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Automatic
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The Department of Automatic Control & Systems Engineering
is pleased to announce the following seminar:

Network reconstruction using dynamical structure functions

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University of Cambridge*

Wednesday, 13th November 2013 at 14:00

LT02, Sir Henry Stephenson Building

Abstract

In this talk, we will firstly introduce network reconstruction problem and review a number of ODE-based approaches. Motivated by the gap between input-output data and underlying network structure, we define a new representation: dynamical structure functions, which encode structural information. Furthermore we explore the properties of such a representation for solving the reconstruction problem. Moreover, we propose and study a number of theoretical problems: identification (using deterministic or stochastic inputs), minimal realisation for dynamical structure functions and show that how these theoretical results can shed light on network reconstruction problems. Finally we illustrate the results on a number of in silico and in vitro examples.

Biography

Ye Yuan received his B.Eng. degree (Valedictorian) from the Department of Automation, Shanghai Jiao Tong University in 7.2008, M. Phil. and Ph.D. from the Department of Engineering, Cambridge University in 10.2009 and 2.2012 respectively. Ye is now a junior research fellow in Darwin College and a post-doc researcher in Engineering Department, University of Cambridge. He was a visiting researcher at Caltech, MIT and Imperial College London. His research interest lies in the mathematical control theory with applications to networks, power systems, transportation and biology.