

# Yao Ma

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## CONTACT INFORMATION

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Troy, NY, 07102, USA

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## POSITIONS

### Rensselaer Polytechnic Institute, Troy, USA

- Assistant Professor, Department of Computer Science      Jul 2023 –

### New Jersey Institute of Technology, Newark, USA

- Assistant Professor, Department of Computer Science      Sep 2021 – Jul 2023

### Michigan State University, East Lansing, USA

- Graduate Researcher, Department of Computer Science      Jan 2017 – Jul 2021

### Snap Inc., Santa Monica, USA

- Research Intern, Snap Research      May 2020 – Aug 2020

### JD.com, Beijing, China

- Research Intern, Data Science Lab      May 2018 – Aug 2018
- Research Intern, Data Science Lab      Jul 2017 – Aug 2017

### Philips, Eindhoven, the Netherlands

- Research Intern, Philips Research      Jan 2016 – Oct 2016

## EDUCATION

### Michigan State University, East Lansing, USA

- Ph.D. in Computer Science and Engineering      Jul 2021

### Eindhoven University of Technology, Eindhoven, the Netherlands

- M.S. in Statistics, Probability & Operations Research      Oct 2016

### Zhejiang University, Hangzhou, China

- B.S. in Mathematics & Applied Mathematics      Jul 2015

## RESEARCH INTERESTS

- Machine Learning on Graphs, Graph Neural Networks
- Trustworthy AI: Robustness, Fairness, Privacy
- Data Centric-AI: Data Augmentation, Active Learning, Data Valuation, Data Condensation

## PUBLICATIONS

See also [my google scholar](#) page.

### Books or Book Chapters

2. Yao Ma, Jiliang Tang. “Deep Learning on Graphs.” *Cambridge University Press*, 2021.
1. Yao Ma, Charu Aggarwal, Jiliang Tang. “Feature Engineering For Data Streams.” *Book Chapter in Feature Engineering, CRC Press*, 2017.

### Tutorials

4. Wei Jin, Yao Ma, Yiqi Wang, Xiaorui Liu, Jiliang Tang, Yukuo Cen, Jiezhong Qiu, Jie Tang, Chuan Shi, Yanfang Ye, Jiawei Zhang, Philip S. Yu. “Graph Representation Learning: Foundations, Methods, Applications and Systems.” *In Proceedings of the 27th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining (KDD)*, 2021.
3. Yao Ma, Wei Jin, Yiqi Wang, Tyler Derr, Jiliang Tang. “Graph Neural Networks: Models and Applications.” *Tutorial Forum, AAAI Conference on Artificial Intelligence (AAAI)*, 2021.
2. Yao Ma, Yiqi Wang, Tyler Derr, Lingfei Wu, Tengfei Ma, Yu Rong, Tingyang Xu, Junzhou Huang, Wenbing Huang, Hong Cheng. “Deep Graph Learning: Foundations, Advances and Applications.” *In Proceedings of the 26th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining (KDD)*, 2020.
1. Yao Ma, Wei Jin, Jiliang Tang, Lingfei Wu, Tengfei Ma. “Graph Neural Networks: Models and Applications.” *Tutorial Forum, AAAI Conference on Artificial Intelligence (AAAI)*, 2020.

