



Social Network Group
@ Wrocław University of Technology

IMPACT OF SOCIAL NETWORKS ON HUMAN MOBILITY AND INFLUENCE OF OPINIONS

Date: 2013-05-27 Monday 1:15 PM – 3PM

Location: C-3, room 22

Presenter: Bolesław K. Szymański, Social Cognitive Networks Center,
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Human behavior is profoundly affected by the influenceability of individuals and the social networks that link them together. In this talk, we report on fundamentals of the evolution of opinions and the dynamics of its spread. We use the binary agreement model in which initially all individuals adopt one of the two given opinions, A and B, and a small fraction of all individuals commits to their opinions. Committed individuals are immune to influence but they can influence others to alter their opinion through the prescribed rules for opinion change. We show that under certain conditions, the prevailing majority opinion in a population can be rapidly reversed by a small fraction of randomly distributed committed individuals. In case when minorities of committed individuals exist for both opinions, the difference between larger and smaller fractions of committed minorities needed for rapid conversion of majority decreases as the smaller minority increases. This has significant impact on stability of society's opinions. The results are relevant in understanding and influencing the social perceptions of ideas and policies. We also used location networks in combination with social relationships to obtain footprints of users and reveal the repetitive nature of human movements and the spatial proximity of friends and friends-of-friends. We found that friendship between two people is more likely to arise within spatial proximity which dictates the spatial distribution of friendship and social communities as well as patterns of human mobility. This knowledge has applications in link prediction, marketing campaigns, and urban planning.

ABOUT PRESENTER:

Prof. Boleslaw Szymański, Rensselaer Polytechnic Institute, USA.

Prof. Szymański is working in the field of network science, with emphasis on social, wireless and sensor networks, to analysis and design of distributed and parallel algorithms, simulation of networks and biological/ecological phenomena.

His current research projects focus on dynamical processes on networks, hidden groups in social networks, sensor network protocols and algorithms, and large-scale parallel and distributed computing and simulation.

He is currently Claire and Roland Schmitt Distinguished Professor of Computer Science, Director of the Social Cognitive Network Academic Research Center, part of NS CTA, funded by the ARL, and Director of the Network Science and Technology Center (NeST).