



ECDSA-12
2025
Conference

The 12th International Electronic Conference on Sensors and Applications

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ECDSA-12
2025
Conference

The 12th International Electronic Conference on Sensors and Applications

12–14 November 2025 | Online

Chaired by Prof. Dr. Stefano Mariani, Prof. Dr. Stefan Bosse,
Prof. Dr. Francisco Falcone and Prof. Dr. Jean-Marc Laheurte



sensors



The 12th International Electronic Conference on Sensors and Applications

Part of the **International Electronic Conference on Sensors and Applications** series

[\(https://sciforum.net/event-series/ecsa\)](https://sciforum.net/event-series/ecsa)

12–14 November 2025

Event's Timezone: Central European Time

The 12th International Electronic Conference on Sensors and Applications

(<https://sciforum.net/event/ECOSA-12>).

ECOSA-12 will be FREE for Participation!

If you were unable to upload your full file by the deadline, you may attach your file and sent to ecsa@mdpi.com (<https://mailto:ecsa@mdpi.com>) for manual processing.

Our new full file submission deadline is **5 September 2025**.

Join us today to [register](https://sciforum.net/event/ecsa-12?section=#registration) (<https://sciforum.net/event/ecsa-12?section=#registration>), and be part of cutting-edge discussions and networking opportunities!

Welcome from the Chairs

Dear Colleagues,

We are pleased to announce **The 12th International Electronic Conference on Sensors and Applications (ECOSA-12)**. The conference is sponsored by MDPI (<https://www.mdpi.com/>), and the scientific journal *Sensors* (<https://www.mdpi.com/journal/sensors>) (ISSN 1424-8220, Impact Factor 3.4, CiteScore 8.2). It will be held **online** from **12 to 14 November 2025**.

After the success of the eleven editions from 2014 to 2024, this year's edition will focus on the following thematic areas where sensors are changing science:

- S1. Chemo- and Biosensors;**
- S2. Physical Sensors;**
- S3. Sensor Networks, IoT, Smart Cities, and Health Monitoring;**
- S4. Sensors and Artificial Intelligence;**
- S5. Smart Agriculture Sensors;**
- S6. Electronic Sensors, Devices, and Systems;**
- S7. Wearable Sensors and Healthcare Applications;**
- S8. Robotics, Sensors, and Industry 4.0;**

A student competition will also be held online for selected students' contributions (students as correspondences) exhibited in the:

S9. Student Session.

For more details of the competition, please click [Event Awards](https://sciforum.net/event/ECOSA-12?subscribe§ion=#awards). (<https://sciforum.net/event/ECOSA-12?subscribe§ion=#awards>).

This event will solely be online that allows participation from all over the world with no concerns about travel and related expenditures. This type of conference is particularly appropriate and useful because research concerned with

ECSA-12 Program (DAY 1)

DAY 1 - Morning

- Opening Ceremony
- S4. Sensors and Artificial Intelligence
- S6. Electronic Sensors, Devices, and Systems

Date: 12 November 2025 (Wednesday)
Time: 09:00 (CET, Basel) | 03:00 (EST, New York) | 16:00 (CST Asia, Beijing)

Time in CET	Speaker	Title
Opening Ceremony		
9:00-9:30	Prof. Dr. Stefano Mariani Prof. Dr. Jean-Marc Laheurte Conference Chairs	Opening Ceremony
S4. Sensors and Artificial Intelligence		
9:30-9:40	Prof. Dr. Stefano Mariani Conference Chair	Welcome from the Chair
9:40-9:55	Tabassum Kanwal Oral speaker	A Smart Glove-Based System for Dynamic Sign Language Translation Using LSTM Networks
9:55-10:10	Candaş Ünal Oral speaker	XAI-Interpreter: A Dual-Attention Framework for Transparent and Explainable Decision-Making in Autonomous Vehicles
10:10-10:25	Umut Dolangac Oral speaker	Sensor Fusion of Doppler Microwave and Multizone ToF for Short-Range Dynamic Object Tracking
10:25-10:40	Christophe Graveline Oral speaker	Forest Fire Monitoring from Unmanned Aerial Vehicles using Deep Learning
S6. Electronic Sensors, Devices, and Systems		



