

CALL FOR PAPERS**IEEE Journal of Selected Areas in Sensors Special Section on
Emerging technologies of imaging systems for robotics and/or UAVs**

Imaging systems are at the core of intelligent perception for both robotics and UAVs. Over the past decade, a profound transformation has occurred—from traditional feature-based methods to modern deep learning, multi-modal sensor fusion, and real-time 3D scene understanding. Robots and UAVs are no longer confined to controlled environments; they are increasingly expected to operate in dynamic, complex, and open-world settings where adaptability and robust perception are critical. The explosive growth of AI-driven vision techniques, combined with advancements in novel sensors and real-time control architectures, has opened new possibilities for robotic autonomy, dexterous manipulation, and aerial navigation. At the same time, cross-disciplinary innovations—such as combining vision with touch, applying language-guided perception, or leveraging simulation and generative AI for training—are reshaping the future of robotic perception systems. This special session seeks to highlight these emerging technologies, foster discussion on next-generation imaging platforms, and encourage collaboration across fields such as robotics, computer vision, machine learning, and sensor technology. We aim to attract contributions that push the boundaries of what robots and UAVs can perceive and achieve, ultimately advancing the goal of truly intelligent and adaptive autonomous systems.

It is intended that this Special Section of IEEE Journal of Selected Areas in Sensors (JSAS) will show the state-of-the-art in emerging technologies of imaging systems for robotics and/or UAVs. Original research contributions, tutorials and review papers are sought in emerging technologies of imaging systems for robotics and/or UAVs related areas including (but not limited to):

- **Novel imaging hardware for robotic and UAV applications:** Novel imaging hardware, such as event cameras, RGB-D sensors, and multispectral systems, is expanding the capabilities of robots and UAVs by providing faster, richer, and more robust visual information. These new sensors enable advanced perception in challenging environments, improving tasks like autonomous navigation, object manipulation, and real-time decision-making.).
- **Advances in AI and Deep Learning for Robotics and UAV Perception:** Recent advances in AI and deep learning have dramatically improved perception capabilities for robotics and UAV systems, enabling more accurate object detection, tracking, and scene understanding. These technologies allow autonomous platforms to operate in complex, unstructured environments with greater adaptability and intelligence.
- **Sensor Fusion and Multi-Modal Perception:** Sensor fusion and multi-modal perception combine data from multiple sensing sources—such as vision, depth, tactile, and inertial sensors—to create a more robust and comprehensive understanding of the environment. This approach enhances the reliability and accuracy of robotic and UAV operations, especially in complex or dynamic conditions.

- **Vision-based robotic control strategies:** Modern robotics integrates closed-loop visual feedback and reinforcement learning to enable real-time error correction and adapt to dynamic environments. By combining predictive control with perception and drawing inspiration from human sensorimotor strategies, robots can optimize manipulation tasks, improving performance in uncertain and complex conditions.
- **3D Object Recognition and Scene Understanding for Robotics:** 3D object recognition and scene understanding in robotics involve leveraging depth sensors and advanced algorithms to accurately identify and track objects in three-dimensional space. This capability enhances robots' ability to navigate and manipulate objects within complex environments, enabling more efficient and adaptive interactions.
- **Vision Technologies for Human-Robot Collaboration:** Vision technologies play a critical role in enabling safe and intuitive collaboration between humans and robots by allowing robots to perceive, understand, and predict human actions. Advances in imaging, sensing, and AI-driven perception are helping robots operate more effectively alongside humans in dynamic and unstructured environments.

Solicited and invited papers shall undergo the standard IEEE Journal of Selected Areas in Sensors (JSAS) peer review process. All manuscripts must be submitted on-line, via the IEEE Author Portal, see <https://ieee.atyponrex.com/journal/jsas>. When submitting, please indicate in the “Manuscript Type” roll down menu that the paper is intended for the “Emerging technologies of imaging systems for robotics and/or UAVs” Special Section. Authors are particularly encouraged to **suggest names of potential reviewers** for their manuscripts in the space provided for these recommendations in *Manuscript Central*. For manuscript preparation and submission, please follow the guidelines in the *Information for Authors* at IEEE Journal of Selected Areas in Sensors web page, <https://ieee-jsas.org/>. In addition, each published paper has a discount of 20% for publication fee.

Deadlines:

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| · Manuscript Submission: | November 1, 2025 (extended) |
| · Completion of First-Round Review: | December 15, 2025 |
| · Deadline for Revision Submission: | December 31, 2025 |
| · Notification of Acceptance: | February 28, 2026 |
| · Final Manuscript published in IEEE Xplore: | May 1, 2026 |

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