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Robotics and Automation/Control Systems Joint Chapter

Jointly presents

SEMINAR SERIES ON CHAOS, CONTROL AND COMPLEX NETWORKS

Feedback Networks

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Research School of Information Sciences and Engineering
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Date and Time: **Tuesday, 24 March 2009, 11:00am – 12:00noon**

Venue: Room **B6605**, City University of Hong Kong

Reception starts at **10:45am**

(Language: **English**)

Abstract

The field of systems and control has gone through stages based around focus on preferred models for systems and appropriate structures for controllers, including linear systems and state variable feedback, time-varying parametric systems and adaptive control, nonlinear systems and optimal control and so on. However, important control tasks in living systems and modern infrastructure technology actually take the form of systems with network structure controlled by distributed control, with switching, time-delays and other complexities, i.e. control of networks by networks or *feedback networks*. Examples in engineering include power grids, road traffic control and Internet congestion control. This model opens up a plethora of new systems and control science questions, which are being studied by separate communities in science and engineering.

This seminar will describe recent work in this area mainly focussing on work in the Lab for Networks and Control at ANU. The emphasis is on the role of structure, i.e. the various graphs in the networks (system, sensing and controller), stability-related questions and self-organising mechanisms for control.

About the Speaker

David J Hill received the BE and BSc degrees from the University of Queensland, Australia, in 1972 and 1974, respectively. He received the PhD degree in Electrical Engineering from the University of Newcastle, Australia, in 1976. He is currently a Professor and Australian Research Council Federation Fellow in the Research School of Information Sciences and Engineering at The Australian National University. He has held academic and substantial visiting positions at the universities of Melbourne, California (Berkeley), Newcastle (Australia), Lund (Sweden), Sydney and Hong Kong (City University). He holds honorary professorships at the University of Sydney, University of Queensland (Australia), South China University of Technology, City University of Hong Kong, Wuhan University and Northeastern University (China). His research interests are in network systems science, stability analysis, nonlinear control and applications. He is a Fellow of the Institution of Engineers, Australia, the Institute of Electrical and Electronics Engineers, USA and the Australian Academy of Science; he is also a Foreign Member of the Royal Swedish Academy of Engineering Sciences.