Trinity Term 2007

COMPLEX ADAPTIVE SYSTEMS GROUP SEMINAR
Saïd Business School, University of Oxford

Convenors:
Felix Reed-Tsochas, *Saïd Business School*
Jukka-Pekka Onnela, *Physics Department & Saïd Business School*

Our meetings intend to provide a forum for rigorous research (in a broad range of disciplines) focusing on complex adaptive systems, using methods and techniques such as agent-based modelling and complex network analysis. Since potential areas of application for such approaches can be located across the social, natural and engineering sciences, our aim is to involve participants from a wide range of departments in Oxford. We welcome talks which focus on particular areas of application and associated technical issues, but also encourage contributions which address more fundamental conceptual or mathematical problems. The CASG Seminar Series is one of the activities of the CABDyN Research Cluster (http://sbs-xnet.sbs.ox.ac.uk/complexity/).

Monday 25th June 16.00 – 17.30 pm

James Martin Institute Seminar Room

Prof Luciano da Fontoura Costa
Institute of Physics of São Carlos
University of São Paulo, Brazil

Characterization and Classification of Complex Networks

ABSTRACT

The unprecedented development of complex networks along the last few years has been a direct consequence of their inherent ability to represent and model a wide variety of sophisticate systems and phenomena. In addition, the intrinsic connectivity of each complex network has been found to strongly affect dynamical processes unfolding on the respective network. Thus, it becomes particularly important to obtain a set of meaningful measurements capable of providing a comprehensive characterization of the topological properties of each network.

Because traditional measurements such as the node degree, clustering coefficient and shortest paths are degenerate (i.e. several networks may share the same measurements values), it is necessary to consider additional measurements as well as sound methodologies for classifying and discriminating between diverse types of networks.

In this talk I present a set of hierarchical measurements which, by considering progressive neighborhoods around each node of reference, allows the comprehensive characterization of the connectivity of complex networks.

It is also shown how multivariate statistical methods, including canonical projections and Bayesian decision theory, can provide the basis for sound discrimination and classification of complex networks. The overall approach is illustrated with respect to real-world examples.

Tea and coffee will be provided

For further information contact felix.reed-tsochas@sbs.ox.ac.uk
Seminar webpage: http://sbs-xnet.sbs.ox.ac.uk/complexity/complexity_casg.asp