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Cooperative Global Robust Output Regulation of Multi-Agent Nonlinear Systems

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Abstract:

The output regulation problem, also called the servomechanism problem, is to design a feedback control law for a system such that asymptotic tracking for a class of reference inputs and disturbance rejection for a class of external disturbances can be achieved while the stability of the closed-loop system can be maintained. In this talk, we will first introduce the output regulation problem, and present some result on the global robust output regulation problem for a class of single nonlinear systems in output feedback form. The concerned systems contain unknown control direction, uncertain exosystem and arbitrarily large parameter uncertainties. Then we will introduce some of our recent result on the cooperative global robust output regulation problem of a class of multi-agent nonlinear systems with unknown control direction via adaptive and robust control approach.

Biography:

Dr. LIU Lu received her Ph.D. degree in 2008 in the Department of Mechanical and Automation Engineering, Chinese University of Hong Kong, Hong Kong. From 2009 to 2012, she was an Assistant Professor in The University of Tokyo, Japan, and then a Lecturer in The University of Nottingham, United Kingdom. She is currently an Assistant Professor in the Department of Mechanical and Biomedical Engineering, City University of Hong Kong, Hong Kong. Her research interests are primarily in multi-agent systems, control theory and applications and biomedical devices. Dr. Liu is an Associate Editor of Control Theory and Technology, Transactions of the Institute of Measurement and Control, and Unmanned Systems. She received the Best Paper Award (Guan Zhaozhi Award) in the 27th Chinese Control Conference in 2008.