

KE YANG

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CURRENT AFFILIATIONS

Postdoctoral Research Associate

College of Information and Computer Sciences,
University of Massachusetts Amherst

Sep, 2021 - Aug, 2023

Visiting Scholar

Tandon School of Engineering,
New York University

2021 - 2022

RESEARCH INTEREST

data management, machine learning, responsible computing, human-centered data science, algorithmic fairness, diversity and transparency, social impact of algorithms

EDUCATION

Ph.D. in Computer Science, New York University

2021

- Advisor: Julia Stoyanovich, GPA 3.9
- Thesis: Fairness, diversity, and interpretability in ranking
- Committee: Julia Stoyanovich (chair), Sebastian Schelter, Daniel Neill, and Oded Nov

Ph.D. candidate in Computer Science, Drexel University (transferred)

2015 - 2018

- Advisor: Julia Stoyanovich, GPA 3.98

M.S.E in Computer Science, Beijing Technology and Business University,

2015

- Advisors: Qian Mo and Zhongming Han, GPA 3.51
- Thesis: Detecting web spammers in online shopping websites
- Graduated summa cum laude

B.Eng. in Software Engineering, Beijing Technology and Business University

2012

- Advisor: Qian Mo, GPA 3.45
- Graduated summa cum laude

PROFESSIONAL EXPERIENCE

Postdoctoral Research Associate

College of Information and Computer Sciences, University of Massachusetts, Amherst 2021 - 2023

Supervisor: Alexandra Meliou

- Project: Interpretable Machine Learning with data-focused explanations.

Research Assistant

Tandon School of Engineering, New York University

2019 - 2021

Supervisor: Julia Stoyanovich

- Details of the projects can be found at dataresponsibly.github.io.

Research Intern

AT&T Research, New York

2019

Supervisors: Emily Dodwell, Ritwik Mitra, and Balachander Krishnamurthy

- Worked on a project to ensure fairness and transparency for internal AT&T machine learning projects. Developed a diagnostic tool for bias-related issues that can be used by project managers and data scientists at AT&T.

Research Assistant

College of Computing & Informatics, Drexel University,

2015 - 2018

Supervisor: Julia Stoyanovich

- Worked on a project to quantify fairness in rankings through equalized representation across groups, and proposed a mitigation framework to ensure a fair ranking outcome.

Research engineer

Elite & Resource (start-up company)

2014 - 2015

Supervisor: Peng Sun

- Worked on a project to model historical data of flood disasters and develop techniques to help with flood prevention. Our model is integrated as a core component of a national watershed data management system.

PUBLICATIONS

Peer-reviewed Conference Publications

1. **Ke Yang**, Joshua R. Loftus, and Julia Stoyanovich. Causal Intersectionality and Fair Ranking. Symposium on Foundations of Responsible Computing, (**FORC 2021**), Virtual Conference.
2. Meike Zehlike, **Ke Yang**, and Julia Stoyanovich. Mapping Normative Frameworks to Fair Ranking. ACM Conference on Equity and Access in Algorithms, Mechanisms, and Optimization (**EAAMO 2021**), presented as a poster.
3. **Ke Yang**, Vasilis Gkatzelis, and Julia Stoyanovich. Balanced ranking with diversity constraints. International Joint Conference on Artificial Intelligence (**IJCAI 2019**), Macao, China.

4. **Ke Yang**, Julia Stoyanovich, Abolfazl Asudeh, Bill Howe, H.V. Jagadish, and Gerome Miklau. A Nutritional Label for Rankings. ACM International Conference on Management of Data (**SIGMOD 2018 Demonstration**), Houston, USA.
5. Julia Stoyanovich, **Ke Yang**, H.V. Jagadish. Online Set Selection with Fairness and Diversity Constraints. International Conference on Extending Database Technology (**EDBT 2018**), Vienna, Austria.
6. **Ke Yang** and Julia Stoyanovich. Measuring Fairness in Ranked Outputs. International Conference on Scientific and Statistical Database Management (**SSDBM 2017**), Chicago, USA.

