

# SAS 2022 Session Details

## Monday, August 1

### M1: Special Session: Sensing systems for a sustainable economy

10:40-12:20

Session Chairs: Salvatore Graziani, Adi R. Bulsara

- 1570795758 Detection and Thickness Estimation of Oil under Saline Ice Using Machine Learning
- 1570799404 Modeling of a Bacterial Cellulose-based Composite in Bending Configuration
- 1570800175 Design Considerations of Capacitive Sensors for Micro-Droplet Detection
- 1570800001 Comparison of Magnetic Field Sensors for Current Distribution Reconstruction Through Barycenter Filament Model
- 1570800278 Telemetric QCM-D based sensing system with adaptive excitation frequency

Presenter

Imad Elhaji  
Salvatore Graziani  
Sumathi Parasuraman  
Mirko Marracci  
Federico Carli

### M2: Biomedical Sensors and Systems

13:40-15:20

Session Chairs: Bruno Andò, Lisa Petani

- 1570800194 Integration of fiber optic sensors in organ-on-a-chip devices towards label-free cell viability assays
- 1570795827 Experimental Setup for Evaluation of Medical Ozone Gas Sensors
- 1570799545 Load Cell Force and Direction Sensor System for Push Bars
- 1570800039 A Neuro-Fuzzy Approach to Assess Postural Sway
- 1570800062 Effects of Lighting and Window Length on Heart Rate Assessment through Video Magnification

Sanzhar Shakarim  
Lisa Petani  
Bahareh Chimehi  
Bruno Ando  
Leen Yassin Kassab

### MP: Poster Session 1

15:20-16:20

Session Chairs: Karsten Husby, Benny Thörnberg

- 1570794663 Hydrogen induced dipole layer in Pd-SiO<sub>2</sub> based gas sensors
- 1570799550 Presenting a novel NDT Eddy Current probe for crack detection on rough welds and steel with variable permeability
- 1570799874 Classification of batteries in waste streams using magnetic induction spectroscopy
- 1570800103 Development of a neural network to identify plastics using Fluorescence Lifetime Imaging Microscopy
- 1570797720 The Material Imaging Analyzer MIA
- 1570800167 Techtile: a Flexible Testbed for Distributed Acoustic Indoor Positioning and Sensing
- 1570800287 A simple and highly sensitive Force Sensor based on modified plastic optical fibers and cantilevers
- 1570802790 A three-electrode capacitive based sensing system to determine the direction of motion of humans
- 1570802853 A Bending Angle Sensor Based on Magnetic Coupling Suitable for Soft Robotic Finger
- 1570802768 Magnetic Sensor Array for Determining the Assembly Torsion and Preload of a Bolted Joint

Idan Shem Tov  
Karsten Husby  
Kane Williams  
Georgekutty Jose Maniyattu  
Benny Thörnberg  
Daan Delabie  
Francesco Arcadio  
Poojitha Makireddy  
Debasrita Kar  
Thorben Schütte

### M3: Smart IoT Sensing and Networking

16:20-18:00

Session Chairs: Tommaso Polonelli, Paolo Bellagente

- 1570797111 Performance Comparison between Decawave DW1000 and DW3000 in low-power double side ranging applications
- 1570787876 A low-cost, open-source, and distributed ocean profiling sensor node
- 1570802356 Assessment of UWB RTLS for Proximity Hazards Management in Construction Sites
- 1570800061 Rx position effect on Device Free Indoor Localization in the 28 GHz band
- 1570802844 Feasibility of Measuring Shot Group Using LoRa Technology and YOLO V5

Tommaso Polonelli  
Andres Rico  
Paolo Bellagente  
Juan Aviles  
Sanghyun Park

## Tuesday, August 2

### T1: Smart Mobility and Smart Agriculture

10:40-12:20

Session Chairs: Enea Masina, Gerrit Maus

- 1570800160 Water Stress Detection in Pearl Millet Canopy with Selected Wavebands using UAV Based Hyperspectral Imaging and Machine Learning
- 1570800189 A parking spot occupancy sensor based on commodity wireless chipsets
- 1570802845 Evaluation of the quality of LiDAR data in the varying ambient light
- 1570802829 Towards the Future Generation of Railway Localization and Signaling Exploiting sub-meter RTK GNSS
- 1570799572 Real-time LiDAR module with 64x128-pixel CMOS SPAD array and 940-nm PCSEL

Rajalakshmi Pachamuthu  
Gerrit Maus  
Rajalakshmi Pachamuthu  
Enea Masina  
Sheng-Di Lin