EVENT SESSIONS
Prof. Dr. Stefano Mariani
Conference Chair

Welcome from the Chair

The 12th International Electronic Conference on Sensors and Applications

10:50-11:05
(<https://sciforum.net/event/ecsa-12>).
Oral speaker

Valerio Pfister
A real-world case study
An efficient neural network for low-cost air quality sensor system:

11:05-11:20	Muhammad Imran Aslam Oral speaker	Development of Cellular IoT-based, portable outdoor air quality monitoring system for Pollution mapping
11:20-11:35	Marco Grossi Oral speaker	Impact of electrical noise on the accuracy of resistive sensor measurements using sensor-to-microcontroller direct interface

DAY 1 - Afternoon

S3. Sensor Networks, IoT, Smart Cities, and Health Monitoring

Date: 12 November 2025 (Wednesday)

Time: 14:00 (CET, Basel) | 08:00 (EST, New York) | 21:00 (CST Asia, Beijing)

Time in CET	Speaker	Title
14:00-14:10	Prof. Dr. Francisco Falcone Conference Chair	Welcome from the Chair
14:10-14:30	Prof. Dr. César Vargas Keynote speaker	Sensing and Communications for Localization
14:30-14:45	Anton Royanto Ahmad Oral speaker	Development of an Autonomous Unmanned Ground Vehicle for Artistic Landscaping
14:45-15:00	Keqi Yang Oral speaker	Research on Intelligent Monitoring of Offshore Structure Damage through the Integration of Multimodal Sensing and Edge Computin
15:00-15:15	Sinda Besrour Oral speaker	A Three-Stage Transformer-Based Approach for Food Mass Estimation
15:15-15:30	Timothy Malche Oral speaker	Scalable Sewer Fault Detection and Condition Assessment using Embedded Machine Vision
15:30-15:45	Sani Abba Oral speaker	Smart IoT-Based COVID-19 Vaccine Supply Chain, Monitoring, and Control System
15:45-16:00	Murugeswari K Oral speaker	Autonomous Traffic Monitoring Pedestrian Crossing Detection with Motion Sensors and Maintenance Decision System in the Smart Cities by Using YOLOV8

([https://sciforum.net/event/ECSA-](https://sciforum.net/event/ECSA-12)

12)		
16:15-16:30	Anushay Khan Oral speaker	AI/ML Enabled Internet of Medical Things (IoMT) for Personalized Cardiac Health Monitoring and Predictive Diagnostics

ECSA-12 Program (DAY 2)

DAY 2 - Morning

S8. Robotics, Sensors, and Industry 4.0

Date: 13 November 2025 (Thursday)

Time: 09:00 (CET, Basel) | 03:00 (EST, New York) | 16:00 (CST Asia, Beijing)

Time in CET	Speaker	Title
9:00-9:10	Prof. Dr. Francisco Falcone Conference Chair	Welcome from the Chair
9:10-9:25	Rusira Karunarathna Oral speaker	Towards Autonomous Raised Bed Flower Pollination with IoT and Robotics
9:25-9:40	İsa Karaböcek Oral speaker	Extending ADAS Control with Full Manual Teleoperation: A Dual-Mode Approach for Remote Driving
9:40-9:55	Anton Royanto Ahmad Oral speaker	Development of a New 3-Axis Force Sensor for Measuring Cutting Forces in a Lathe Machine
9:55-10:10	Diego Ramil López Oral speaker	Human-Centered Interfaces for a Shipyard 5.0 Cognitive Cyber-Physical System
10:10-10:25	Vinicius Toledo Dias Oral speaker	Study on AE-Based Tool Conditioning Monitoring in CFRP Milling Processes
10:25-10:40	DANIEL FORD Oral speaker	Gesture-Controlled Bionic Hand for Safe Handling of Biomedical Industrial Chemicals
10:40-10:55	Oumaima Gharsa Oral speaker	YOLOv8-Based Autonomous Ball Detection and Tracking for Rotorcraft UAVs Using Onboard Vision Sensors

