Call for Papers Special Collections on Robot-Assisted Medical Imaging

Aims and Scope

Medical robotics has grown significantly over the last two decades, particularly for image-guided surgery. The rapid rise in attention towards human-like intelligence has spurred the development of advanced medical robotics, particularly in addressing complex decision-making challenges within the dynamic medical environment. The integration of advanced medical imaging and robotic techniques holds great promise for creating autonomous medical robotic systems that enable precise clinical diagnosis, healthcare monitoring, optimal operation planning, and safety monitoring. Given the huge advances achieved in this area using various medical imaging modalities such as ultrasound, CT, MRI, laparoscopy, spectral imaging, and photoacoustic imaging, it is timely to have a special collection that summarizes recent advancements. This collection will explore how robotics can enhance medical imaging and how advanced medical imaging can expand the capabilities of robotics in tackling challenging and highly demanding clinical problems.

To highlight machine intelligence that understands physiology knowledge and can robustly work in unknown environments, this special collection is particularly interested in fundamental research, such as investigating novel approaches of embodied intelligence, share-control, large language models, scene understanding, and learning from experts' experiences in the medical environment. The scope of this special section includes, but is not limited to, the following topics:

- Robotic US imaging
- Robotic CT imaging
- Robotic photoacoustic
- Robotic laparoscopy
- Capsule endoscopy
- Image-guided intervention
- Autonomous medical imaging system
- Soft robotics in surgery
- Emerging imaging modalities: multispectral, speckle, polarization
- Embodied intelligence for medical application
- Computer vision for medical application
- Skill encoding from human demonstration
- MRI-compatible medical robotic system
- Physiology knowledge understanding
- Surgical workflow recognition
- Surgical scene understanding
- Novel medical imaging sensing system
- Surgical and medical robotics
- Tracking and navigation

Top-quality original (unpublished) articles and review papers are welcomed, following the IEEE T-RO journal instructions for authors. Each submission will be peer-reviewed and the selection of papers will be based on their originality, impact, and relevance to the scope of the special collection. To ensure that all manuscripts are correctly identified for evaluation for the special collection, please select **"Robot-Assisted Medical Imaging"** in the submission process.

Important Dates:

- Submission open: June 1, 2025
- Submission deadline: ~~December 31, 2025~~ February 15, 2026
- Expected publication date: 2026

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