

# Mingxuan (Clark) Ju

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## Education

### University of Notre Dame

*Ph.D. in Computer Science*

Apr. 2020 – May 2024 (Expected)

*Notre Dame, IN*

### Case Western Reserve University

*M.S. in Computer and Information Science*

Jun. 2019 – Mar. 2020

*Cleveland, OH*

### Case Western Reserve University

*B.S. in Computer Science*

Aug. 2015 – May 2019

*Cleveland, OH*

## Research Interests and Applications

**Interests:** Graph Neural Network (GNN), Recommender System (RecSys), and Self-supervised Learning (SSL).

**Applications:** *Efficient yet Effective GNNs for RecSys and GNNs with Stronger Generalization and Broader Applicability.*

## Professional Experiences

### Research Intern

*Snap Research at Snap Inc., Supervisors: Dr. Tong Zhao and Dr. Neil Shah.*

Jun. 2023 – Oct. 2023

*Seattle, WA*

- Efficient GNNs for RecSys. Significant performance improvement (~10%) with only ~1% additional overheads.
- Performant multi-task GNNs for user representation learning. Promising A/B results and preparing for a **production launch**.

### Graduate Research Assistant

*University of Notre Dame, Supervisor: Dr. Yanfang Ye.*

Apr. 2020 – Present

*Notre Dame, IN*

- Mitigating the degree bias of GNNs by test-time augmentation. [S7]
- Multi-task self-supervised learning for GNNs to improve their generalization and applicability. [S6]
- Research on the adversarial robustness of GNNs through reinforcement learning. [S5]
- Open-domain question answering enhanced by entity relations from knowledge graphs. [S4]
- Adaptive message passing for GNNs to improve their generalization. [S3]
- Emotion analysis on social media platform to study COVID-19 impacts. [S2]

### Graduate Teaching Assistant

*University of Notre Dame*

Sep. 2019 – Present

*Notre Dame, IN*

- CSE 40567/60567: Computer Security, Spring 2022, Spring 2023

*Case Western Reserve University*

- EECS 440: Machine Learning, Fall 2019; CSDS 435: Data Mining, Spring 2021

### Undergraduate Research Assistant

*Case Western Reserve University, Supervisor: Dr. Soumya Ray.*

May 2017 – Mar. 2020

*Cleveland, OH*

- Research on disease classification and won 3rd place in the FEMH cup at IEEE Big Data 2018. [C1]
- Development and deployment of disease pre-diagnosis framework at University Hospital. [J1]

## Selected Publications

[S7] **GraphPatcher: Mitigating Degree Bias for Graph Neural Networks via Test-time Augmentation.** *NeurIPS 2023*

Mingxuan Ju, Tong Zhao, Wenhao Yu, Neil Shah, Yanfang Ye

[S6] **Multi-task Self-supervised Graph Neural Networks Enable Stronger Task Generalization.** *ICLR 2023*

Mingxuan Ju, Tong Zhao, Qianlong Wen, Wenhao Yu, Neil Shah, Yanfang Ye, Chuxu Zhang

[S5] **Let Graph be the Go Board: Gradient-free Node Injection Attack for Graph Neural Networks via Reinforcement Learning.** *AAAI 2023*

Mingxuan Ju, Yujie Fan, Chuxu Zhang, Yanfang Ye

[S4] **Grape: Knowledge Graph Enhanced Passage Reader for Open-domain Question Answering.** *Findings of EMNLP 2022*

Mingxuan Ju\*, Wenhao Yu\*, Tong Zhao, Chuxu Zhang, Yanfang Ye

[S3] **Adaptive Kernel Graph Neural Network.** *AAAI 2022*

Mingxuan Ju, Shifu Hou, Yujie Fan, Jianan Zhao, Liang Zhao, Yanfang Ye

[S2] **Dr. Emotion: Disentangled Representation Learning for Emotion Analysis on Social Media to Improve Community Resilience in the COVID-19 Era and Beyond.** *WWW 2021-Best Paper Award Shortlist*

Mingxuan Ju, Wei Song, Shiyu Sun, Yanfang Ye, Yujie Fan, Shifu Hou, Kenneth Loparo, Liang Zhao

[S1] **Heterogeneous Temporal Graph Neural Network.** *SDM 2022*

Yujie Fan, Mingxuan Ju, Chuxu Zhang, Liang Zhao, Yanfang Ye

## Awards:

- AAI 2023 Student Scholar Jan. 2023
- WWW 2021 Best Paper Award Shortlist Mar. 2021
- 3rd Place Award at IEEE Big Data 2018 FEMH Cup Jan. 2019
- Receiver of Support of Undergraduate Research and Creative Endeavors Nov. 2018

## Services:

- Organizer of Learning on Graph (LoG) conference mid-north meetup.
- Reviewer/PC Member: ICLR 24; NeurIPS 23; AAI 22/23/24; KDD 22/23; WWW 24; SDM 23/24; WSDM 22; ICDM 21/22.