#### Conference and Journal Publications

44. Tianyi Zhao, Liangliang Zhang, Yao Ma, and Lu Cheng. “A Survey on Safe Multi-Modal Learning Systems”. *In Proceedings of the 30th ACM SIGKDD Conference on Knowledge Discovery and Data Mining(SIGKDD)*, 2024
43. Xiaowei Qian, Zhimeng Guo, Jialiang Li, Haitao Mao, Bingheng Li, Suhang Wang, Yao Ma. “Addressing Shortcomings in Fair Graph Learning Datasets: Towards a New Benchmark.” *In Proceedings of the 30th ACM SIGKDD Conference on Knowledge Discovery and Data Mining(SIGKDD)*, 2024
42. Harry Shomer, Yao Ma, Haitao Mao, Juanhui Li, Bo Wu, Jiliang Tang. “LP-Former: An Adaptive Graph Transformer for Link Prediction.” *In Proceedings of the 30th ACM SIGKDD Conference on Knowledge Discovery and Data Mining(SIGKDD)*, 2024
41. Hongliang Chi, Yao Ma “Enhancing Graph Contrastive Learning with Node Similarity.” *In Proceedings of the 30th ACM SIGKDD Conference on Knowledge Discovery and Data Mining(SIGKDD)*, 2024
40. Haitao Mao, Zhikai Chen, Wenzhuo Tang, Jianan Zhao, Yao Ma, Tong Zhao, Neil Shah, Mikhail Galkin, Jiliang Tang. “Graph Foundation Models.” *In Proceedings of the 41th International Conference on Machine Learning (ICML)*, 2024.
39. Bingheng Li, Linxin Yang, Yupeng Chen, Senmiao Wang, Qian Chen, Haitao Mao, Yao Ma, Akang Wang, Tian Ding, Jiliang Tang, Ruoyu Sun “PDHG-Unrolled Learning-to-Optimize Method for Large-Scale Linear Programming.” *In Proceedings of the 41th International Conference on Machine Learning (ICML)*, 2024.
38. Lin Wang, Wenqi Fan, Jiatong Li, Yao Ma, Qing Li, “Fast Graph Condensation with Structure-based Neural Tangent Kernel” *In The Web Conference (WWW 2024)*, 2024.
37. Hongliang Chi, Cong Qi, Suhang Wang, Yao Ma, “Active Learning for Graphs with Noisy Structures.” *In Proceedings of SIAM International Conference on Data Mining (SDM)*, 2024
36. Haitao Mao, Zhikai Chen, Wei Jin, Haoyu Han, Yao Ma, Tong Zhao, Neil Shah, Jiliang Tang “Demystifying Structural Disparity in Graph Neural Networks:

Can One Size Fit All?” *To Appear in Thirty-seventh Conference on Neural Information Processing Systems, Orleans, United States, 2023*

35. Juanhui Li, Harry Shomer, Haitao Mao, Shenglai Zeng, Yao Ma, Neil Shah, Jiliang Tang, Dawei Yin “Evaluating Graph Neural Networks for Link Prediction: Current Pitfalls and New Benchmarking” *To Appear in Thirty-seventh Conference on Neural Information Processing Systems, Orleans, United States, 2023*
34. Zhimeng Guo, Jialiang Li, Teng Xiao, Yao Ma, and Suhang Wang “Towards Fair Graph Neural Networks via Graph Counterfactual.” *To Appear in Proceedings of 32nd ACM International Conference on Information and Knowledge Management (CIKM 2023)*
33. Mahmoud Nazzal, Issa Khalil, Abdallah Khreichah, NhatHai Phan, Yao Ma “Multi-Instance Adversarial Attack on GNN-Based Malicious Domain Detection” *To Appear in the 45th IEEE Symposium on Security and Privacy, May 20-23, 2024.*
32. Harry Shomer, Wei Jin, Juanhui Li, and Yao Ma, Jiliang Tang “Learning Representations for Hyper-Relational Knowledge Graphs.” *The 2023 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining, Marrakesh, Morocco, 6-9 November 2023*
31. Juanhui Li, Harry Shomer, Jiayuan Ding, and Yiqi Wang, Yao Ma, Neil Shah, Jiliang Tang, Dawei Yin “Are Graph Neural Networks Really Helpful for Knowledge Graph Completion?” *Proceedings of the 61st Annual Meeting of the Association for Computational Linguistics, ACL 2023, Toronto, Cananda, 2023*
30. Juanhui Li, Yao Ma, Wei Zeng, Suqi Cheng, Jiliang Tang, Shuaiqiang Wang, Dawei Yin. “Graph Enhanced BERT for Query Understanding” *Proceedings of the 46th International ACM SIGIR conference on research and development in Information Retrieval, SIGIR 2023.*
29. Khang Tran, Phung Lai, NhatHai Phan, Yao Ma, Abdallah Khreichah, Issa Khalil, My T. Thai, Xintao Wu. “Heterogeneous Randomized Response for Differential Privacy in Graph Neural Networks” *In Proceedings of the 2022 IEEE International Conference on Big Data, 2022*
28. Wei Jin, Xiaorui Liu, Yao Ma, Charu Aggarwal, Jiliang Tang. “Feature Over-correlation in Deep Graph Neural Networks: A New Perspective.” *In Proceedings of the 28th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (SIGKDD), 2022*
27. Yao Ma, Xiaorui Liu, Neil Shah, Jiliang Tang. “Is Homophily a Necessity for Graph Neural Networks.” *International Conference on Learning Representations (ICLR), 2022*
26. Wei Jin, Xiaorui Liu, Xiangyu Zhao, Yao Ma, Neil Shah, Jiliang Tang. “Automated Self-Supervised Learning for Graphs.” *International Conference on Learning Representations (ICLR), 2022*
25. Xiaorui Liu, Jiayuan Ding, Wei Jin, Han Xu, Yao Ma, Zitao Liu, Jiliang Tang. “Graph Neural Networks with Adaptive Residual.” *Conference on Neural Information Processing Systems (NeurIPS), 2021.*
24. Yao Ma, Xiaorui Liu, Tong Zhao, Yozen Liu, Jiliang Tang. “A Unified View of Graph Neural Networks as Graph Signal Denoising.” *In Proceedings of the 2021 ACM on Conference on Information and Knowledge Management (CIKM), 2021.*

