

Special Issue

Guidance, Navigation, and Control of Spacecraft and Space Robots

Message from the Guest Editors

The future of space exploration depends on the development of fully autonomous and intelligent systems capable of operating safely and efficiently in complex and unpredictable environments. Missions involving on-orbit servicing, satellite formation flying, and planetary exploration require spacecraft and robotic systems that can make decisions, adapt to uncertainties, and execute tasks with minimal human intervention. Achieving high levels of autonomy is essential for enabling long-duration missions, improving operational efficiency, and reducing reliance on ground control. To ensure the safety and reliability of autonomous space operations, innovative Guidance, Navigation, and Control (GNC) solutions are required. These must be able to handle uncertainties, optimize trajectories, and manage multi-body interactions, ensuring robust and adaptive performance in dynamic space environments. The aim of this Special Issue is to assemble both theoretical and experimental research advancements in the dynamics, guidance, navigation, and control of space vehicles and space robots, covering topics from fundamental modeling to real-world applications.

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Message from the Editor-in-Chief

Machines is an international, peer reviewed journal on machinery and engineering. It publishes research articles, reviews and communications. Our aim is to encourage scientists to publish their experimental and theoretical results in as much detail as possible. There is no restriction on the length of the papers. Full experimental and/or methodical details must be provided. There are, in addition, unique features of this journal: Manuscripts regarding research proposals and research ideas will be particularly welcomed; Electronic files or software regarding the full details of the calculation and experimental procedure - if unable to be published in a normal way can be deposited as supplementary material.

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