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 16th October, 12.30 – 2.00 pm

Seminar Room B

Dr Vassilis Kostakos

Department of Computer Science, University of Bath

Brief Encounter Networks

ABSTRACT

Many complex human and natural phenomena can usefully be represented as networks describing the relationships between individuals. While these relationships are typically intermittent, previous research has used network representations that aggregate the relationships at discrete intervals. However, such an aggregation discards important temporal information, thus inhibiting our understanding of the network's dynamic behaviour and evolution. In our research we have recorded patterns of human urban encounter using Bluetooth technology thus retaining the temporal properties of this network. Here we show how the temporal properties relate to the structural properties of the network. Specifically, we show that the temporal properties of human urban encounter are scale-free, leading to an overwhelming proportion of brief encounters between individuals.

While previous research has shown preferential attachment to result in scale-free connectivity in aggregated network data, we found that scale-free connectivity results from the temporal properties of the network. In addition, we show that brief encounters act as weak social ties in the diffusion of non- expiring information, yet persistent encounters provide the means for sustaining time- expiring information through a network.

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