23. Wei Jin, Xiaorui Liu, Yao Ma, Tyler Derr, Charu Aggarwal, Jiliang Tang. “Graph Feature Gating Networks.” *In Proceedings of the 2021 ACM on Conference on Information and Knowledge Management (CIKM)*, 2021.
22. Yao Ma, Suhang Wang, Tyler Derr, Lingfei Wu, Jiliang Tang. “Attacking Graph Convolutional Networks via Rewiring.” *In Proceedings of 27th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (SIGKDD)*, 2021.
21. Xiaorui Liu, Wei Jin, Yao Ma, Yaxin Li, Hua Liu, Yiqi Wang, Ming Yan, Jiliang Tang. “Elastic Graph Neural Networks.” *International Conference on Machine Learning (ICML)*, 2021.
20. Wei Jin, Tyler Derr, Yiqi Wang, Yao Ma, Zitao Liu, Jiliang Tang. “Node Similarity Preserving Graph Convolutional Networks.” *In Proceedings of the 14th International Conference on Web Search and Data Mining (WSDM)*, 2021.
19. Wenqi Fan, Tyler Derr, Xiangyu Zhao, Yao Ma, Hui Liu, Jianping Wang, Jiliang Tang, Qing Li. “CopyAttack: Attacking Black-box Recommendations via Copying Cross-domain User Profiles.” *In Proceedings of the IEEE 37th International Conference on Data Engineering (ICDE)*, 2021.
18. Yao Ma, Juanhui Li, Yiqi Wang, Charu Aggarwal, Changdong Wang, Jiliang Tang. “Graph Pooling with Representativeness.” *In Proceedings of 20th IEEE International Conference on Data Mining (ICDM)*, 2020.
17. Wentao Wang, Tyler Derr, Yao Ma, Suhang Wang, Hui Liu, Zitao Liu, Jiliang Tang. “Learning from Incomplete Labeled Data via Adversarial Data Generation.” *In Proceedings of 20th IEEE International Conference on Data Mining (ICDM)*, 2020.
16. Wei Jin, Yao Ma, Xiaorui Liu, Xianfeng Tang, Suhang Wang, Jiliang Tang. “Graph Structure Learning for Robust Graph Neural Networks.” *In Proceedings of 26th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (SIGKDD)*, 2020.
15. Wenqi Fan, Yao Ma, Qing Li, Yuan He, Eric Zhao, Jiliang Tang, Dawei Yin. “A Graph Neural Network Framework for Social Recommendations.” *IEEE Transactions on Knowledge and Data Engineering (TKDE)*, 2020.
14. Yao Ma, Ziyi Ding, Zhaochun Ren, Jiliang Tang, Dawei Yin. “Streaming Graph Neural Networks.” *In Proceedings of the 43rd International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR)*, 2020.
13. Xiaoyang Wang, Yao Ma, Yiqi Wang, Wei Jin, Xin Wang, Jiliang Tang, Caiyan Jia, Jian Yu. “Traffic Flow Prediction via Spatial Temporal Graph Neural Network.” *In Proceedings of the 29th International Conference on World Wide Web Companion (WWW)*, 2020.
12. Wenqi Fan, Yao Ma, Han Xu, Xiaorui Liu, Jianping Wang, Qing Li, Jiliang Tang. “Deep Adversarial Canonical Correlation Analysis.” *In Proceedings of the SIAM International Conference on Data Mining (SDM)*, 2020.
11. Han Xu, Yao Ma, Haochen Liu, Debayan Deb, Hui Liu, Jiliang Tang, Anil Jain. “Adversarial Attacks and Defenses in Images, Graphs and Text: A Review.” *International Journal of Automation and Computing*, 17(2), pp.151-178., 2020.
10. Tyler Derr, Yao Ma, Wenqi Fan, Xiaorui Liu, Charu Aggarwal, Jiliang Tang. “Epidemic Graph Convolutional Network.” *In Proceedings of the 13th ACM Conference on Web Search and Data Mining (WSDM)*, 2020.

