

Jian Kang

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201 N. Goodwin Ave, Urbana, IL 61801

RESEARCH INTERESTS

Data mining and machine learning on graphs, algorithmic fairness, trustworthy artificial intelligence

EDUCATION

- **University of Illinois at Urbana-Champaign** Urbana, IL
Ph.D. student in Computer Science Aug. 2019 - Present
Advisor: Dr. Hanghang Tong
- **Arizona State University** Tempe, AZ
Ph.D. student in Computer Science Aug. 2017 - May 2019
Advisor: Dr. Hanghang Tong
- **University of Virginia** Charlottesville, VA
Master of Computer Science Aug. 2015 - Dec. 2016
- **Beijing University of Posts and Telecommunications** Beijing, China
Bachelor of Engineering Sep. 2010 - Jun. 2014

RESEARCH EXPERIENCE

- **Meta AI** Menlo Park, CA
Research Intern May 2022 - Aug. 2022
 - Conducted research on the cold start problem in real-time recommendation.
 - Mentor: Dr. Yan Zhu
- **Facebook AI** Remote
Research Intern May 2021 - Aug. 2021
 - Conducted research on local clustering for billion-scale graphs.
 - Mentor: Dr. Yan Zhu
- **University of Illinois at Urbana-Champaign** Urbana, IL
Research Assistant Aug. 2019 - Present
 - Conduct research on transparency and fairness of graph mining.
 - Advisor: Dr. Hanghang Tong
- **Arizona State University** Tempe, AZ
Research Assistant Aug. 2017 - May 2019
 - Conducted research on transparency and vulnerability of graph mining.
 - Conducted research in the AI-Trinity project (<https://ai-trinity.herokuapp.com/>).
 - Advisor: Dr. Hanghang Tong

AWARDS AND HONORS

- LOG 2022 Top Reviewers 2022
- NeurIPS 2022 Top Reviewers 2022
- Rising Stars in Data Science, University of Chicago 2022
- Mavis Future Faculty Fellow, University of Illinois at Urbana-Champaign 2022
- Research Platinum Award, IDEA-iSAIL Labs at University of Illinois at Urbana-Champaign 2022
- CIKM 2021 Best Reviewers Award 2021
- University Nomination (Top 3) for 2022 Apple Scholars in AI/ML 2021

- ICLR 2021 Outstanding Reviewer 2021
- ICML 2020 Top Reviewer 2020
- KDD 2020 Student Travel Award 2020
- CIKM 2019 Student Travel Award 2019
- BigData 2018 Student Travel Award 2018

GRANT EXPERIENCE

- Helped a successful NSF proposal on ‘Collaborative Research: Towards a Theoretic Foundation for Optimal Deep Graph Learning’.
- Helped a successful NSF proposal on ‘FAI: Towards a Computational Foundation for Fair Network Learning’.

PUBLICATIONS

Under Review

- Weilin Cong, **Jian Kang**, Hanghang Tong, Mehrdad Mahdavi. Deeper Understanding of Temporal Graph Learning. In submission.
- Xiao Lin, **Jian Kang**, Weilin Cong, Hanghang Tong. *BeMap: Balanced Message Passing for Fair Graph Neural Network*. In submission.

Journal Papers

- Tiankai Xie, Yuxin Ma, **Jian Kang**, Hanghang Tong, Ross Maciejewski. *FairRankVis: A Visual Analytics Framework for Exploring Algorithmic Fairness in Graph Mining Models*. IEEE Transactions on Visualization and Computer Graphics (TVCG), 2021.
- Meijia Wang, **Jian Kang**, Nan Cao, Yinglong Xia, Wei Fan, Hanghang Tong. *Graph Ranking Auditing: Problem Definition and Fast Solutions*. IEEE Transactions on Knowledge and Data Engineering (TKDE), 2020.

Conference Papers

- Weilin Cong, Si Zhang, **Jian Kang**, Baichuan Yuan, Hao Wu, Xin Zhou, Hanghang Tong, Mehrdad Mahdavi. *Do We Really Need Complicated Model Architectures For Temporal Networks?* In Proceedings of the 11th International Conference on Learning Representations (ICLR), 2023.
- **Jian Kang**, Tiankai Xie, Xintao Wu, Ross Maciejewski, Hanghang Tong. *InfoFair: Information-Theoretic Intersectional Fairness*. In 2022 IEEE International Conference on Big Data (Big Data), 2022.
- Yian Wang, **Jian Kang**, Yinglong Xia, Jiebo Luo, Hanghang Tong. *iFiG: Individually Fair Multi-view Graph Clustering*. In 2022 IEEE International Conference on Big Data (Big Data), 2022.
- **Jian Kang***, Qinghai Zhou*, Hanghang Tong. *JuryGCN: Quantifying Jackknife Uncertainty on Graph Convolutional Networks*. In Proceedings of the 28th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD), 2022.
- **Jian Kang**, Yan Zhu, Yinglong Xia, Jiebo Luo, Hanghang Tong. *RawlsGCN: Towards Rawlsian Difference Principle on Graph Convolutional Network*. In Proceedings of the ACM Web Conference (WWW), 2022.
- Yushun Dong, **Jian Kang**, Hanghang Tong, Jundong Li. *Individual Fairness for Graph Neural Networks: A Ranking based Approach*. In Proceedings of the 27th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD), 2021.
- **Jian Kang**, Jingrui He, Ross Maciejewski, Hanghang Tong. *InFoRM: Individual Fairness on Graph Mining*. In Proceedings of the 26th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD), 2020.

