Advanced Control of Complex Dynamical Systems and Robotics with Applications

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Message from the Guest Editors

Dear Colleagues,

This Special Issue showcases the latest research on the use of mathematical models and methods in the analysis and control of complex dynamical systems and robots.

These articles explore a range of topics, including nonlinear dynamics, adaptive control, optimal control, distributed control, and learning control. They present new theoretical results and practical applications that demonstrate the dynamics and control of complex systems and robots.

Specific applications of these techniques in different complex systems and robotic domains are addressed. The topics include the following:

- The modelling and control of nonlinear systems using differential geometry and Lie group methods;
- Designing adaptive controllers for uncertain systems using Lyapunov stability theory and sliding mode control techniques;
- Robotic systems using optimal control theory and numerical optimization methods;
- Learning control policies for autonomous robots using machine learning algorithms and reinforcement learning techniques;
- Learning cross-domain knowledge for robotic interaction and comprehension using machine learning algorithms and large pretrained language models.

Special Issue

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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.

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