

Special Issue

New Advances in Artificial Intelligence and Robotics Based on Mathematical Methods

Message from the Guest Editor

The rapid advancement of artificial intelligence and robotics is increasingly driven by innovative mathematical methods, which lay a solid foundation for solving complex technical challenges and expanding application boundaries. This Special Issue aims to gather cutting-edge research achievements at the intersection of mathematical methods, artificial intelligence and robotics.

We warmly invite original research articles, reviews and case studies focusing on, but not limited to, the following topics:

world models for embodied artificial intelligence; control theory of large language models; formal methods for reasoning models; mathematical methods for agentic AI; statistical learning and deep learning methods in robotic control; nonlinear dynamics in intelligent systems; numerical methods for AI-driven robotics applications; reinforcement learning for swarm robotics; multi-agent learning via game theory; optimization theory for foundation models.

The core objectives of this Special Issue are to showcase novel mathematical approaches applied in artificial intelligence and robotics. We look forward to your valuable submissions.

Guest Editor

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About the Journal

Message from the Editor-in-Chief

The journal *Mathematics* publishes high-quality, refereed papers that treat both pure and applied mathematics. The journal highlights articles devoted to the mathematical treatment of questions arising in physics, chemistry, biology, statistics, finance, computer science, engineering and sociology, particularly those that stress analytical/algebraic aspects and novel problems and their solutions. One of the missions of the journal is to serve mathematicians and scientists through the prompt publication of significant advances in any branch of science and technology, and to provide a forum for the discussion of new scientific developments.

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Rapid Publication:

manuscripts are peer-reviewed and a first decision is provided to authors approximately 17.3 days after submission; acceptance to publication is undertaken in 2.8 days (median values for papers published in this journal in the second half of 2025).