Juanhui Li

Contact Information

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Research Interests

- Graph Neural Networks, Link Prediction, Knowledge Graph
- Recommendation Systems
- Large Language Models

Education

Michigan State University, USA 08/2020 – 06/2025 (Expected)

- Ph.D., Computer Science and Engineering
- Advisor: Dr. Jiliang Tang
- Remote study during 2020-2021 due to Covid-19

Sun Yat-sen University, China 09/2017 – 06/2020

- Master of Computer Science and Technology

Sun Yat-sen University, China 09/2013 – 06/2017

- Bachelor of Software Engineering

Professional Experience

Amazon 05/2024 – 10/2024
Applied Scientist Intern

- Topic: Learning with Less: Knowledge Distillation from Large Language Models via Unlabeled Data
- Mentor: Sreyashi Nag

Homedepot 06/2023 – 02/2024
Research Intern

- Topic: ID-based and Text-based Learning for Session Recommendation
- Mentor: Dr. Amin Javari

Baidu Inc.
Research Intern 05/2020 – 08/2021

- Topic: Graph Enhanced BERT for Query Understanding
- Mentors: Dr. Suqi Cheng and Dr. Wei Zeng

Data Science and Engineering Lab, Michigan State University 08/2020 – Present
Research Assistant, Department of Computer Science and Engineering

- Topic: Link Prediction, Knowledge Graph, Recommendation Systems, Large Language Models
- Mentor: Dr. Jiliang Tang
- Remote working during 2020-2021 due to Covid-19

Visiting Student at Data Science and Engineering Lab 10/2019 – 12/2019

- Topic: Graph Pooling with Representativeness
- Mentor: Dr. Jiliang Tang

Honors and Awards

- ICDM Female Student Award Shortlist Candidate 2024
- NeurIPS Scholar Award 2023
- KDD Travel Award 2022
- WSDM Travel Award 2022
- First-Class Scholarship for Outstanding Students 2019
- First-Class Scholarship for Outstanding Students 2018
- First-Class Scholarship for Outstanding Students 2017

Open-Source Projects

- **HeaRT** [Link]. 2023
  A benchmark repo of link prediction across a wide range of representative methods and datasets, accompanied by a new and practical evaluation setting for link prediction.
- **Are_MPNNs_helpful** [Link]. 2022
  A repo investigating if the messaging passing is helpful for knowledge graph completion.
- **RepPool** [Link]. 2020
  A repo of graph pooling method by considering both node importance and node representativeness.

Publication

Conference and Journal Papers

* indicates equal contribution

- "Mixture of Link Predictors"
  Li Ma, Haoyu Han, **Juanhui Li**, Harry Shomer, Hui Liu, Xiaofeng Gao, Jiliang Tang.
  the Thirty-eighth Annual Conference on Neural Information Processing Systems (**NeurIPS**), 2024.
- "LPFormer: An Adaptive Graph Transformer for Link Prediction"
  Harry Shomer, Yao Ma, Haitao Mao, and **Juanhui Li**, Bo Wu, Jiliang Tang.
  SIGKDD Conference on Knowledge Discovery and Data Mining (**KDD**), 2024.
- "Revisiting Link Prediction: A Data Perspective"
  Haitao Mao, **Juanhui Li**, Harry Shomer, and Bingheng Li, Wenqi Fan, Yao Ma, Tong Zhao, Neil Shah, Jiliang Tnag.
  International Conference on Learning Representations (**ICLR**), 2024.
- "Distance-Based Propagation for Efficient Knowledge Graph Reasoning"
  Harry Shomer, Yao Ma, **Li Juanhui**, and Bo Wu, Charu Aggarwal, Jiliang Tang
  Conference on Empirical Methods in Natural Language Processing (**EMNLP**), 2023.
- "Evaluating Graph Neural Networks for Link Prediction: Current Pitfalls and New Benchmarking"
  Juanhui Li*, Harry Shomer*, Haitao Mao, and Shenglai Zeng, Yao Ma, Neil Shah, Jiliang Tang, Dawei Yin.
  Conference on Neural Information Processing Systems (**NeurIPS**), 2023.
- "Are Message Passing Neural Networks Really Helpful for Knowledge Graph Completion?"
  Juanhui Li, Harry Shomer, Jiayuan Ding, and Yiqi Wang, Yao Ma, Neil Shah, Jiliang Tang, Dawei Yin.
  Annual Meeting of the Association for Computational Linguistics (**ACL**), 2023.

