



Special Session

“Machine Learning for Localization and Navigation”

Abstract

Recently, machine learning (ML) and deep learning (DL) have attained remarkable success. ML facilitates the thorough comprehension of intricate scenarios by implicitly learning from provided data, as opposed to depending on empirical models. In the field of positioning, ML has exhibited impressive outcomes in various application areas, consistently surpassing model-based estimation. Notably, ML approaches possess considerable potential to effectively address common localization challenges in indoor environments, such as non-line-of-sight issues, device heterogeneity, environmental variations, and diverse forms of movement types. Non-linear function approximators are capable of capturing relationships that are challenging to model directly.

The primary objective of this special session is to focus on the utilization of ML and DL techniques in the domain of indoor positioning. We welcome to submit research works that employ novel data-driven methodologies for navigation and tracking using various sensors such as radio frequency, inertial measurement units, cameras, and others. Furthermore, we encourage the submission of works that propose hybrid systems that integrate ML/DL with conventional tracking filters. The session also welcomes research works that deal with adapting pre-trained ML models to new and unexplored circumstances, such as changes in the environment, motion type, or heterogeneous sensor systems.

Keywords

Data-driven sensor fusion, multi-modal learning, machine learning, uncertainty estimation, non-line-of-sight positioning, tracking filters

Organizers

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Important Dates

- Submission deadline: 15 May 2023
- Notification of acceptance: 21 June 2023

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