## All Publications (Chronological Order)

## Conference Papers

- [C14] **GraphPatcher: Mitigating Degree Bias for Graph Neural Networks via Test-time Augmentation.** *NeurIPS 2023*  
Mingxuan Ju, Tong Zhao, Wenhao Yu, Neil Shah, Yanfang Ye
- [C13] **Multi-task Self-supervised Graph Neural Networks Enable Stronger Task Generalization.** *ICLR 2023*  
Mingxuan Ju, Tong Zhao, Qianlong Wen, Wenhao Yu, Neil Shah, Yanfang Ye, Chuxu Zhang
- [C12] **Generate rather than Retrieve: Large Language Models are Strong Context Generators.** *ICLR 2023*  
Wenhao Yu, Dan Iter, Shuohang Wang, Yichong Xu, Mingxuan Ju, Soumya Sanyal, Chengguang Zhu, Michael Zeng, Meng Jiang
- [C11] **Chasing All-Round Graph Representation Robustness: Model, Training, and Optimization.** *ICLR 2023*  
Chunhui Zhang, Yijun Tian, Mingxuan Ju, Zheyuan Liu, Yanfang Ye, Nitesh Chawla, Chuxu Zhang
- [C10] **Let Graph be the Go Board: Gradient-free Node Injection Attack for Graph Neural Networks via Reinforcement Learning.** *AAAI 2023*  
Mingxuan Ju, Yujie Fan, Chuxu Zhang, Yanfang Ye
- [C9] **Self-Supervised Graph Structure Refinement for Graph Neural Networks.** *WSDM 2023*  
Jianan Zhao, Qianlong Wen, Mingxuan Ju, Yanfang Ye
- [C8] **Leveraging Comment Retrieval for Code Summarization.** *ECIR 2023*  
Shifu Hou, Lingwei Chen, Mingxuan Ju, Yanfang Ye
- [C7] **Grape: Knowledge Graph Enhanced Passage Reader for Open-domain Question Answering.** *Findings of EMNLP 2022*  
Mingxuan Ju\*, Wenhao Yu\*, Tong Zhao, Chuxu Zhang, Yanfang Ye
- [C6] **Heterogeneous Temporal Graph Neural Network.** *SDM 2022*  
Yujie Fan, Mingxuan Ju, Chuxu Zhang, Liang Zhao, Yanfang Ye
- [C5] **Adaptive Kernel Graph Neural Network.** *AAAI 2022*  
Mingxuan Ju, Shifu Hou, Yujie Fan, Jianan Zhao, Liang Zhao, Yanfang Ye
- [C4] **Dr. Emotion: Disentangled Representation Learning for Emotion Analysis on Social Media to Improve Community Resilience in the COVID-19 Era and Beyond.** *WWW 2021-Best Paper Award Shortlist*  
Mingxuan Ju, Wei Song, Shiyu Sun, Yanfang Ye, Yujie Fan, Shifu Hou, Kenneth Loparo, Liang Zhao
- [C3] **Heterogeneous Temporal Graph Transformer: An Intelligent System for Evolving Android Malware Detection.** *KDD 2021*  
Yujie Fan, Mingxuan Ju, Shifu Hou, Yanfang Ye, Wenqiang Wan, Kui Wang, Yinming Mei, Qi Xiong
- [C3] **Disentangled Representation Learning in Heterogeneous Information Network for Large-scale Android Malware Detection in the COVID-19 Era and Beyond.** *AAAI 2021*  
Shifu Hou, Yujie Fan, Mingxuan Ju, Yanfang Ye, Wenqiang Wan, Kui Wang, Yinming Mei, Qi Xiong, Fudong Shao
- [C2] **Community Mitigation: A Data-driven System for COVID-19 Risk Assessment in a Hierarchical Manner.** *CIKM 2021*  
Yanfang Ye, Yujie Fan, Shifu Hou, Yiming Zhang, Yiyue Qian, Shiyu Sun, Qian Peng, Mingxuan Ju, Wei Song, Kenneth Loparo
- [C1] **A Multi-representation Ensemble Approach to Classifying Vocal Diseases.** *BigData 2018*  
Mingxuan Ju, Zhengkai Jiang, Yufan Chen, Soumya Ray

## Journal Papers

- [J3] **Exploring Contrast Consistency of Open-domain Question Answering Systems on Minimally Edited Questions.** *TACL*  
Zhihan Zhang, Wenhao Yu, Ning Zheng, Mingxuan Ju, Meng Jiang
- [J2] **a-Satellite: An AI-Driven System and Benchmark Datasets for Dynamic COVID-19 Risk Assessment in the United States.** *JBHI*  
Yanfang Ye, Yujie Fan, Shifu Hou, Yiming Zhang, Yiyue Qian, Shiyu Sun, Qian Peng, Mingxuan Ju, Wei Song, Kenneth Loparo
- [J1] **Development and Validation of a Machine Learning Algorithm for Predicting Response to Anticholinergic Medications for Overactive Bladder Syndrome.** *Obstetrics & Gynecology*  
David Sheyn, Mingxuan Ju, Sixiao Zhang, Caleb Anyaeche, Adonis Hijaz, Jeffrey Mangel, Sangeeta Mahajan, Britt Conroy, Sherif El-Nashar, Soumya Ray