- "Graph Enhanced BERT for Query Understanding"
  Juanhui Li, Yao Ma, Wei Zeng, and Suqi Cheng, Jiliang Tang, Shuaiqiang Wang, Dawei Yin.
  International ACM SIGIR conference on research and development in Information Retrieval (**SIGIR**), 2023.
- "Learning Representations for Hyper-Relational Knowledge Graphs"
  Harry Shomer, Wei Jin, **Juanhui Li**, and Yao Ma, Jiliang Tang.
  International Conference on Advances in Social Networks Analysis and Mining (**ASONAM**), 2023.
- "Attributed Network Embedding with Micro-Meso Structure"
  Juanhui Li, Ling Huang, Chang-Dong Wang, and Dong Huang, Jian-Huang Lai, Pei Chen.
  ACM Transactions on Knowledge Discovery from Data (**TKDD**), 2021.
- "Graph Pooling with Representativeness"
  Juanhui Li, Yao Ma, Yiqi Wang, and Charu C. Aggarwal, Chang-Dong Wang, Jiliang Tang.
  International Conference on Data Mining, (**ICDM**), 2020.
- "Discriminative metric learning for multi-view graph partitioning"
  Juanhui Li, Chang-Dong Wang, Pei-Zhen Li, and Jian-Huang Lai.
  Pattern Recognition, (**Pattern Recognition**), 2018.

Preprints and Submissions

- "Learning with Less: Knowledge Distillation from Large Language Models via Unlabeled Data"
  Juanhui Li, Sreyashi Nag, Hui Liu, Xianfeng Tang, Sheikh Sarwar, Limeng Cui, Hansu Gu, Suhang Wang, Qi He, Jiliang Tang
  Submitted to Annual Conference of the Nations of the Americas Chapter of the Association for Computational Linguistics (**NACCL**), 2025
- "Enhancing ID and Text Fusion via Alternative Training in Session-based Recommendation"
  Juanhui Li, Haoyu Han, Zhikai Chen, Harry Shomer, Wei Jin, Amin Javari, Jiliang Tang
  Arxiv.
- "Node-wise Filtering in Graph Neural Networks: A Mixture of Experts Approach"
  Haoyu Han, **Juanhui Li**, Wei Huang, Xianfeng Tang, Hanqing Lu, Chen Luo, Hui Liu, Jiliang Tang.
  Submitted to the Thirteenth International Conference on Learning Representations (**ICLR**), 2025.

Proposal Writing

- GUARD: Safeguarding Patient-Facing Medical Chatbots by integrating Multifaceted Knowledge via Scalable Multi-agent Retrieval-Augmented Generation (RAG) system
  PI: Dr. Jiliang Tang
  Role: Designed and drafted the component of leveraging multi-source knowledge graphs to mitigate hallucination
  Result: Submitted to ARPA-H and **rejected** in 2024.
- Graph Foundation Models
  PI: Dr. Jiliang Tang
  Role: Designed and drafted the link prediction component of the proposal
  Result: Submitted to Meta and **funded** in 2024.
- Graph Neural Networks for Single-cell Analysis
  PI: Dr. Jiliang Tang
  Role: Designed and drafted the GNN components of the proposal
  Result: Submitted to Johnson&Johnson and **funded** in 2022.
- Learn to Transform Graphs for Graph Neural Networks
  PI: Dr. Jiliang Tang

Role: Designed and drafted the whole proposal
Result: Submitted to Snap Inc. and **funded** in 2022.

