Special Issue

Machine Learning for Dynamics and Control Advancement in Engineering Applications

Message from the Guest Editor

The integration of machine learning (ML) with system dynamics and control has revolutionized engineering applications, enabling data-driven modeling, adaptive control, and real-time optimization in complex, nonlinear environments. This Special Issue seeks to highlight cutting-edge research at the intersection of ML, dynamics, and control, with a focus on theoretical advances, algorithmic innovations, and practical implementations in engineering domains. Topics of interest include, but are not limited to, the following:

- ML-based modeling of dynamical systems (e.g., neural ODEs, Koopman operators, Gaussian processes).
- Reinforcement learning and adaptive control for robotics, aerospace, or autonomous systems.
- Physics-informed ML for hybrid modeling of the nonlinear engineering systems.
- Data-driven stability analysis and robust control under uncertainty.
- Deep reinforcement learning for predictive control.
- Transfer learning and meta-learning for dynamics adaptation.
- Explainable AI in dynamics and control systems for safety-critical applications.
- Edge AI and real-time ML for embedded control systems.

Guest Editor

Prof. Dr. Ye Zhuang
National Key Laboratory of Automotive Chassis Integration and Bionics, Jilin University, Changchun, China

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Mathematics
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
mathematics@mdpi.com

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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.

Editor-in-Chief

Prof. Dr. Francisco Chiclana
School of Computer Science and Informatics, De Montfort University, The Gateway, Leicester LE1 9BH, UK

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