Notice and Invitation
Oral Defense of Doctoral Dissertation
The Volgenau School of Engineering, George Mason University

Arezou Koohi

Bachelor of Science
Sharif University of Technology, 2001

Master of Science
University of California, Irvine, 2003

Multi-view graph Co-clustering and Matrix Completion

28th of November, 2018 at 10:30 am
Nguyen Engineering Building, ROOM 3507

All are invited to attend.

Committee

Dr. Houman Homayoun,Chair
Dr. Avesta Sasan
Dr. James Jones
Dr. Nitin Agrawal
Dr. Setareh Rafatirad

Abstract

As the amount of available data increases through e-commerce websites like Amazon, Netflix, and Facebook as well as biological networks and biomedical images, we increasingly have access to larger and also multi-view data for learning algorithms. As a result the need for scalable, fast learning computation has increased. This Dissertation provides both scalable as well as computationally efficient solutions for processing a learning algorithm on graph data. This dissertation focuses on Multiview graph mining. The two areas of research are in unsupervised learning for graph co-clustering and matrix completion using the two views of input graphs.
First, it will present a scalable Co-clustering algorithm for the Multiview graph of three different nodes and use the small case data on genetic network of drug-disease-gene to show its application. Co-clustering algorithm has an advantage of simultaneous clustering of different node types and originally was used for the Co-clustering of words and documents. The proposed method is scalable and can be used for other multi-view graph co-clustering applications on a large scale matrix.
Second, this work will present a computationally more efficient rating prediction for the Multiview graph matrix completion. Multiview graph matrix completion has applications for recommender systems and other cases of graph link prediction in which only small numbers of ratings (or links) are known and the matrix is very sparse. Since the input matrix can be large, distributed and parallel processing can speed up the process of prediction of unknown ratings. The research will show the use of parallel processing to make the calculation computationally efficient.