



CoCo Seminar Series Fall 2017

Attributed Networks, Network Representation, and the Hierarchical Structure of Networks

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Tuesday November 14, 2017 2:00-3:00pm (note the irregular time)
Engineering Building H-9 (Knoll-MacDonald Commons / Watson Commons)

This talk will consist of two parts. In the first part of the talk, we discuss attributes in graphs and how attributes can help design a network representation. We will focus on attributes that relate to user emotions. We analyze different patterns that users exhibit with respect to emotions at different network levels: user-level, dyad-level, triad-level, community-level, and whole-network level. We show how emotions are connected to the network structure as a whole and show that how networks, in particular, their core-periphery structure, can be represented via user emotions. Finally, we present a network model that can reconstruct networks based on user emotions.

In the second part of the talk, we present recent work on characterizing the structure of real complex networks. We introduce the k-peak network decomposition, which identifies cohesive 'mountains', or regions of dependencies, within the network. Using this decomposition, one can generate a 'mountain plot', a new type of visualization that allows one to immediately understand the distinct regions of the network and the relationship between nodes in the same region. By generating mountain plots for a variety of graphs, we gain key insights into important similarities and differences between different types of graphs.

Dr. Sucheta Soundarajan and D. Reza Zafarani are Assistant Professors of Electrical Engineering and Computer Science at Syracuse University. Their research interests include social media mining, social network analysis, big data analytics, and social computing.

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