Trinity Term 2008

CABDyN SEMINAR SERIES
Saïd Business School, University of Oxford

Convenors:

Felix Reed-Tsochas, *James Martin Institute*, *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 CABDyN Seminar Series is one of the activities of the CABDyN Research Cluster (http://sbs-xnet.sbs.ox.ac.uk/complexity/).

Tuesday 29th April, 12.30 – 2.00 pm

Seminar Room A, Saïd Business School

Dr Eduardo Lopez
Saïd Business School
University of Oxford

Limited Path Percolation in Complex Networks

ABSTRACT

Does it make sense to go to work if a storm increases my commute to half a day to go and the other half to come back? Classical percolation theory, only concerned with whether a path exists from origin to destination after a portion of the network fails, would answer in the affirmative because it neglects the ``efficiency" aspect of this communication. We propose a new and general model, Limited Path Percolation (LPP), which considers such efficiency effects by restricting the allowed paths after some network failures to those with a limited relative length increase (a limited percentage) with respect to the original paths. The percentage limit is dictated by the specifics of the problem. This model leads to a new and important set of analytical results for the largest ``communicating" cluster which are different from those of regular percolation, as well as a new (larger) percolation threshold. These results are critical for problems such as disease propagation, data transfer on communication networks, and transportation, where short paths are most relevant.

Sandwiches and drinks will be provided

For further information contact info.cabdyn@sbs.ox.ac.uk
Seminar webpage: http://sbs-xnet.sbs.ox.ac.uk/complexity/complexity_seminars.asp