

# Research Talks

10 Feb 2017 (Friday), 11am-1pm

Seminar Room 102 (Opposite The Hive)

NTU Blk 1 Innovation Centre, Level 1  
16 Nanyang Drive, Singapore 637723

## *Inferring Information Processing & Emotion Spreading in Online Communities*



Prof. Janusz Hołyst

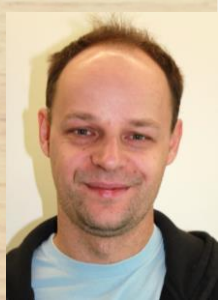
Our society becomes more and more a coevolving techno-social system where the accelerating progress of information technologies induces quantitative changes in the way we communicate, express our opinions and emotions. The lecture will start with a demonstration of a simple model of coevolution of information processing and topology in hierarchical adaptive random boolean networks. Then I discuss three more realistic cases related to: (i) prediction of Twitter coevolution, (ii) locating a hidden source of information spreading in complex networks and (iii) tracking of information flow in Slovenian Press Agency STA.

The second part of my talk is on: detecting and modelling of collective emotions in cyberspace. I will address: What are emotions? How can one measure emotional states? What are cyber emotions? When do emotions and cyber emotions become collective phenomena? What role do emotions play for on-line communities? I will show how machine learning can be an efficient tool for large scale sentiment analysis and how data-driven agent-based models of virtual emotional human can describe live and death of on-line communities.

1. "Coevolution of Information Processing and Topology in Hierarchical Adaptive Random Boolean Networks", Piotr J. Górski, Agnieszka Czaplicka and Janusz A. Hołyst, Eur. Phys. J. B (2016) 89: 33. doi:10.1140/epjb/e2015-60530-6
2. "Cyberemotions - Collective Emotions in Cyberspace", Janusz A. Hołyst (Ed.), Springer 2017.

*Janusz Hołyst is a full professor at the Faculty of Physics, Warsaw University of Technology, where he leads the Center of Excellence for Complex Systems Research and the lab Physics in Economy & Social Sciences. His current research includes simulations of evolving networks, information processing in hierarchical systems, models of collective opinion and emotion formation, econo-physics, and equilibrium & non equilibrium statistical physics. He is a pioneer in applications of physical methods to economic and social systems and maintains a close collaboration with many institutes in Germany, Italy, UK, Switzerland, Japan, and USA where he spent over 6 years as visiting professor, fellow of Humboldt Foundation, or guest scientist. He is editor of the European Physical Journal B and of the Journal of Computational Science. He is a co-founder and acting chairman of KRAB (National Council for Research Project Coordinators) as well as a co-founder and the former chairman of FENS (Physics in Economy and Social Sciences, Division of the Polish Physical Society). He was coordinator of the CYBEREMOTIONS EU Project and is now Coordinator of RENOIR EU Project.*

## *Impact of Lexical and Sentiment Factors on the Popularity of Scientific Papers*



Dr. Julian Sienkiewicz

"How should I present my results in order to attract more attention and citations to my paper?" is a question that bothers many scientists. No wonder, scientists are increasingly evaluated by citation counts. Recent studies suggest that simple stylistic choices can affect it, e.g. "the shorter the title the more citations". Is it really that simple? Well, apparently not. I will show how textual properties of scientific papers relate to the number of citations they receive [1]. The main finding is that correlations are not linear and thus affect differently the most cited and typical papers. According to our research, the short title recipe works only for the most cited papers. Surprisingly for less popular ones, it is better to have a longer title. Quantile regression analysis of six different factors, calculated both at the title and abstract level of 4.3 million papers in over 1500 journals, reveals the number of authors, length and complexity of the abstract, as having the strongest influence on the number of citations.

- [1] J. Sienkiewicz, E. G. Altmann, Royal Society Open Science 3, 160140 (2016)

*Dr. Julian Sienkiewicz is Assistant Professor of Faculty of Physics, Warsaw University of Technology (WUT). His MSc (WUT 2004) in physics on the statistical properties of Polish public transport networks. After obtaining his PhD (WUT, 2010) for examining scaling relations of path lengths in complex networks, he has used statistical physics approaches (such as Ising model or maximal entropy principle) to explore social phenomena of isolation and emotional communication. In Feb 2016, he completed a 17-month post-doctoral study in Eduardo Altmann's group at MPI-PKS Dresden where he worked on the impacts of lexical and sentiment factors on the popularity of scientific papers.*