

# Special Issue

## Symmetry/Asymmetry in Autonomous Robotics

### Message from the Guest Editors

Symmetry, broadly defined as the invariance of a system under transformations such as rotation, reflection, or, in some cases, translation, is a fundamental concept in both natural and artificial systems. In robotics, symmetry supports efficient design, locomotion, manipulation, and perception by leveraging balanced configurations and predictable dynamics. Conversely, asymmetry opens up opportunities for adaptability, customization, and optimized performance, particularly in unstructured environments. This Special Issue explores the role of symmetry and asymmetry in autonomous robotics, with a focus on their impact on system architecture, control strategies, perception, and interaction. Topics of interest include symmetrical and asymmetrical robotic designs, motion planning and control algorithms, sensor placement optimization, and the influence of symmetrical/asymmetrical features on machine learning models for autonomous decision making. We invite theoretical, experimental, and review contributions that address the interplay of symmetry and asymmetry in robotics to further our understanding and development of autonomous systems.

### Guest Editors

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### Deadline for manuscript submissions

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## About the Journal

### Message from the Editor-in-Chief

Symmetry is ultimately the most important concept in natural sciences. It is not surprising then that very basic and fundamental research achievements are related to symmetry. For instance, the Nobel Prize in Physics 1979 (Glashow, Salam, Weinberg) was received for a unified symmetry description of electromagnetic and weak interactions, while the Nobel Prize in Physics 2008 (Nambu, Kobayashi, Maskawa) was received for the discovery of the mechanism of spontaneous breaking of symmetry, including CP symmetry. Our journal is named *Symmetry* and it manifests its fundamental role in nature.

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### Editor-in-Chief

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