IEEE Transactions on Cybernetics
CALL FOR PAPERS
for Special Issue on

Robust Cooperative Control for Heterogeneous Nonlinear Multi-Agent Systems

Theme: In recent years, with the recent advancements of computing, communication, sensing, learning theories and methods and control techniques, cooperative control for multi-agent systems has become a global hot topic in the cybernetic community due to its broad application prospects in many fields, including autonomous satellites formations, drag reduction, load transportation and so on. Although cooperative control of homogeneous multi-agent systems (MASs), with identical system dynamics for both follower nodes and the leader node, is relatively less challenging to design and analysis, heterogeneous multi-agent systems are more practical and general. For example, many industrial manufacturing processes rely on cooperation of different types of robotic manipulators.

In order to ensure that the emergent behavior can have the features of low cost, high scalability and flexibility, great robustness, and easy maintenance, distributed control theory and technology has always been a cutting-edge but difficult research focus. How to design more advanced distributed cooperative control approaches for heterogeneous multi-agent systems with nonidentical dynamics is a hot topic of current academia and industry. In addition, the uncertainties and nonlinear dynamics inextricably exist in the agent dynamics, which heavily increases the difficulty to investigate the cooperative control for heterogeneous multi-agent system.

The special issue focuses on the latest research results of robust cooperative control for heterogeneous nonlinear multi-agent systems. This special issue provides a platform to promote interdisciplinary research and to share the latest developments in related fields.

This special issue will focus on (but not limited to) the following topics:

Modeling and identification of heterogeneous multi-agent systems with uncertainties; The methods of nonlinear internal models for heterogeneous nonlinear multi-agent systems; Output regulation theory and application in heterogeneous nonlinear multi-agent systems; Data-driven control, and optimization for heterogeneous nonlinear multi-agent systems; Application of learning in heterogeneous nonlinear multi-agent systems; Intelligent fault tracing and analysis methods for heterogeneous nonlinear multi-agent systems; Control performance assessment for heterogeneous multi-agent systems with uncertainties.

Manuscript Preparation and Submission

Follow the guidelines in "Information for Authors" in the IEEE Transaction on Cybernetics https://www.ieeesmc.org/publications/transactions-on-cybernetics. Please submit your manuscript in electronic form through Manuscript Central web site: https://mc.manuscriptcentral.com/cyb-ieee. On the submitting page # 1 in popup menu of manuscript type, select: SI on Robust Cooperative Control for Heterogeneous Nonlinear Multi-Agent Systems. Submissions to this special issue must represent original materials that have been neither submitted to, nor published in, any other journal. The review process for the special issue submissions and the paper length requirement are the same as the regular issue papers.

Note: The recommended papers for the special issue are subject to the final approval by the Editor-in-Chief. Some papers may be published in a regular issue, at the EIC discretion. Depending on the number of accepted manuscripts, this special issue could be published as a special section in a regular issue.

Timetable:		
	Paper submission:	March 31, 2023
	Completion of first round of review :	June 30, 2023
	Completion of final review:	November 30, 2023
	Submission of final manuscripts:	December 31, 2023
	Scheduled publication:	February 29, 2024

Guest Editors:

Prof. Xiwang Dong, Beihang University, China, xwdong@buaa.edu.cn
Prof. Zhiyong Chen, University of Newcastle, Australia, zhiyong.chen@newcastle.edu.au
Prof. Ming Cao, University of Groningen, Netherlands, ming.cao@ieee.org
Prof. Wei Ren, University of California, Riverside, USA, ren@ee.ucr.edu
Prof. Huaguang Zhang, Northeastern University, China, hgzhang@ieee.org
Prof. Danwei Wang, Nanyang Technological University, Singapore, wwang@ntu.edu.sg

Editor-in-Chief: Prof. Peng Shi   eicieeetc@adelaide.edu.au