



**COLLEGE OF ENGINEERING
AND COMPUTER SCIENCE**
FLORIDA ATLANTIC UNIVERSITY

Announces the Ph.D. Dissertation Defense of

Man Wu

for the degree of Doctor of Philosophy (Ph.D.)

Embedding Learning for Complex Dynamic Information Networks

November 7, 2022, Monday, 12:00 PM – 1:30 PM
Dissertation Defense

Virtual defense link:

<https://fau-edu.zoom.us/j/5618090648?pwd=cUN6Uy90ci9xdzI0TVB5ekppSGJaQT09>

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DEPARTMENT: Electrical Engineering and Computer Science

ADVISOR: Xingquan Zhu, Ph.D.

PH.D. SUPERVISORY COMMITTEE:

Xingquan Zhu, Ph.D., Chair

Dimitrios Pados, Ph.D.

Taghi Khoshgoftaar, Ph.D.

Yufei Tang, Ph.D.

ABSTRACT OF DISSERTATION

Embedding Learning for Complex Dynamic Information Networks

With the rapid development of networking platforms and data intensive applications, networks (or graphs) are becoming convenient and fundamental tools to model the complex inter-dependence among big scale data. However, the high complexity (containing many important information) as well as the dynamic nature of the network makes the graph learning task more difficult. The good graph representation learning is the key factor in performing well on downstream tasks. The dissertation mainly focuses on the graph representation learning, which aims to embed both structure and node content information of graphs into a compact and low dimensional space for a new representation learning. More specifically, in order to achieve an efficient and robust graph representation, the following four problems will be studied from different perspectives: 1) We study the problem of positive unlabeled graph learning for network node classification, and present a new deep learning model as a solution; 2) We formulate a new open-world learning problem for graph data, and propose an uncertain node representation learning approach and sampling strategy to solve the problem; 3) For cross-domain graph learning, we present a novel unsupervised graph domain adaptation problem, and propose an effective graph convolutional network algorithm to solve it; 4) We consider a dynamic graph as a network with changing nodes and edges in temporal order and propose a temporal adaptive aggregation network for dynamic graph learning. Finally, the proposed models are verified and evaluated on various real-world datasets.

BIOGRAPHICAL SKETCH

Born in China

B.S., Shenyang Normal University, Shenyang, Liaoning Province, China, 2013

Ph.D., Florida Atlantic University, Boca Raton, Florida, 2022

CONCERNING PERIOD OF PREPARATION
& QUALIFYING EXAMINATION

Time in Preparation: 2020 - 2022

Qualifying Examination Passed: Spring 2021

Published Papers:

1. Man Wu, Shirui Pan, Lan Du, Ivor W. Tsang, Xingquan Zhu, Bo Du. Long-short Distance Aggregation Networks for Positive Unlabeled Graph Learning. In Proceedings of the 28th ACM International Conference on Information and Knowledge Management (CIKM 2019), pp. 2157-2160, Beijing, China, November 3-7, 2019.
2. Man Wu, Shirui Pan, Xingquan Zhu, Chuan Zhou, and Lei Pan. Domain-adversarial graph neural networks for text classification. In 2019 IEEE International Conference on Data Mining (ICDM 2019), pp. 648-657, Beijing, China, November 8-11, 2019.
3. Man Wu, Shirui Pan, Chuan Zhou, Xiaojun Chang, Xingquan Zhu. Unsupervised domain adaptive graph convolutional networks. In Proceedings of The Web Conference 2020 (WWW 2020), pp. 1457-1467, Taipei, Taiwan, April 20-24, 2020.
4. Man Wu, Shirui Pan, Xingquan Zhu. OpenWGL: Open-World Graph Learning. In 2020 IEEE International Conference on Data Mining (ICDM 2020) (pp. 681-690), Sorrento, Italy, November 17-20, 2020. **(Best Student Paper)**
5. ManWu, Shirui Pan, Lan Du, Xingquan Zhu. Learning Graph Neural Networks with Positive and Unlabeled Nodes. ACM Transactions on Knowledge Discovery from Data, (2021) 15(6): 101:1-101:25.
6. Man Wu, Shirui Pan, Xingquan Zhu. OpenWGL: open-world graph learning for unseen class node classification. Knowledge and Information Systems, 63:2405–2430, 2021.
7. Man Wu, Shuwen Wang, Shirui Pan, Andrew C. Terentis, John Strasswimmer, Xingquan Zhu. Deep learning data augmentation for Raman spectroscopy cancer tissue classification, Scientific Reports, vol. 11, Article number: 23842, 2021.
8. Man Wu, Shirui Pan, Xingquan Zhu. Attraction and Repulsion: Unsupervised Domain Adaptive Graph Contrastive Learning Network. IEEE Transactions on Emerging Topics in Computational Intelligence, 6(5):1079—1091, 2022.
9. Man Wu and Xingquan Zhu. Temporal Adaptive Aggregation Network for Dynamic Graph Learning. In 2022 IEEE International Conference on Big Data (BigData-2022), Osaka, Japan, December 17-20, 2022.