The University Of Sheffield.

Automatic Control and Systems Engineering

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

Fast consensus and community detection in networks

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The University of Sheffield

Wednesday, 02 December 2020 at 14:00
Via Google Meet

Host Academic: Dr Shuhei Miyashita, ACSE

Abstract

Networks are ubiquitous. What enables coordinated manoeuvres in avian flocks and the coordination of neurons firing in the brain is fundamentally the connection network amongst them. Stripped down to the bare bones, these mechanisms may be illustrated by simple linear equations, yet revealing the role of the network in influencing the dynamics.

This talk covers some applications of algebraic graph theory to linear dynamical systems, looking in particular at the problems of consensus speed maximisation and community detection. This talk sets off with the maximisation of the consensus speed in a linear system, to eventually flip the argument and land on the identification of influential nodes in subgraphs and, therefore the identification of the communities around these nodes.

Biography

Dr Giuliano Punzo is a Lecturer in the department of Automatic Control and Systems Engineering. Giuliano's background is in the area of control theory and complex systems. After a degree in aerospace engineering (University of Naples, Italy, 2008), he briefly joined industry, before starting a PhD in swarm engineering, gaining it in 2013. Later he expanded his interests to robotics, control theory, consensus and complexity. Giuliano had postdoctoral appointments at the University of Glasgow, at the University of Strathclyde and, finally at the University of Sheffield.

His current research interests are in the area of complex socio-technical systems, with applications to infrastructure networks and, in particular, transport.
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