Special Issue

Simultaneous Localization and Mapping (SLAM) and Artificial Intelligence (AI) Based Localization for Positioning Applications and Mobile Robot Navigation—Second Edition

Message from the Guest Editors

With the proliferation of 5G technologies and the Internet of Things (IoT), there has been a surge of mobile robot technologies and location-based services entering our daily lives. This trend accelerated during the COVID-19 pandemic, amplifying the need for automated solutions, which require knowledge of the sensor/robot location and perception of the dynamic environment, e.g., robots/drones in indoor and outdoor environments for delivery, surveillance, inspection, or mapping applications. Simultaneous Localization and Mapping (SLAM) and Artificial Intelligence (AI) are seen as key enablers for precise localization and mobile robot navigation. Despite the popularity of these methods, it remains a challenge for them to work robustly in dynamic, poorly lit, or unknown environments with possible multipath effects. Hence, data from computer vision, inertial, LiDAR, and other time-of-flight sensors are typically coupled with the latest AI and Machine Learning techniques to meet the challenging requirements of high precision in location accuracy, especially in dynamic indoor environments.

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