

Call for Papers

Special Issue on Multi-Device Cooperative ISAC

The convergence of sensing and communication has led to the emergence of Integrated Sensing and Communication (ISAC) as a promising new paradigm. ISAC enables the joint optimization of sensing and communication to achieve low hardware cost, reduced power consumption, and improved spectral efficiency. In this context, multi-device cooperative ISAC is emerging as a compelling area of research, aiming to enhance the sensing capabilities of wireless networks through the utilization of sensing data from multiple devices, including base stations, edge devices, and IoT sensors. This special issue of the IEEE Sensors Journal is dedicated to exploring the latest advancements and research trends in multi-device cooperative ISAC, with a primary focus on the sensing aspects of these systems.

Topics

This Special Issue of the IEEE Sensors Journal will showcase the state-of-the-art in Multi-Device Cooperative ISAC, with an emphasis on sensing technologies and their integration with communication systems. Original research contributions and review papers are sought related areas including (but not limited to):

- **Cooperative Sensing Algorithms:** Novel algorithms for ISAC in multi-device scenarios, including distributed sensing techniques, cooperative beamforming for sensing and communication, interference management strategies, time and frequency synchronization techniques, and phase alignment strategies across multiple devices.
- **ISAC Signal Processing and Information Fusion:** Advanced signal processing methods for extracting sensing information and optimizing cooperative ISAC signals, as well as techniques for fusing sensing data from multiple devices.
- **Performance Evaluation and Optimization:** Analytical and experimental studies on the performance of multi-base station cooperative ISAC systems, with a particular emphasis on sensing accuracy, environmental adaptability, and robustness. Optimization frameworks and algorithms for maximizing the overall system performance are also of interest.
- **Channel Modeling and Estimation for Multi-Device ISAC:** Channel models and estimation techniques specific to multi-device ISAC, taking into account the interaction between sensing and communication channels and the impact of mobility and the environment.
- **Hardware and System Implementations:** Innovative hardware architectures and system designs for enabling multi-device cooperative ISAC, including transceiver design, antenna systems, and software-defined radio platforms.
- **Applications and Use Cases:** Real-world applications and case studies of multi-device cooperative ISAC in diverse fields such as smart cities, intelligent transportation, industrial automation, and environmental monitoring. Examples include vehicle-to-everything (V2X) communication with sensing capabilities, smart grid monitoring, and indoor positioning systems.

Important dates (tentative)

October 30, 2025	Deadline for Manuscript Submission
December 30, 2025	Completion of Final Review
February 28, 2026	Publication

Upon acceptance papers appear as Early Access (preprints) in IEEEExplore and are fully citable.

Guest Editors

- GE1 Cai Wen, Northwest University, China (wencai@nwu.edu.cn)
- GE2 Timothy N. Davidson, McMaster University, Canada (davidson@mcmaster.ca)
- GE3 Fan Liu, Southeast University, China (f.liu@ieee.org)
- GE4 Le Zheng, Beijing Institute of Technology, China (le.zheng.cn@gmail.com)
- GE5 Kai Wu, University of Technology Sydney, Australia (Kai.Wu@uts.edu.au)

Submission and Peer Review of Papers

Manuscripts submitted to the special issue should maintain an explicit focus on sensing or sensor systems, to be considered within the scope of the IEEE Sensors Journal (please check full journal scope). All manuscripts must be submitted on-line, via the *IEEE Author Portal*, see <https://ieee.atyponrex.com/journal/sensors>. Choose the special issue listed in the dropdown menu during submission. For manuscript preparation and submission, please follow the guidelines in the *Information for Authors* at the IEEE Sensors Journal web page, <https://ieee-sensors.org/ieee-sensors-journal/for-authors>