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HARVARD MEDICAL SCHOOL

181 Longwood Avenue
Boston, Massachusetts 02115-5804

Department of Medicine
Channing Division of Network Medicine

Channing Network Science Seminar
Feb 3 (Friday), 2017, 11am @ 5th floor conference room

Speaker: Tina Eliassi-Rad, Ph.D.
Associate Professor
Network Science Institute
College of Computer and Information Science
Northeastern University
Boston, MA

The Reasonable Effectiveness of Roles in Complex Networks

Abstract: Given a network, how can we automatically discover roles (or functions) of the actors? Roles compactly represent structural behaviors of actors and generalize across various networks. Examples of roles include "clique-members," "periphery-nodes," "bridges," etc. Are there good features that we can extract for actors that indicate role-membership? How are roles different from communities and from equivalences (from sociology)? What are the applications in which these discovered roles can be effectively used? In this talk, we address these questions, provide unsupervised and supervised algorithms for role discovery, and discuss why roles are so effective in many applications from transfer learning to re-identification to anomaly detection to mining time-evolving and multi-relational networks.

Bio: Tina Eliassi-Rad is an Associate Professor of Computer Science at Northeastern University in Boston, MA. She is also on the faculty of Northeastern's Network Science Institute. Prior to joining Northeastern, Tina was an Associate Professor of Computer Science at Rutgers University; and before that she was a Member of Technical Staff and Principal Investigator at Lawrence Livermore National Laboratory. Tina earned her Ph.D. in Computer Sciences (with a minor in Mathematical Statistics) at the University of Wisconsin-Madison. Her research is rooted in data mining and machine learning; and spans theory, algorithms, and applications of massive data from networked representations of physical and social phenomena. Tina's work has been applied to personalized search on the World-Wide Web, statistical indices of large-scale scientific simulation data, fraud detection, mobile ad targeting, and cyber situational awareness. Her algorithms have been incorporated into systems used by the government and industry (e.g., IBM System G Graph Analytics) as well as open-source software (e.g., Stanford Network Analysis Project). In 2010, she received an Outstanding Mentor Award from the Office of Science at the US Department of Energy. For more details, visit http://eliassi.org.

Hosted by Yang-Yu Liu

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