

IEEE Journal of Selected Topics in Signal Processing: Special Issue on Intelligent Robotics: Sensing, Signal Processing and Interaction

The utilization of sensors enables robots to evaluate the environment and know their status. However, the adoption of sensors in robotic systems also raised many problems: how to design smart sensors and sensing systems for robotics towards different tasks; how to efficiently fuse multi-modal signals from various sensors with sensing mechanisms and precisions; how to enable robots to leverage ubiquitous sensors in their working environment to coordinately make intelligent decisions; and how to exploit unique advantage from emerging techniques such as soft robots, smart materials. Thereby, we endeavor to bring together researchers from academia and industry to introduce the latest advances in robot sensors, related signal processing algorithms, and human-robot interaction applications to the signal processing and robotics community. This special issue focus on signal processing problems that are ahead of robotics applications. An outline of topics on which we plan to solicit submissions is listed but not limited to as follows:

- Novel sensor design and signal processing algorithms for robotics
 - Signal detection with high sensitivity, large range, and low latency
- Tactile perception algorithms, systems for robotics
 - Tactile SLAM, surface 3D reconstruction for robotics
 - E-Skin enabled tactile sensing and signal processing
- Visual perception algorithms, systems for robotics
 - Target identification
 - Semantic segmentation
 - Terrain identification
- Multimodal signal processing and fusion for robotics
 - Visuo-tactile sensor and visuo-tactile sensing for robotics
- Utilize complementary characteristics of multimodal sensors
- Perception for complex and extreme environment
 - Environment exploration and navigation
 - Error correction under disturbance
- Signal processing for human-robot interactions
- Other emerging topics for robotics sensing and signal processing
 - Soft robots sensing
 - Edge computing for industrial robots
 - Ultra-reliable and low-latency communications for robotics
 - Low cost and high efficient multi-robot collaboration

Prospective authors should follow the instructions given on the IEEE JSTSP webpages: <https://signalprocessingsociety.org/publications-resources/ieee-journal-selected-topics-signal-processing> and submit their manuscripts at: <https://mc.manuscriptcentral.com/jstsp-ieee>.

Dates

Manuscript submission: September 15, 2023

Second review due: January 31, 2024

First review due: November 30, 2023

Final decision: February 29, 2024,

Revised manuscript due: December 31, 2023,

Final manuscript due: March 13, 2024

Guest Editors

Wenbo Ding (Lead GE), Tsinghua University, China (ding.wenbo@sz.tsinghua.edu.cn)

Nathan F. Lepora, Bristol University, UK (n.lepora@bristol.ac.uk)

Shan Luo, King's College London, UK (shan.luo@kcl.ac.uk)

Billur Barshan, Bilkent University, Turkey (billur@ee.bilkent.edu.tr)

Qixing Huang, UT Austin, USA (huangqx@cs.utexas.edu)

Koushil Sreenath, UC Berkeley, USA (koushils@berkeley.edu)

Fei Chen, CUHK, Hong Kong (feichen@cuhk.edu.hk)