- **Jian Kang**, Hanghang Tong. *N2N: Network Derivative Mining*. In Proceedings of the 28th ACM International Conference on Information and Knowledge Management (CIKM), 2019.
- **Jian Kang**, Meijia Wang, Nan Cao, Yinglong Xia, Wei Fan, Hanghang Tong. *AURORA: Auditing PageRank on Large Graphs*. In 2018 IEEE International Conference on Big Data (Big Data), 2018.
- **Jian Kang***, Scott Freitas*, Haichao Yu, Yinglong Xia, Nan Cao, Hanghang Tong. *X-Rank: Explainable Ranking in Complex Multi-Layered Networks*. In Proceedings of the 27th ACM International Conference on Information and Knowledge Management (CIKM), 2018.
- Haichao Yu, **Jian Kang**, Yinglong Xia, Nan Cao, Hanghang Tong. *Visual Mining of Multi-Sourced Networks*. In Proceedings of the 5th China Visualization and Visual Analytics Conference (ChinaVis), 2018.

(* indicates equal contribution)

TALKS

• Keynote Talks

- **Algorithmic Foundation of Fair Graph Mining** Aug. 2022
* The 1st ACM SIGKDD Workshop on Ethical Artificial Intelligence: Methods and Applications (EAI-KDD'22)

• Guest Lectures

- **Algorithmic Foundation of Fair Graph Mining** Apr. 2022
* CS 5824: Advanced Machine Learning at Virginia Tech
* Host: Dr. Dawei Zhou
- **Algorithmic Fairness in Machine Learning** Apr. 2021
* DS 402: Data Science in Healthcare at the Pennsylvania State University
* Host: Dr. Fenglong Ma

• Invited Talks

- **Algorithmic Foundation of Fair Graph Mining** Dec. 2022
* UCLA Data Mining lab at UCLA
* Host: Mr. Song Jiang
- **Algorithmic Foundation of Fair Graph Mining** Nov. 2022
* The Sanghani Center for AI and Analytics Seminar at Virginia Tech
* Host: Dr. Dawei Zhou
- **Algorithmic Foundation of Fair Graph Mining** Nov. 2022
* The DEFIRST reading group at Mila
* Host: Ms. Rebecca Salganik
- **Algorithmic Foundation of Fair Graph Mining** Nov. 2022
* The Emory Graph Mining lab at Emory University
* Host: Dr. Carl Yang
- **Fair Graph Mining** Nov. 2022
* Internal seminar at Alibaba
* Host: Dr. Liangyue Li

• Conference Tutorials

- **Algorithmic Fairness on Graphs: State-of-the-Art and Open Challenges** Apr. 2023
* Lecture-style tutorial at SDM 2023
- **Algorithmic Fairness on Graphs: Methods and Trends** Aug. 2022
* Lecture-style tutorial at KDD 2022

TEACHING EXPERIENCE

- **University of Illinois at Urbana-Champaign** Urbana, IL
Teaching Assistant Aug. 2020 - Dec. 2020, Jan. 2022 - May 2022
 - Lead teaching assistant of CS412: Introduction to Data Mining (undergraduate- and graduate-level).
 - Supported students for Q&A and course logistics.
 - Taught recitations and created course assignments and exams.
- **Arizona State University** Tempe, AZ
Teaching Assistant Aug. 2018 - Dec. 2018
 - Lead teaching assistant of CS575: Statistical Machine Learning (graduate-level).
 - Supported students on Q&A and course logistics.
 - Taught review sessions and created course assignments and exams.

MENTORING EXPERIENCE

- Mr. Jiaju Chen (B.Eng. student in Data Science at University of Science and Technology of China)
 - Research on algorithmic fairness in graph contrastive learning.
- Mr. Xianghe Xu (B.S. student in Computer Science at the University of Illinois at Urbana-Champaign)
 - Research on algorithmic fairness in graph contrastive learning.
- Mr. Xiao Lin (B.Eng. student in Intelligence Science and Technology at Peking University)
 - Research on algorithmic fairness in graph neural networks.
 - Led to a submission to premium data mining conference WWW 2023.
- Ms. Yian Wang (M.S. student in Computer Science at the University of Illinois at Urbana-Champaign)
 - Research on algorithmic fairness in multi-network mining.
 - Led to a publication at top data mining conference IEEE Big Data 2022.
- Ms. Xinyu He (B.Eng. in Computer Science at Tsinghua University)
 - Research on understanding negative sampling for graph contrastive learning.
 - Now Ph.D. student at the University of Illinois at Urbana-Champaign.
- Mr. Junke Ye (B.S. in Computer Science at Michigan State University)
 - Research on algorithmic fairness in heterogeneous graph mining.
- Mr. Yuxin Xiao (B.S. in Computer Science, Statistics & Mathematics at the University of Illinois at Urbana-Champaign)
 - Research on auditing graph attention networks.
- Ms. Meijia Wang (M.S. in Statistics at Arizona State University)
 - Research on graph ranking auditing.
 - Led to a publication at top-tier data mining journal TKDE.
 - Now Ph.D. student at Arizona State University.

