



# ANNUAL CONFERENCE OF THE IEEE INDUSTRIAL ELECTRONICS SOCIETY

Chicago | Illinois, November 3-6, 2024

## Special Session on Smart Sensors and IEEE 1451 Standards for IoT/IIoT/Smart Cities

### Organized and co-chaired by:

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### Call for Papers

#### Technical Outline of the Session and Topics:

Sensors and actuators are used in many applications, including aerospace, automobile, environmental monitoring, smart buildings/homes, healthcare, industrial automation, smart manufacturing, smart grids, internet of things (IoT), industrial internet of things (IIoT), and smart cities. A smart sensor consists of a set of sensors and/or actuators coupled with meta-data and some capabilities, such as signal conditioning, analog-to-digital conversion, digital-to-analog conversion, sensor data processing, and timing and synchronization by an internal clock with an optional external time reference, and network communications. Thus, the smart sensor can have more intelligent capabilities, such as self-identification, self-description, self-testing, self-diagnostics, self-validation, self-calibration, time and location-awareness, multi-sensing and actuation, and artificial intelligent (AI)-based data fusion. Hence, smart sensors can play key roles in the applications mentioned above by providing data and status of systems deployed in these applications for real-time monitoring, protection, and control operations to improve overall system efficiency, performance, and reliability.

However, sensor data exchange, sharing, and interoperability are major challenges for all these applications. Standardization of smart sensor interfaces, for example, IEEE 1451 suite of standards, will help to achieve sensor data interoperability. Interoperability testing, modelling, measurement, and assessment methods of smart sensors are very helpful to achieving and assuring interoperability of smart sensors/actuators deployed in the applications described above.

#### Topics of the Session include, but are not limited to:

- Smart sensors/actuators.
- Timing and synchronization for smart sensors/actuators.
- Security and privacy for smart sensors/actuators.
- IEEE 1451-based smart sensor/actuator interface standards reference implementations.
- IEEE 1451-based smart sensor/actuator interoperability and conformance testing methods and certifications.
- Smart sensor ontology modelling and semantic interoperability based on IEEE 1451.
- Ontology-based sensor standards harmonization for semantic interoperability.
- Smart sensors/actuators for IoT/IIoT/smart cities applications.
- Smart sensors for smart grid applications.
- Smart sensors/actuators for cyber-physical systems.
- Wireless sensor networks for industrial automation applications.
- Smart sensor/actuator technologies for Industry 4.0.



#### Author's schedule:

Deadline for submission of special session papers	April 15, 2024
Notification of acceptance	June 10, 2024
Deadline for submission of final manuscript	July 01, 2024
Early submission is highly encouraged for early decision notifications!	



All the instructions for paper submission are included in the conference website:

[www.iecon-2024.org](http://www.iecon-2024.org)