack and Relative Humidity
Thomas Leigh Hackett, Jeong Young Choi, Remco Sanders, Tom van Den Berg, Dennis Alveringh, Jurriaan Schmitz
University of Twente, Netherlands

3:45 PM
6560: Design and Fabrication of Micro Resonator with Bilateral Concentric Boundaries
Haleh Nazemi{2}, Ryan Graham{1}, Bruce Ye{2}, David Damiani{1}, Arezoo Emadi{2}
{1}Polytec, United States; {2}University of Windsor, Canada

4:00 PM
7278: High-Temperature-Resistant Polymer-Based 3-D-Printed Electromagnetic Scanning Micromirror
Yongseung Lee{2}, Yong-Kweon Kim{2}, Chang-Hyeon Ji{1}
{1}Ewha Womans University, Korea; {2}Seoul National University, Korea

4:15 PM
6568: Electrothermal Tunable MEMS Oscillators for MEMS Based Reservoir Computing
Yuan-Chieh Lee, Liang-Kai Wang, Yu-Chi Chuang, Hao-Chiao Hong, Yi Chiu
National Yang Ming Chiao Tung University, Taiwan

3:00 PM - 4:30 PM
Optical Sensors and Systems
Room: Nunobiki
Session Chair(s): Bertrand Bourlon
Hengky Chandrahalim

3:00 PM
7276: Robust Determination of Performance Loss Rate for Photovoltaic Systems
Sergey Muravyov, Liudmila Khudonogova, Alexander Pak
Tomsk Polytechnic University, Russia

3:15 PM
7019: Splice Loss Investigation of single-Mode Fiber and Photonic Crystal Fiber and its Potential Refractometric Sensing Applications
Haris Apriyanto{1}, Olivier Bernal{2}, Michel Cattoen{2}, Frederic Surre{3}, Han Cheng Seat{2}
{1}INP de Toulouse, France; {2}LAAS-CNRS, University of Toulouse, Toulouse INP, France; {3}University of Glasgow, United Kingdom

3:30 PM
7206: A Compact and Low-Cost Optical Sensor for Progesterone Detection Using Molecularly Imprinterd Polymer
Nuntaporn Kongswang, Yifan Guan, Paris Uerchuchai, Pannathorn Jipratak, Nuthee Am-In, Charusluk Viphavakit
Chulalongkorn University, Thailand

3:45 PM
6715: Printed Optical Waveguide Temperature Sensor with Rhodamine-Doped Core
Rebeca Beatriz Davila{2}, Ignacio Raul Matias{2}, Silvia Zabala{1}, Pedro José Rivero{2}, Jesus Maria Corres{2}
{1}Centro Stirling, Spain; {2}Public University of Navarra, Spain

4:00 PM
6599: Machine Learning-Based Methods for Force Mapping with an Optical Fiber Sensing System
Walter Oswaldo Cutipa Flores{1}, Vinícius Carvalho{2}, Victor Hugo Martins{1}, Jose Luis Fabris{1}, Márcia Muller{3}, Heitor Silverio Lopes{1}, André Eugenio Lazzaretti{1}
{1}Federal University of Technology-Paraná, Brazil; {2}Universidade Tecnológica Federal do Paraná, Brazil; {3}UTFPR, Brazil

4:15 PM
7261: Self-powered, Flexible, Edible UV Sensors Based on Sustainable Materials Applicable for Food Packaging
Mohammadreza Chimerad, Pouya Borjian, Pawan Pathak, Hyoung J. Cho
University of Central Florida, United States

3:00 PM - 4:30 PM
Biosensors
Room: Sappaire
Session Chair(s): Woo Hyoung Lee
Wei Gao

3:00 PM
6542: A Zero-Power Harmonic Tag for Real-Time Wireless Food Quality Monitoring
Yichong Ren{2}, Nanshu Wu{2}, Kuo-Cheng Chang{1}, Yu-Sheng Su{1}, Pai-Yen Chen{2}
{1}National Yang Ming Chiao Tung University, Taiwan; {2}University of Illinois Chicago, United States

3:15 PM
7247: Wireless and Portable Electrochemical Measurement System Integrated with Screen-Printed Immunosensor for VP28 Protein Detection
Linh Huynh Thi Thuy{2}, Minh Le Quang Nhat{2}, Phu Nguyen Dang{6}, Hung Cao{4}, Hung Anh Nguyen{5}, Jung-Chih Chiao{3}, Chun-Ping Jen{1}, Loc Do Quang{7}, Trinh Chu Duc{6}, Tung Bui Thanh{6}
{1}National Chung Cheng University, Taiwan; {2}School of Engineering and Technology, Hue University, Vietnam; {3}Southern Methodist University, United States; {4}University of California, Irvine, United States; {5}University of California, Irvine, USA, Un

3:30 PM
7282: Label-Free EGFR Sensing by Using a Flexible IrOx Extended-Gate Field-Effect Transistor-Based Biosensor
Kanishk Singh{2}, Chao-Hung Chen{1}, Li-Chia Tai{2}, Wei-Chen Huang{2}, Tung-Ming Pan{1}
{1}Chang Gung University, Taiwan; {2}National Yang Ming Chiao Tung University, Taiwan

3:45 PM
7283: Optimizing Glucose Sensor Calibration with Lightweight Neural Networks: a Comparative Study
Costanza Cenerini{2}, Anna Sabatini{2}, Luca Vollero{2}, Danilo Pau{1}
{1}STMicroelectronics, Italy; {2}Università Campus Bio-Medico di Roma, Italy

4:00 PM
6764: Identification and Quantification of Multiple Drugs by Machine Learning on Electrochemical Sensors for Therapeutic Drug Monitoring
Lin Du{1}, Francesca Rodino{1}, Yann Thoma{2}, Sandro Carrara{1}
{1}EPFL, Switzerland; {2}HEIG-VD, Switzerland