PROFESSIONAL SERVICES

- **Workshop Chair**
 - The 1st Workshop on Trustworthy Learning on Graphs (TrustLOG) 2022
- **Senior Program Committee**
 - AAAI Conference on Artificial Intelligence (AAAI) 2023
- **Program Committee/Reviewer**
 - 2023 IEEE International Conference on Big Data (BigData) 2023
 - European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML-PKDD) 2023
 - ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD) 2023
 - International Conference on Machine Learning (ICML) 2023

– International Joint Conference on Artificial Intelligence (IJCAI)	2023
– International Conference on Learning Representations (ICLR)	2023
– The ACM Web Conference (WWW)	2023
– The SIAM International Conference on Data Mining (SDM)	2023
– ACM International Conference on Web Search and Data Mining (WSDM)	2023
– Learning on Graphs Conference (LOG)	2022
– Conference on Neural Information Processing Systems (NeurIPS)	2022
– ACM International Conference on Information and Knowledge Management (CIKM)	2022
– ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD)	2022
– International Conference on Machine Learning (ICML)	2022
– International Joint Conference on Artificial Intelligence (IJCAI)	2022
– International Conference on Learning Representations (ICLR)	2022
– ACM International Conference on Web Search and Data Mining (WSDM)	2022
– Conference on Neural Information Processing Systems (NeurIPS)	2021
– ACM International Conference on Information and Knowledge Management (CIKM)	2021
– International Joint Conference on Artificial Intelligence (IJCAI)	2021
– International Conference on Machine Learning (ICML)	2021
– International Conference on Learning Representations (ICLR)	2021
– AAAI Conference on Artificial Intelligence (AAAI)	2021
– Workshop on Deep Learning on Graphs: Methods and Applications at AAAI (DLG-AAAI)	2021
– International Conference on Machine Learning (ICML)	2020
• Journal Reviewer	
– ACM Transactions on Knowledge Discovery from Data (TKDD)	2023
– IEEE Transactions on Knowledge and Data Engineering (TKDE)	2023
– ACM Computing Surveys (CSUR)	2022
– IEEE Transactions on Knowledge and Data Engineering (TKDE)	2022
– Journal of Machine Learning Research (JMLR)	2021
– IEEE Transactions on Big Data (TBD)	2021
– IEEE Transactions on Knowledge and Data Engineering (TKDE)	2021
– The Computer Journal (COMPJ)	2021
– IEEE Transactions on Knowledge and Data Engineering (TKDE)	2020
– IEEE Transactions on Knowledge and Data Engineering (TKDE)	2019
• External Reviewer	
– IEEE International Conference on Distributed Computing Systems (ICDCS)	2022
– The Conference on Uncertainty in Artificial Intelligence (UAI)	2021
– International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR)	2021
– The Web Conference (WWW)	2021
– Conference on Neural Information Processing Systems (NeurIPS)	2020
– International World Wide Web Conference (TheWebConf)	2020
– ACM International Conference on Web Search and Data Mining (WSDM)	2020
– Communications of the ACM (CACM)	2019
– International Joint Conference on Artificial Intelligence (IJCAI)	2019
– ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)	2019
– International Conference on Machine Learning (ICML)	2019
– International Conference on Database Systems for Advanced Applications (DASFAA)	2019
– Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD)	2019
– ACM International Conference on Web Search and Data Mining (WSDM)	2019
– AAAI Conference on Artificial Intelligence (AAAI)	2019
– ACM Transactions on Knowledge Discovery from Data (TKDD)	2018
– ACM International Conference on Information and Knowledge Management	2018
– ACM Multimedia (MM)	2018

- IEEE International Conference on Data Science and Advanced Analytics (DSAA) 2018
- ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2018
- International Conference on Database Systems for Advanced Applications (DASFAA) 2018
- International World Wide Web Conference (TheWebConf) 2018
- **Student Volunteer**
- ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2021
- ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD) 2020
- IEEE International Conference on Big Data (BigData) 2018

REFERENCES

- Dr. Hanghang Tong
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- Dr. Jiebo Luo
Albert Arendt Hopeman Professor, Department of Computer Science, University of Rochester
 - Address: 3101 Wegmans Hall, University of Rochester, Rochester, NY 14627, USA
 - Phone: 585-276-5784
 - Email: jluo@cs.rochester.edu
 - Homepage: <https://www.cs.rochester.edu/u/jluo/>
- Dr. Ross Maciejewski
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- Dr. Jiawei Han
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