香港浸會大學
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DEPARTMENT OF
COMPUTER SCIENCE
計算機科學系

ONLINE SEMINAR
2022 SERIES

Department of Computer Science

Mr. Luo Dongsheng

PhD Candidate
College of Information Science and Technology
The Pennsylvania State University, USA

Register Now

Date: 16 February 2022 (Wednesday)
Time: 9:00am – 10:00am
Registration: http://bit.ly/bucs-ereg
(*Zoom details will only be provided to registrants)

Denoising and Integrating Complex Networks for Big Data Analysis

ABSTRACT

Graphs are prevalent in various domains to describe complex relationships among entities and have been used widely in many real-world applications, such as social networks, author collaboration networks, and brain networks. Inspired by the great achievements of deep learning on i.i.d data, Graph Neural Networks (GNNs) generalize the deep learning model to process graph-structured data and have shown to be powerful tools for graph analytics.

Despite the success of deep graph learning, there are still several challenges unsolved when handling noise and heterogeneous graph data generated in real-life applications. First, existing GNNs are sensitive to the quality of the input graph. Real-world graphs are often noisy with task-irrelevant connections, leading to suboptimal generalization performance in the learned GNN models. Second, a key issue for data science is handling data collected from multiple information sources that may involve many different types of information interrelated in a complex way. Generalizing graph learning that is designed for single and homogenous data to multiple and heterogeneous information networks is another challenge for complex graph analytics.

In this talk, I will focus on these two critical issues in graph learning systems and present mitigating solutions. I will first introduce a general framework to denoise graphs by learning to drop edges, which can be plugged into various GNN models to improve their robustness, followed by an application of the learning to drop strategy in the GNN explanation. I will then discuss graph learning on multiple networks and present an integrative learning method for multiple network clustering.

BIOGRAPHY

Dongsheng Luo is a final year Ph.D. student at the College of Information Science and Technology, Pennsylvania State University, supervised by Prof. Xiang Zhang. He obtained his B.Eng degree in computer science and technology from Beihang University in 2017, supervised by Prof. Shuai Ma.

His research lies primarily in data mining and machine learning, with a special focus on graph mining, such as graph neural networks, clustering algorithms in complex networks. He interned at Baidu Research and NEC lab America. He has published over 15 papers in top-tier conferences and journals, such as NeurIPS, SIGKDD, IJCAI, The Web Conference, WSDM, ICDM, ICDE, TKDE. His research work is recognized by multiple prestigious awards, including the Award for Research Excellence at the College of IST and the best paper award Candidate in ICDM 2018.

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