



中国矿业大学

CHINA UNIVERSITY OF MINING AND TECHNOLOGY

学术报告

受中国矿业大学信息与控制工程学院邀请，南京理工大学自动化学院向峥嵘教授在我校举行学术报告。欢迎广大师生踊跃参加！

报告题目：Fully Distributed Optimal Consensus for a Class of Nonlinear Multiagent Systems

时 间：1月5日上午 10: 30

报告地点：文昌综合楼 803

主办单位：信息与控制工程学院

报告人简介：



向峥嵘，博士、教授、博士生导师。1998年12月毕业于南京理工大学控制理论与控制工程专业获得博士学位，1998年起在南京理工大学自动化学院工作至今。主持及承担多项国家级与省部级科研项目，获得国防科技进步二等奖，在国内外重要期刊及会议上发表多篇高水平学术论文。目前主要从事非线性系统，切换控制系统，多智能体系统等方面的理论及应用研究。

报告摘要： In this talk, an optimal consensus protocol is proposed for a class of leaderless multi-agent systems. Any global information, including the eigenvalues of the Laplacian matrix, is unavailable in the control scheme development. The reference trajectory is designed for each agent, and the corresponding performance function, which reflects the off-track error evolution and control cost, is proposed. The sufficient condition for the synchronization of reference trajectories, which does not rely on the topology dwell time, is established by constructing an appropriate current topology independent Lyapunov function. Due to the fact that the nonlinear function in the system dynamical equation of each agent is unknown, an equation termed integral reinforcement learning equation is provided, and it is strictly proven that the provided IRL equation is equivalent to the given Hamilton–Jacobi–Bellman equation. The model-free optimal feedback control law is then derived based on the IRL technique. In the implementation of the developed control scheme, the neural network approximation tool is adopted, and the scheme is applied to a numerical system to show its effectiveness.

