SCIENCE CHINA Information Sciences

Call for Papers

Special Topic: Data-Driven Control: Theory, Methods, and Applications

Data-driven control has emerged as a transformative paradigm for modern engineering systems, particularly in scenarios where accurate modeling is challenging or impossible. With the rapid development of sensing technologies, computational power, and machine learning, data-driven methods are reshaping control theory and practice across a wide spectrum of applications.

This Special Topic aims to provide a platform for disseminating cutting-edge research results, and highlighting recent advances in data-enabled control technologies. Topics of interest include, but are not limited to, the following:

(1) **Foundations and Advances in Data-Driven Control Theory**: fundamental theoretical developments in data-driven control, including stability analysis, robustness guarantees, performance characterization, and control design under limited or uncertain model information.

(2) **Learning-Based and Intelligent Control Approaches**: advances in learning-enhanced control methods achieved by integrating machine learning techniques—such as neural networks, fuzzy systems, and reinforcement learning—with traditional control frameworks for improved adaptability and performance.

(3) **Iterative, Repetitive, and Experience-Based Learning in Control**: new results in iterative learning control, repetitive control, and experience-based identification, emphasizing methods that leverage repeated operations to enhance accuracy, robustness, and convergence properties.

(4) **Data-Driven Fault Diagnosis, Health Monitoring, and Fault-Tolerant Control**: data-enabled methods for fault detection, isolation, and prognosis, as well as techniques for system health monitoring, predictive maintenance, and the development of resilient controllers that maintain performance under faults.

(5) **Data-Driven Modeling, Optimization, and Decision-Making**: system modeling using black-box, hybrid, or data-physic fusion approaches, along with data-driven optimization, scheduling, and decision-making strategies for high-dimensional, complex, or uncertain systems.

(6) **Big Data Analytics and Intelligent Industrial Applications**: the applications of statistical learning, data mining, and big-data processing technologies in industrial automation, focusing on improving monitoring, prediction, and control in data-intensive engineering environments.

(7) **Integration of Data-Driven and Model-Based Control Paradigms**: investigates hybrid control architectures that combine data-driven insights with physics-based modeling, including physics-informed learning, model-error compensation, unified modeling-control frameworks, and comparative analyses of data-driven versus model-based approaches.

Submission

The papers should be prepared using the SCIS template, and should be submitted online through the manuscript submission system of the SCIENCE CHINA Information Sciences. The submission website is https://mc03.manuscriptcentral.com/scis. You should choose **Special Topic: Data-Driven Control: Theory, Methods, and Applications**. Information and guidelines on preparation of manuscripts are available on the journal website: http://scis.scichina.com.

Important Dates

Submission deadline: **April 30, 2026**
First Round of Reviews: August 15, 2026
Final Acceptance: October 15, 2026
Publication: February 1, 2027

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