3:00 PM - 4:30 PM
Chemical, Electrochemical & Gas Sensors 3
Room: Ikuta
Session Chair(s): Bérengère Lebental
Daesik Lee

3:00 PM
6194: Temperature Dependence of Accuracy of Thermal Conductivity Hydrogen Sensor
Shunsuke Akasaka{2}, Koji Terumoto{2}, Isaku Kanno{1}
{1}Kobe University, Japan; {2}ROHM Co., Ltd., Japan

3:15 PM
6285: Functionalized Graphene Sensors for Selective and Sensitive Gas Detection in Real Air at Room Temperature
Manoharan Muruganathan{1}, Osazuwa G. Agbonlahor{1}, Md. Zahidul Islam{1}, Afsal Kareekunnan{1}, Yosuke Onda{2}, Masashi Hattori{2}, Hiroshi Mizuta{1}
{1}Japan Advanced Institute of Science and Technology, Japan; {2}TAIYO YUDEN CO., LTD. R&D Center, Japan

3:30 PM
6356: A Low Power Single-Cantilever Gas Sensor Cell with Remarkable Recognition Capability for Food Freshness Related Gases
Yujie Yang{2}, Dongcheng Xie{1}, Yan Zhang{1}, Dongliang Chen{2}, Ruichen Liu{2}, Di He{2}, Cong Xing{2}, Liang Geng{2}, Lei Xu{2}
{1}Micro Nano Sensing (Hefei) Technology CO., Ltd., China; {2}University of Science and Technology of China, China

3:45 PM
6412: Colorimetric/Electrical Sensing of Chemical Warfare Agent Surrogates with Polydiacetylenes
Stephanie White, Philip Miller, Marieke Sorge, Clayton Curtis, Alexander Hare, Joshua Whiting, Jason Sammon, William Corbin
Sandia National Laboratories, United States

4:00 PM
6451: High-Performance and Low-Power VOCs Monitoring System with Temperature and UV Light Modulation Enhanced MEMS Gas Sensors
Jiaqing Zhu{3}, Tao Wang{1}, Wangze Ni{2}, Zhuoheng Li{2}, Weiwei Cheng{3}, Lechen Chen{2}, Xinan Ma{1}, Zhi Yang{2}, Jianhua Yang{2}, Shusheng Xu{3}, Bowei Zhang{1}, Fuzhen Xuan{1}
{1}East China University of Science and Technology, China; {2}Shanghai Jiao Tong University, China; {3}Shanghai University of Engineering Science, China

4:15 PM
6394: Investigation of Hydrogen Spatial Distribution During Smoldering Fire in Capacitive MEMS Hydrogen Sensor Using Pt Thin Film
Yumi Hayashi, Naoki Hiramatsu, Hiroshi Hamasaki, Hiroaki Yamazaki
Toshiba Corporation, Japan

3:00 PM - 4:30 PM
Data Processing & AI for Imaging & Optical Sensing
Room: Waraku2
Session Chair(s): Marco Jose Da Silva

3:00 PM
6312: Lightweight Object Detection Model for a CMOS Image Sensor with Binary Feature Extraction
Keiichiro Kuroda{2}, Yudai Morikaku{2}, Yu Osuka{2}, Ryoya Iegaki{1}, Kota Yoshida{2}, Shunsuke Okura{2}
{1}Nisshinbo Micro Devices Inc, Japan; {2}Ritsumeikan University, Japan

3:15 PM
6680: LIF-SAR: Local Interpolation Function Based SAR Imaging for Irregular Scanning Geometries
Andrew Gigie, Rokkam Krishna Kanth, Achanna Anil Kumar, Tapas Chakravarty, Arpan Pal
TCS Research, India

3:30 PM
6286: Defense Method Against Adversarial Example Attacks Using Thermal Noise of a CMOS Image Sensor
Yuki Rogi, Kota Yoshida, Tatsuya Oyama, Takeshi Fujino, Shunsuke Okura
Ritsumeikan University, Japan

3:45 PM
6287: SPECTRE: A Dataset for Spectral Reconstruction on Chip-Size Spectrometers with a Physics-Informed Augmentation Method
Julio Wissing{2}, Teresa Scholz{2}, Stefan Saloman{2}, Lidia Fargueta{2}, Stephan Junger{2}, Alessio Stefani{2}, Wladimir Tschekalinskij{1}, Stephan Scheele{3}, Ute Schmid{3}
{1}DUALQUANT GmbH, Germany; {2}Fraunhofer Institute for Integrated Circuits IIS, Germany; {3}Otto-Friedrich-Universität Bamberg, Germany

4:00 PM
6676: ME-Net: A Network for Scale-Variant Objects in Harsh Underwater Detection Scenes
Haodi Zhu{3}, Shaojian Yang{2}, Yan Wei{3}, Wenchu Wang{1}, Xinyi Zhou{3}, Fengzhong Qu{3}
{1}Central Conservatory of Music, China; {2}Ocean College, Zhejiang University, China; {3}Zhejiang University, China

4:15 PM
6315: Enhancing Port Automation: A Novel Object Detection Pipeline for Container Ship Bays
Junan Lin{1}, Stefano Maranò{1}, Bruno Arsenali{1}, Josip Marjanovic{1}, Niklas Sundholm{2}, Elin Jirskog{2}, Deran Maas{1}
{1}ABB Corporate Research, Switzerland; {2}ABB Ports, Sweden

4:30 PM – 5:30 PM
Conference & Council Publications Award Ceremony
Room: Portopia Hall

5:30 PM – 6:00 PM
Closing Remarks
Room: Portopia Hall