CALL FOR PAPERS

IEEE Transactions on Aerospace and Electronic Systems
Special Section on Machine Learning Methods for Aerial and Space Positioning and Navigation

Scope and Aims

Positioning and navigation plays a significant role in a wide range of fields such as aerospace, defense, and transportation. Requirements on positioning and navigation are becoming stricter in areas such as reliability, accuracy, integrability, and safety to enable better location-based services. In many complex environments, it is still a demanding task to generate real-time valid location information and perform the desired navigation. For instance, small delivery services by unmanned aerial vehicles carrying products from a warehouse to a destination still present many technical challenges such as having to travel along a trajectory near tall buildings and operating in severe meteorological conditions such as strong wind, heavy rain or snow. This Special Section seeks the state of the art of theories, methodologies, software and hardware design for positioning and navigation especially related to aerial and space vehicles. Machine learning has been applied to a variety of fields with remarkable success. Due to the use of machine learning, significant advances have been made in positioning and navigation. For instance, Mars rovers Spirit, Opportunity and Curiosity have used a machine learning based navigation and driving system for self-driving on Mars surface. The theme of this special section is on **the application of machine learning methods which are particularly suited to aerial and space positioning and navigation such as deep learning and reinforcement learning.**

Topics of Interest

This special section focuses on machine learning methods for aerial and space positioning and navigation with particular emphasis on:

- Supervised, semi-supervised and unsupervised learning for positioning and navigation
- Centralized and federated learning for positioning and navigation
- Deep and reinforcement learning for positioning and navigation
- Learning-enhanced data fusion for positioning and navigation
- Modelling and system identification in navigation
- Interference detection, classification and mitigation for positioning and navigation
- Navigation for urban air mobility / advanced air mobility / EVTOLs
- Experimental testbeds

Important Dates

Submission window: Jul. 1 – Aug. 1, 2022
Revised manuscript due: Nov. 1, 2022
Final manuscript due: Dec. 30, 2022
First review completed: Sept. 15, 2022
Second review completed: Dec. 1, 2022
Publication date: 1st quarter of 2023

The prospective authors need to submit their manuscripts via *https://mc.manuscriptcentral.com/taes* and select Navigation Systems as the technical area and the category Special Section: Machine Learning Methods for Aerial and Space Positioning and Navigation.

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