EVENT

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SESSIONS

Iman Barket Ghiloubi
Oral speaker

Backstepping-Based Trajectory Tracking Control of a Three-Rotor UAV: A Robust Nonlinear Approach for Stable Flight

11:10-11:25
(<https://sciforum.net/event/ECSSA-12>)

Mohammed Faeik Ruzaij Al
Oral speaker

Development and Testing of a Low-Cost, Traceable Portable Sensor Node for Ambient Monitoring in Automated Laboratories

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11:25-11:40	Alberto Borboni Oral speaker	Quantitative Evaluation and Comparison of Motion Discrepancy Analysis Methods for Enhanced Trajectory Tracking in Mechatronic Systems
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DAY 2 - Afternoon

S2. Physical Sensors

S7. Wearable Sensors and Healthcare Applications

Date: 13 November 2025 (Thursday)
Time: 14:00 (CET, Basel) | 08:00 (EST, New York) | 21:00 (CST Asia, Beijing)

Time in CET	Speaker	Title
S2. Physical Sensors		
14:00-14:10	Prof. Dr. Jean-Marc Laheurte Conference Chair	Welcome from the Chair
14:10-14:30	Prof. Dr. Hamida Hallil Keynote speaker	Emerging Trends in EM and Acoustic Wave-Based Chemical and Biosensing
14:30-14:45	Kerry Worton Oral speaker	Towards Low-Cost Magnetic Resonance Relaxometry
14:45-15:00	Humberto Vazquez-Sanchez Oral speaker	Applications of Terahertz FMCW radar Reflectometry with plastic waveguide
15:00-15:15	Hind Hallabia Oral speaker	Synchronization of High-Resolution Imageries Acquired by NOAA et SUOMI NFP Satellites for Active Fire Detection over Etna Volcano
15:15-15:30	Moshe Avraham Oral speaker	CMOS-Compatible Narrow Bandpass MIM Metamaterial Absorbers for Spectrally Selective LWIR Thermal Sensors

S7. Wearable Sensors and Healthcare Applications

([https://sciforum.net/event/ECSA-](https://sciforum.net/event/ECSA-12)

15:40-16:00	Dr. Alice Lemarquand Keynote speaker	iSafe project: wearable technologies for traffic accident management – comparison of a logical rule-based score versus artificial intelligence models
16:00-16:15	Sonia D. Becerril-Zepeda Oral speaker	Development of breakout boards for wearable ECG applications based on the AD823X microchip and the Arduino Platform
16:15-16:30	Gianluca Diana Oral speaker	Analysis of the Second Derivative of the PPG Signal as Indicator of Vascular Aging
16:30-16:45	Apostolos Apostolakis Oral speaker	Inkjet-Printed PEDOT:PSS Devices on Tattoo Paper for Transferable Epidermal Temperature Sensing and Heating Applications
16:45-17:00	Timothy Malche Oral speaker	A TinyML Wearable System for Real-Time Cardio Exercise Tracking

ECSA-12 Program (DAY 3)

DAY 3 - Morning

S1. Chemo- and Biosensors

S5. Smart Agriculture Sensors

Date: 14 November 2025 (Friday)

Time: 09:00 (CET, Basel) | 03:00 (EST, New York) | 16:00 (CST Asia, Beijing)

Time in CET	Speaker	Title
9:00-9:10	Prof. Dr. Stefano Mariani Conference Chair	Welcome from the Chair
9:10-9:30	Dr. Michele Penza Keynote speaker	Recent progress in chemical sensors for applications
9:30-9:45	Tieying Xu Oral speaker	Microfluidic sensor chip development dedicated to cell morphology and distribution analysis
9:45-10:00	Alexandru Paolo Mardare Oral speaker	Energy Harvesting for a Microscale Biosensing Device via Piezoelectric Micromachined Ultrasonic Transducers