Peer-reviewed Journal Publications

7. Zehlike Meike, **Ke Yang**, and Julia Stoyanovich. Fairness in Ranking, Part I: Score-based Ranking. ACM Computing Surveys (**CSUR 2022**).
8. Zehlike Meike, **Ke Yang**, and Julia Stoyanovich. Fairness in Ranking, Part II: Learning-to-Rank and Recommender Systems. ACM Computing Surveys (**CSUR 2022**).
9. Zhongming Han, **Ke Yang**, and Xusheng Tan. Analyzing Spectrum Features of Weight User Relation Graph to Identify Large Spammer Groups in Online Shopping Websites. **Chinese Journal of Computers**, 40(4): 939-954 (2017) (in Chinese).
10. Zhongming Han, **Ke Yang**, Fengmin Xu, and Dagao Duan. Probabilistic Graphical Model for Detecting Spammers in Microblog Websites. **Journal of Embedded Systems**, 8(1): 12-23 (2016).
11. Qian Mo and **Ke Yang**. Overview of Web spammer detection. **Chinese Journal of Software**, 25(7): 1505-1526 (2014) (in Chinese).

Peer-reviewed Workshops

12. **Ke Yang**, Biao Huang, Julia Stoyanovich, and Sebastian Schelter. Fairness-Aware Instrumentation of Preprocessing Pipelines for Machine Learning. Workshop on Human-In-the-Loop Data Analytics in conjunction with the 2020 ACM SIGMOD/PODS Conference, (**HILDA@SIGMOD 2020**), Portland, OR, USA.

Patent

13. Kai Wang and **Ke Yang**. A method and application system for detecting web spammers. China Invention Patent, (2015) (in Chinese), No. CN201510012860.

Working Papers

- * **Ke Yang**, Alexandra Meliou. Non-Invasive Fairness in Learning through the Lens of Data Drift, **under submission**.

FELLOWSHIPS, AWARDS, & HONORS

- Postdoctoral Fellowship, Center for Data Science, College of Information and Computer Sciences, University of Massachusetts Amherst, 2021 - 2023

- Pearl Brownstein Doctoral Research Award, Tandon School of Engineering, New York University, 2021
 - Selected participant, ACM FAccT Ph.D. consortium, 2019
 - Student scholarship, FAT* (previous ACM FAccT), 2018
 - Fellowship for Doctoral Study, Beijing Technology and Business University, 2015
 - Distinguished Master's Thesis Award, Graduate School, Beijing Technology and Business University, 2015
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TEACHING & MENTORING EXPERIENCE

Assisting Instructor at University of Massachusetts Amherst

- Practice and Applications of Data Management, Fall 2022

Teaching Assistant at Drexel University

- Fundamentals of Databases (graduate level), Winter 2017
- Database Systems (undergraduate level), Spring 2017

Research Lead in summer program Data Science for Social Good at the Center for Data Science at the University of Massachusetts Amherst

- Alexandra Burushkina (MS in Computer Science), Summer and Fall 2022, “Trust Scores for Fair Machine Learning”
- Peter Tran (MS in Computer Science), Summer and Fall 2022, “Profiling Data for Fair Machine Learning”

Research Advisor at New York University

- Jensine Raihan (BS in Computer Science), Fall 2020, “Ranking Facts in Real Datasets”
- Biao Huang (MS in Data Science), Spring 2020, “Fairness-aware Instrumentation of Preprocessing Pipelines for Machine Learning”
- Samasth Norway Ananda (MS in Computer Science), Spring and Summer 2020, “FairPrep: Promoting Data to a First-class Citizen in Fairness Enhancing Interventions”

Invited Talks

- Data Bias and their Impact on Machine Learning, 2022, MIT Horizon live event (visual podcast)
 - Fairness and Diversity in Rankings, 2019, AT&T Lab Research Weekly Symposium
 - Fairness In Ranking Systems, 2018, AT&T Research Graduate Student Symposium
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ACADEMIC SERVICE

Program Committee Member

- ACM Conference on Management of Data (SIGMOD) 2023
- Extending Database Technology (EDBT) 2023, 2022
- The Web Conference (a.k.a. WWW) 2023 Industry, Workshops, Tutorials, Posters, and Demos, 2022 Industry
- IEEE Conference on Data Engineering (ICDE) 2022 Demo Track
- ACM Conference on Fairness, Accountability, and Transparency (ACM FAccT) 2021
- ACM Workshop on Responsible Recommendation (FAccTRec) at RecSys 2021
- ACM Workshop on Data Management for End-to-End Machine Learning (DEEM) at SIGMOD 2021, 2020

Reviewer

- Ethics reviewer, NeurIPS 2022, 2021
- ACM Conference on Human Factors in Computing Systems (CHI) 2021
- Information Systems 2019

Other Activities

- Session co-chair: Responsibility and Privacy at Extending Database Technology (EDBT) 2022
- Technical chair: ACM Workshop on Data Management for End-to-End Machine Learning (DEEM) at SIGMOD 2020
- Student volunteer: ACM Conference on Fairness, Accountability, and Transparency (ACM FAT*) 2019