- Toward Interpretable and Stable Graph Neural Networks
  PI: Dr. Jiliang Tang
  Role: Designed and drafted the research objective of "Stable Graph Neural Networks"
  Result: Submitted to The Army Research Office (ARO) and **funded** in 2021.
- III: Medium: New Frontiers of Graph Neural Networks: Scalability, Interpretability, Vulnerability, and Stability
  PI: Dr. Jiliang Tang
  Role: Designed and drafted one of the four research objectives, i.e., Interpretability on Graphs
  Result: Submitted to National Science Foundation (NSF) and **funded** in 2021.

Presentations

- "Evaluating Graph Neural Networks for Link Prediction: Current Pitfalls and New Benchmarking" 12/2023
  - Poster presentation at NeurIPS 2023
- "Are Message Passing Neural Networks Really Helpful for Knowledge Graph Completion?" 10/2023
  - Presentation at the 8th Qilu Youth Forum at Shangdong University
- "Are Message Passing Neural Networks Really Helpful for Knowledge Graph Completion?" 07/2023
  - Poster presentation at ACL 2023
- "Graph Enhanced BERT for Query Understanding" 07/2023
  - Online oral presentation at SIGIR 2023
- "From uni-relational to multi-relational graph neural networks" 11/2022
  - Online presentation at WSDM Doctoral Consortium 2022
- " Graph pooling with representativeness" 11/2020
  - Online oral presentation at ICDM 2020

Teaching Experience

- Teaching Assistant for CSE 320 Computer Organization and Architecture (Undergraduate Level) 2023
  - Duties included online discussions, office hours and grading.
- Teaching Assistant for CSE 440 Introduction to Artificial Intelligence(Undergraduate Level) 2022
  - Duties included online discussions, office hours and grading.

Mentoring

- Ma Li (Female), visiting PhD student from Shanghai Jiao Tong University 08/2023 – Present
  Co-authored paper: NeurIPS'24
  Mixture of Link Predictors
- Hanbing Wang, Michigan State University, PhD student 10/2023 – Present
  Rethinking Large Language Model Architectures for Sequential Recommendations

Services

Senior Program Committee Member

- AAAI Conference on Artificial Intelligence (AAAI) 2022

Program Committee Member & Conference Reviewer

- The Web Conference (WWW) 2022-2023
- Conference on Information and Knowledge Management (CIKM) 2021-2023
- IEEE International Conference on Data Mining (ICDM) 2023
- SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2023
- Conference on Empirical Methods in Natural Language Processing (EMNLP) 2023-2024
- Association for Computational Linguistics (ACL) 2022
- AAAI Conference on Artificial Intelligence (AAAI) 2021
- The International Conference on Learning Representations (ICLR) 2024

Journal Reviewer

- Transactions on Network Science and Engineering (TNSE) 2024
- Transactions on Intelligent Systems and Technology (TIST) 2023-2024
- Transactions on Knowledge and Data Engineering (TKDE) 2023
- Transactions on Knowledge Discovery from Data (TKDD) 2023
- Transactions on Information Systems (TOIS) 2023

Conference External Reviewer

- AAAI Conference on Artificial Intelligence (AAAI) 2023

Volunteering

- SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2022

List of References

- **Dr. Jiliang Tang**
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  Email: tangjili@msu.edu
  Homepage: `https://www.cse.msu.edu/~tangjili/`
- **Dr. Suhang Wang**
  Associate Professor, College of Information Sciences and Technology, Penn State University
  Phone: +1 814-865-2453
  Email: szw494@psu.edu
  Homepage: `https://suhangwang.ist.psu.edu/`
- **Dr. Neil Shah**
  Lead Research Scientist, Manager, Snap Research
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  Homepage: `http://nshah.net/`