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School of
Information Sciences

Big Data Colloquium Series presents

"Link prediction in dynamic networks: Statistical models and evaluation metrics"

Kevin S. Xu
Assistant Professor, University of Toledo

Monday, October 3
1:00 p.m.
IS Building, 3rd Floor

Abstract: The task of predicting future relationships in a network, known as link prediction, has been studied extensively in the literature. In dynamic networks where edges are both added and removed over time, the link prediction problem is more complex and involves predicting both newly added and newly removed edges. Most statistical models for such dynamic networks assume a hidden Markov-like structure that can accurately replicate the structure of a network at a particular time but cannot accurately replicate how these structures persist or evolve over time, resulting in poor link prediction accuracy. In this talk, Xu will introduce the stochastic block transition model, which improves link prediction accuracy by better replicating the addition and removal of edges over time yet maintains the interpretability of simpler models. Xu will also discuss challenges in evaluating link prediction accuracy in this dynamic network setting and provide several recommendations on selecting evaluation metrics.

Bio: Kevin S. Xu received the M.S.E. and Ph.D. degrees in Electrical Engineering: Systems from the University of Michigan in 2009 and 2012, respectively. He was a recipient of the Natural Sciences and Engineering Research Council of Canada (NSERC) Postgraduate Master's and Doctorate Scholarships. He is currently an assistant professor in the EECS Department at the University of Toledo, and has previously held industry research positions at Technicolor and 3M. His main research interests are in machine learning and statistical signal processing with applications to network science and human dynamics.