KE YANG

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CURRENT AFFILIATIONS

Postdoctoral Research Associate, College of Information and Computer Sciences, University of Massachusetts Amherst 2021.09-2023.08

Visiting Scholar, Tandon School of Engineering, New York University 2021.08-2022.08

RESEARCH INTEREST

data management, machine learning, responsible computing, human-centered data science, accountability, and the 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 2021.09-2023.08

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 Summer 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. **Ke Yang**, Vasilis Gkatzelis, and Julia Stoyanovich. