

Call for Papers

Special Issue on Smart Sensing for Transportation Systems

Transportation systems are becoming increasingly intelligent, connected, and autonomous, creating growing demand for advanced sensing technologies that enable safe, reliable, and sustainable operation. This Special Issue focuses on smart sensing for transportation systems, covering novel sensors, intelligent sensing architectures, multi-modal sensor data fusion, IoT-enabled monitoring, edge intelligence, digital twins, physics-informed and trustworthy AI for sensor data interpretation, sensory data processing, etc. Contributions emphasizing the integration of sensing hardware, intelligent algorithms, and real-world deployment in railways, highways, bridges, aviation, maritime transportation, and connected vehicles are particularly encouraged. The Special Issue welcomes original research articles, review papers, and application-oriented studies from researchers in transportation engineering, artificial intelligence, signal processing, structural health monitoring, and cyber-physical systems. It aims to provide a timely forum that advances next-generation transportation sensing and fosters collaboration between sensor developers, AI researchers, and transportation engineers.

Topics

This Special Issue of the *IEEE Sensors Journal* will showcase state-of-the-art in smart sensing for transportation systems. Original research contributions and review papers are sought related areas including the following list (but not limited to). Note that submissions focusing on different machine learning approaches to intelligent transportation problems should rely not just exclusively on public datasets to demonstrate the claimed contributions.

- 1) Novel sensor design and fabrication for transportation systems
- 2) Smart sensing for railways, roads, bridges, tunnels, aviation, and maritime transportation
- 3) Intelligent sensing for autonomous and connected vehicles
- 4) MEMS, ultrasonic, acoustic emission, radar, lidar, vision, and wireless sensors
- 5) Distributed acoustic sensing for intelligent transportation systems
- 6) Physics-informed artificial intelligence and model-based sensor fusion
- 7) Multi-modal sensing and heterogeneous sensor networks
- 8) Collaborative sensing among multiple nodes (e.g., multiple vehicles, road sensors, and roadside units)
- 9) Edge AI and embedded intelligence for sensors
- 10) Intelligent fault diagnosis and prognostics
- 11) Digital twins enabled by smart sensing
- 12) Sensor reliability, calibration, uncertainty quantification, and self-diagnosis
- 13) Large-scale transportation system monitoring
- 14) Real-world deployment and industrial applications

Important dates (tentative)

May 31, 2027:	Deadline for Manuscript Submission
July 31, 2027:	Completion of Final Review
August 30, 2027:	Publication

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

Guest Editors

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Submission and Peer Review of Papers

Manuscripts submitted to the special issue should maintain an explicit focus on sensors 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>