EVENT

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SESSIONS

Shengzhi Ji
Oral speaker

Optimized Electrode Configurations for Multi-Parameter Detection in Microfluidic Impedance Cytometry

Guzel Ziyatdinova
Oral speaker

Highly Sensitive and Selective Sensor for Acid Yellow 3 based on cerium and tin dioxide nanoparticles

(<https://sciforum.net/event/ECSSA-12>).

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S5. Smart Agriculture Sensors

10:30-10:40	Prof. Dr. Stefano Mariani Conference Chair	Welcome from the Chair
10:40-11:00	Dr. Veronica Sberveglieri Keynote speaker	MOX Sensors for Resilient Farming: Real-Time Insights from Field to Crop
11:00-11:15	Amila Dhanushka Karunanayaka Oral speaker	Non-Invasive Disease Stage Classification of Bitter Rot in Fruits Using Optical Coherence Tomography and Intensity-Based Image Analysis
11:15-11:30	Tarun Teja Kondraju Oral speaker	Exploring the Application of UAV-Multispectral Sensors for Proximal Imaging of Agricultural Crops
11:30-11:45	Neelamadhab Padhy Oral speaker	Federated Edge Learning for Distributed Weed Detection in Precision Agriculture Using Multimodal Sensor Fusion
11:45-12:00	Emanuela Tavaglione Oral speaker	Exploring the Correlation Between Gaseous Emissions and Phenological Phases in Tomato Crops Through Machine Learning

DAY 3 - Afternoon

S9. Student Session
Closing Ceremony

Date: 14 November 2025 (Friday)
Time: 14:00 (CET, Basel) | 08:00 (EST, New York) | 21:00 (CST Asia, Beijing)

Time in CET	Speaker	Title
S9. Student Session		
14:00-14:10	Prof. Dr. Stefano Mariani Prof. Dr. Francisco Falcone Conference Chairs	Welcome from the Chairs
14:14-14:20	XIAOLING LIN Oral speaker	Hyperdimensional Computing for Lightweight Modal-Based Damage Classification in Concrete Structures

Sagar Rana
Oral speaker

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(<https://sciforum.net/event/ECSA-12>).
14:30-14:40

Shang-Jun Chen
Oral speaker

Adaptive extended Kalman filtering for online monitoring of concrete structures subject to impacts

14:40-14:50

Samir Rasulov
Oral speaker

Robust IMU Sensor Fusion via Schreiber's Nonlinear Filtering Approach

14:50-15:00

Danial Ahmed
Oral speaker

Printable Chemoresistive Sensor Based on PrFeTiO₅ Solid Solution for Acetone Detection

15:00-15:10

Mofiyinfoluwa Tobi Olowe
Oral speaker

Development of an Integrated Framework for Automated Construction Progress Sensing, Monitoring and Evaluation

15:10-15:20

Rubeshen Mooroogen
Oral speaker

Use of Machine Learning to detect dangerous level of coal mine methane concentrations during underground mining operations

15:20-15:30

Andrew Beten
Oral speaker

Systematic Analysis of Distribution Shifts in Cross-Subject Glucose Prediction Using Wearable Physiological Data

15:30-15:40

Nhung Huyen Hoang
Oral speaker

Entropy Knows You're Low: Wearable Signal Coupling Patterns Reveal Glucose State

15:40-15:50

Yasaman Torabi
Oral speaker

Design and Implementation of an IoT-based Respiratory Motion Sensor

Closing Ceremony

15:50-16:05

Prof. Dr. Stefano Mariani
Prof. Dr. Jean-Marc Laheurte
Prof. Dr. Francisco Falcone
Conference Chairs

Closing Ceremony

Event Chairs