

Jian Kang

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210 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. in Computer Science Aug. 2019 - Present
Advisor: Dr. Hanghang Tong
- **Arizona State University** Tempe, AZ
Ph.D. 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 real-time recommendation for cold-start media for Instagram Reels.
– 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
– Conducted 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 explainability and vulnerability of graph mining.
– Conducted research in AI-Trinity project (<https://ai-trinity.herokuapp.com/>).
– Advisor: Dr. Hanghang Tong

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’.

AWARD AND HONORS

- Mavis Future Faculty Fellow 2022

- CIKM 2021 Best Reviewers Award 2021
- University Nomination for 2022 Apple Scholars in AI/ML 2021
– Top 3 nominees at the University of Illinois at Urbana-Champaign
- 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

PUBLICATIONS

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

- **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.

Tutorial Proposals

- **Jian Kang**, Hanghang Tong. *Algorithmic Fairness on Graphs: Methods and Trends*. In Proceedings of the 28th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD), 2022.
- **Jian Kang**, Hanghang Tong. *Fair Graph Mining*. In Proceedings of the 30th ACM International Conference on Information and Knowledge Management (CIKM), 2021.

Preprint

- **Jian Kang**, Tiankai Xie, Xintao Wu, Ross Maciejewski, Hanghang Tong. *MultiFair: Multi-Group Fairness in Machine Learning*. In Arxiv.

(* indicates equal contribution)

TALKS

- **Algorithmic Foundation of Fair Graph Mining** Online
Invited Talk Nov. 2022
– Invited talk at the DEFfirst reading group at Mila
- **Algorithmic Foundation of Fair Graph Mining** Washington, D.C.
Keynote Aug. 2022
– Keynote talk at the 1st ACM SIGKDD Workshop on Ethical Artificial Intelligence: Methods and Applications (EAI-KDD'22)
- **Algorithmic Fairness on Graphs: Methods and Trends** Washington, D.C.
Lecture-style Tutorial Aug. 2022
– Tutorial at KDD'22
- **Algorithmic Fairness in Machine Learning** Online
Guest Lecture Apr. 2022
– CS 5824: Advanced Machine Learning at Virginia Tech
– Faculty Host: Dr. Dawei Zhou
- **Fair Graph Mining** Online
Invited Talk Nov. 2022
– Invited talk at Alibaba
– Host: Dr. Liangyue Li
- **Fair Graph Mining** Online
Lecture-style Tutorial Nov. 2021
– Tutorial at the CIKM'21
- **Algorithmic Fairness in Machine Learning** Online
Guest Lecture Apr. 2021
– DS 402: Data Science in Healthcare at the Pennsylvania State University
– Faculty Host: Dr. Fenglong Ma

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**
– International Joint Conference on Artificial Intelligence (IJCAI) 2023
– International Conference on Learning Representations (ICLR) 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 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

TEACHING EXPERIENCE

- **University of Illinois at Urbana-Champaign** Urbana, IL
 - Teaching Assistant* Jan. 2022 - May 2022
 - Lead teaching assistant of CS412: Introduction to Data Mining (senior- and graduate-level).
 - Support students for Q&A and course logistics.
 - Teach recitations.

- Create course assignments and exams.
- Instructor: Dr. Hanghang Tong

- **University of Illinois at Urbana-Champaign**

Urbana, IL

Teaching Assistant

Aug. 2020 - Dec. 2020

- Lead teaching assistant of CS412: Introduction to Data Mining (senior- and graduate-level).
- Supported students for Q&A and course logistics.
- Created course assignments.
- Taught recitations and review sessions.
- Instructor: Dr. Hanghang Tong

- **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.
- Created course assignments and exams.
- Taught review sessions.
- Instructor: Dr. Hanghang Tong

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.
- 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.
- Ms. Xinyu He (B.Eng. in Computer Science at Tsinghua University)
 - Research on understanding negative sampling for graph-based contrastive learning.
- 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.