## Tuesday, August 2 (continued)

### T2: Novel Sensing Technologies

13:40-15:20

Session Chairs: Francesco Arcadio, Yuxuan Zhang

1570799514	Plasmonic Sensors based on 3D-printed polymer waveguides covered by a metals bilayer	Francesco Arcadio
1570800023	Three-Coil Sensor for Liquid Level Measurement	Shilpa George
1570797357	In-process tool deflection measurement in incremental sheet metal forming	Marina Terlau
1570800047	Live Migration of a 3D Flash LiDAR System between two Independent Data Processing Systems with Redundant Design	Philipp Stelzer
1570802543	A Lightweight Convolutional Neural Network Model for Concrete Damage Classification using Acoustic Emissions	Yuxuan Zhang

### TP: Poster Session 2

15:20-16:20

Session Chairs: Alessandro Depari, Mazhar Hussain

1570799797	IoT with a Soft Touch: A Modular Remote Sensing Platform for STE(A)M Applications	Jona Cappelle
1570799969	Self-sustainable IoT Wireless Sensor Node for Predictive Maintenance on Electric Motors	Tommaso Polonelli
1570799671	Active magnetic ranging while drilling: A down-hole surroundings mapping	Karsten Husby
1570796338	Selection of optimal parameters to predict fuel consumption of city buses using data fusion	Mazhar Hussain
1570801804	On feature selection in automatic detection of fitness exercises using LSTM models	Alessandro Depari
1570802997	Ensemble learning in the estimation of flow types and velocities of individual phases in multiphase flow-using non-intrusive accelerometers' and process	Ru Yan
1570802511	Sensor Data Communication via Light Guide Body for Monitoring Vehicle Batteries	Karl-Ragmar Riemschneider
1570800162	Towards lightweight deep neural network for smart agriculture on embedded systems	Tommaso Polonelli
1570799785	Printed wireless battery-free sensor tag for structural health monitoring of natural fiber composites	Lukas Rauter
1570799996	Metrological Analysis of a Contactless Inductive Position Measurement System	Gabriel Gruber
1570830070	Recent Results: Strategies for Increasing Longevity of IoT Devices	Jona Cappelle

### T3: Wearable Sensors and Assisted Living

16:20-17:40

Session Chairs: Jeanette Ortega, Gernot Fiala

1570799534	Impact of face covering models on respiratory sound classification applications	Madison Cohen-McFarlane
1570800236	Particle doped fiber based sensors for the monitoring of structures	Jeanette Ortega
1570799680	Maintaining Synchrony of Dual Machine Learning: A Phase-Locked Loop Approach	Saif Almhairat
1570802624	Pupil Detection for Augmented and Virtual Reality based on Images with Reduced Bit Depths	Gernot Fiala
1570802777	Method to Improve Gait Speed Assessment for Low Frame Rate AI Enabled Visual Sensor	Ashi Agarwal

## Wednesday, August 3

### W1: Robotics and Automation

10:40-12:20

Session Chairs: Christian Brunner, Sebastian Schaffnerroth

1570797832	An Anomaly Detection System for Transparent Objects Using Polarized-Image Fusion Technique	Lixing Yu
1570797752	High accuracy torque measurement with position measuring devices	Christian Brunner
1570798492	Improvement of Door Recognition Algorithm using Lidar and RGB-D camera for Mobile Manipulator	Minwoo Kang
1570800138	Measurement setup for industrial communication techniques under electromagnetic interference	Sebastian Schaffnerroth
1570800161	Forestry Crane Automation using Learning-based Visual Grasping Point Prediction	Harald Gietler

### W2: Special Session: Edge computing for medical IoT: sensors, algorithms and applications for wearables and implantable HMIs

13:40-15:20

Session Chairs: Simone Benatti, Sareh Soleimani Gilakjani

1570803831	Interpretable CNN for Single-Channel Artifacts Detection in Raw EEG Signals	Francesco Paissan
1570802388	Emotion Classification from EEG Signals Using a Cascade of Convolutional and Block-Based Residual Recurrent Neural Networks	Sareh Soleimani Gilakjani
1570805255	Comparing Optimal and Commercially Available Bipolar and Tripolar Concentric Ring Electrode Configurations Using Finite Element Method Modeling Based on Their Finite Dimensions Models	Oleksandr Makeyev
1570802908	Automatic Extraction of Muscle Fascicle Pennation Angle from Raw Ultrasound Data	Sergei Vostrikov
1570802942	Cough Classification Using Audio Spectrogram Transformer	Karim Habashy