

March 2016 Complexity Community Sharing Session

4 Mar 2016 (Fri) 11:00am-01:00pm
Seminar Room 102

(opposite Learning Hub), Blk 1 Innovation Centre, Level 1
16 Nanyang Drive, Singapore 637722



Dr. Neil Huynh Hoai Nguyen

Understanding and Modelling Online Social Behavior

The advent of the era of Big Data has allowed researchers to dig into various socio-technical systems, including social media platforms. These systems have provided us with certain verifiable means to look into certain aspects of human behaviours. In particular, there is a great interest in understanding the behaviour of individuals on social media platforms---how they handle the information they get, and how they share it. In this talk, we will explore the dynamics of information travelling in Twitter social network by proposing a simple model with three different mechanisms responsible for different processes taking place when users interact with the information. The model, despite its simplicity, is able to capture the temporal profiles of tweeting/retweeting activities of users and classify different types of content of the tweet messages based on two parameters characterising the activity threshold and rate of decay of interest in sharing the information. Our results extend the classification of tweet messages introduced earlier in the literature and provide further insights into the dynamics of users' behaviours in online interactions.

Biography: Neil HUYNH is an A*STAR International Fellow working as a Scientist at Institute of High Performance Computing. He is concurrently a Research Fellow at Complexity Institute, NTU. His research areas fall in the field of Complex Systems. His interest in Complex Systems involves studying different natural and social phenomena that share the same emergent properties and can be tackled using the approaches of Nonlinear Dynamics and Statistical Mechanics. The aim is to understand the fundamental driving mechanisms of these systems and to see if they share any common underlying (new) physics. He has been working on a number of different projects (<https://sites.google.com/site/nelive/home/research>) on Non-linear Dynamics, Fractals and Self-Organized Criticality. Recently, Dr. Huynh's work focuses on modelling dynamics of people's online sharing behaviours in Social Media; as well as bringing insights from Self-Organized Criticality to understanding complex natural phenomena like atmospheric convection. He is also interested in Urban Morphology, studying the geometrical as well as dynamical properties of the spatial and temporal structures found in different urban systems.



Asst Prof. Michael Lees

Building, Calibrating and Validating Models of Human Crowds: A Complex Systems Approach.

In this talk I will describe an approach to the modelling and simulation of human crowds. By developing accurate models of human crowds the hope is to be able to predict and perhaps manage mass gatherings of people, or enable safer architectural design. There have been numerous attempts at modelling crowds over the past two decades, here I will highlight one approach which uses agent-based modelling. While agent-based modelling offers a very natural approach for modelling human crowds it does introduce significant challenges. Firstly, how to build a model capable of capturing human-like decisions. Secondly, how to calibrate models against real-world data and finally how to validate the model output. This talk will cover work in these areas and finally discuss ways in which these findings might be used to help make large human gatherings safer.

Biography: Michael Lees is an Assistant Professor at the Universiteit van Amsterdam in the Computational Science Lab (Informatics Institute). Prior to this he was an assistant professor at the School of Computer Engineering, NTU. He received his PhD from the School of Computer Science, University of Nottingham, UK. His current research interests are primarily in modelling and simulation of large-scale complex systems. In particular understanding the effect that human behaviour has on urban systems and the important role that individual behavioural interactions have on system level dynamics. His research focuses on the study of human crowds and transportation systems. He is currently workshop chair for the International Conference on Computational Science, serves on the programme committee of a number of international conferences and is an editor for the Journal of Computational Science and ACM Transactions on Modeling and Computer Simulation. For further information see www.mhlees.com.