9. Wenqi Fan, Yao Ma, Dawei Yin, Jianping Wang, Jiliang Tang, Qing Li. “Deep Social Collaborative Filtering.” *In Proceedings of the 13th ACM Conference on Recommender Systems (RecSys)*, 2019.
8. Wenqi Fan, Tyler Derr, Yao Ma, Dawei Yin, Jianping Wang, Jiliang Tang, Qing Li. “Deep Adversarial Social Recommendation.” *In Proceedings of the International Joint Conference on Artificial Intelligence (IJCAI)*, 2019.
7. Yao Ma, Suhang Wang, Charu C. Aggarwal, Jiliang Tang. “Graph Convolutional Networks with EigenPooling.” *In Proceedings of 25th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (SIGKDD)*, 2019.
6. Wenqi Fan, Yao Ma, Qing Li, Yuan He, Eric Zhao, Jiliang Tang, Dawei Yin. “Graph Neural Networks for Social Recommendation.” *In Proceedings of the 28th International Conference on World Wide Web Companion (WWW)*, 2019.
5. Yao Ma, Suhang Wang, Charu C. Aggarwal, Dawei Yin, Jiliang Tang. “Multi-dimensional Graph Convolutional Networks.” *In Proceedings of SIAM International Conference on Data Mining (SDM)*, 2019.
4. Tyler Derr, Yao Ma, Jiliang Tang. “Signed Graph Convolutional Neural Networks.” *In Proceedings of the IEEE International Conference on Data Mining (ICDM)*, 2018.
3. Yao Ma, Suhang Wang, Jiliang Tang. “Local and Global Information Preserved Network Embedding.” *In Proceedings of IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM)*, 2018.
2. Yao Ma, Zhaochun Ren, Ziheng Jiang, Dawei Yin, Jiliang Tang. “Multidimensional Network Embedding with Hierarchical Structures.” *In Proceedings of the 11th ACM International Conference on Web Search and Data Mining (WSDM)*, 2018.
1. Yao Ma, Suhang Wang, Jiliang Tang. “Network Embedding with Centrality Information.” *Ph.D Forum, The IEEE International Conference on Data Mining (ICDM)*, 2017.

### Preprints and Submissions

7. Harry Shomer, Wei Jin, Juanhui Li, Yao Ma, Jiliang Tang. “Learning Representations for Hyper-Relational Knowledge Graphs.” *arXiv preprint arXiv:2208.14322*, 2022.
6. Hongliang Chi, Yao Ma. “Enhancing Graph Contrastive Learning with Node Similarity.” *arXiv preprint arXiv:2208.06743*, 2022.
5. Juanhui Li, Harry Shomer, Jiayuan Ding, Yiqi Wang, Yao Ma, Neil Shah, Jiliang Tang, Dawei Yin. “Are Graph Neural Networks Really Helpful for Knowledge Graph Completion?” *arXiv preprint arXiv:2205.10652*, 2022.
4. Juanhui Li, Yao Ma, Wei Zeng, Suqi Cheng, Jiliang Tang, Shuaiqiang Wang, Dawei Yin. “Graph Enhanced BERT for Query Understanding” *arXiv preprint arXiv:2204.06522*, 2022.
3. Yiqi Wang, Yao Ma, Charu Aggarwal, Jiliang Tang. “Non-IID Graph Neural Networks.” *arXiv preprint arXiv:2005.12386*, 2020.
2. Zhiwei Wang, Yao Ma, Zitao Liu, Jiliang Tang. “R-Transformer: Recurrent Neural Network Enhanced Transformer.” *arXiv preprint arXiv:1907.05572*, 2019.
1. Zhiwei Wang, Yao Ma, Jiliang Tang. “Linked Recurrent Neural Networks.” *arXiv preprint arXiv:1808.06170*, 2018.

