数学与系统科学研究院学术报告

报告题目：Robust Adaptive Dynamic Programming: New Results from Old Ideas

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时间地点：3:00-4:00pm, Jan 21, 2013, Room 703, Siyuan Building

摘要：Bellman's Dynamic Programming is a powerful theory for addressing multistage decision making problems and has been used to solve the optimal control problem. However, its well-known shortcoming is the so-called 'curse of dimensionality', and optimal controllers designed rely on the solution of

certain HJB equation, a PDE which is very hard, if not impossible, to solve for general nonlinear systems.

Approximate/adaptive dynamic programming (ADP) has been introduced to overcome the curse of dimensionality and recently utilized in optimal controller design.

In this talk, we present some preliminary results on our research on the development of a novel methodology called 'robust adaptive dynamic programming ' (robust-ADP),

that aims to generalize ADP theory to nonlinear systems with dynamic uncertainties and unknown dynamics. Drug dosage control and power systems are presented to illustrate the potentially wide applicability of the robust-ADP theory.

报告人简介及联系方式：

Zhong-Ping JIANG (M’94, SM’02, F’08) received the B.Sc. degree in mathematics from the University of Wuhan, Wuhan, China, in 1988, the M.Sc. degree in statistics from the Universite de Paris-sud, France, in 1989, and the Ph.D. degree in automatic control and mathematics from the Ecole des Mines de Paris, France, in 1993.

Currently he is a Professor of Electrical and Computer Engineering at the Polytechnic Institute of New York University (formerly called Polytechnic University). His main research interests include stability theory, the theory of robust and adaptive nonlinear control, and their applications to underactuated mechanical systems, congestion control, wireless networks, multi-agent systems and Systems Physiology.

Dr. Jiang has served as a Subject Editor for the International Journal of Robust and Nonlinear Control, and as an Associate Editor for Systems & Control Letters, IEEE Transactions on Automatic Control and European Journal of Control. Dr. Jiang is a recipient of the prestigious Queen Elizabeth II Fellowship Award from the Australian Research Council, the CAREER Award from the U.S. National Science Foundation, and the Young Investigator Award from the NSF of China. He (together with coauthor Yuan Wang) received the Best Theoretic Paper Award at the 2008 World Congress on Intelligent Control and Automation, June 2008, for the paper “A Generalization of the Nonlinear Small-Gain Theorem for Large-Scale Complex Systems”.

Dr. Jiang is a Fellow of the IEEE and a Cheung Kong Professor at Beijing University.