HONORS & AWARDS	<ul style="list-style-type: none"> <li>Outstanding Graduate Student Award, College of Engineering (2019-20), MSU</li> <li>FAST Fellowship (2020-21), MSU</li> <li>Student Registration Award, KDD'2020</li> <li>Student Travel Grant, SIGIR'2020</li> <li>Student Travel Award, AAAI'2020</li> <li>Student Travel Award, KDD'2019</li> <li>Student Travel Award, SDM'2019</li> <li>ALSP scholarship, Eindhoven University of Technology, 2014-2016</li> </ul>
TEACHING EXPERIENCE	<p>Instructor, RPI</p> <ul style="list-style-type: none"> <li>CSCI 4961-6961 Deep Learning Spring, 2024</li> <li>CSCI 4975-6975 Deep Learning on Graphs Fall, 2023</li> </ul> <p>Instructor, NJIT</p> <ul style="list-style-type: none"> <li>CS 675 Introduction to Machine Learning Fall, 2022</li> <li>CS 675 Introduction to Machine Learning Spring, 2022</li> <li>CS 785 Deep Learning on Graphs Fall, 2021</li> </ul> <p>Teaching Assistant, MSU</p> <ul style="list-style-type: none"> <li>Data Mining 2019</li> <li>Data Structures and Algorithms 2018</li> <li>Big Data Analysis 2018</li> </ul>
SERVICES	<p><b>Editors</b></p> <ul style="list-style-type: none"> <li><i>Machine Learning on Complex Graphs</i>, Frontiers in Big Data</li> </ul> <p><b>Book/Book Proposal Review</b></p> <ul style="list-style-type: none"> <li>Cambridge University Press</li> </ul> <p><b>Conference and Workshop Chairships</b></p> <ul style="list-style-type: none"> <li>Proceedings Co-chair, ACM Conference on Knowledge Discovery and Data Mining (KDD) 2022</li> <li>Workshop Organizer, Machine Learning on Graphs (MLoG)@ICDM2022 2022</li> <li>Workshop Organizer, Machine Learning on Graphs (MLoG)@WSDM2022 2022</li> </ul> <p><b>Session Chair</b></p> <ul style="list-style-type: none"> <li>“Graph Mining” at KDD 2022 2022</li> <li>“Application: Social and Information Networks” at AAAI 2020 2020</li> </ul> <p><b>Senior Program Committee Member</b></p> <ul style="list-style-type: none"> <li>AAAI Conference on Artificial Intelligence (AAAI) 2022</li> <li>International Joint Conferences on Artificial Intelligence (IJCAI) 2021</li> </ul> <p><b>Program Committee Member</b></p> <ul style="list-style-type: none"> <li>The Web Conference (WWW) 2022</li> <li>International Conference on Machine Learning (NeurIPS) 2022</li> <li>International Conference on Machine Learning (ICML) 2021-2022</li> </ul>

- SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2021–2022
- International Conference on Learning Representations (ICLR) 2022
- International Conference on Information and Knowledge Management (CIKM) 2021
- International Joint Conferences on Artificial Intelligence (IJCAI) 2020
- Artificial Intelligence for Education (AI4EDU) @ AAAI 2020
- Deep Learning on Graphs: Methodologies and Applications (DLGMA) @ AAAI 2020
- AAAI Conference on Artificial Intelligence (AAAI) 2020 – 2021
- IEEE International Conference on Big Data (BigData) 2018 – 2021
- International Conference on Artificial Neural Networks (ICANN) 2019

#### **Journal Reviewer**

- IEEE Transactions on Knowledge and Data Engineering (TKDE)
- IEEE Transactions on Pattern Analysis and Machine Intelligence (TPAMI)
- IEEE Transactions on Big Data
- IEEE Transactions on Knowledge Discovery from Data (TKDD)
- Knowledge and Information Systems (KAIS)
- Neurocomputing
- Applied Network Science (ANS)
- IEEE Journal of Biomedical and Health Informatics
- Information Processing and Management (IPM)
- Transactions on the Web (TWEB)

#### **Volunteering**

- Annual Biomedical Research Conference for Minority Students (ABRCMS) Nov 2020
- 26th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (SIGKDD) Aug 2020
- 34th AAAI Conference on Artificial Intelligence (AAAI) Feb 2020
- 25th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (SIGKDD) Aug 2019
- Mid-Michigan Symposium for Undergraduate Research Experiences (MID-SURE) Jul 2019
- 11th ACM International Conference on Web Search and Data Mining (WSDM) Feb 2018
- Volunteer of Summer Science Camp at Zhejiang University Jul 2013
- Organizer of a voluntary math teaching program for a primary school Sep 2012–Jul 2013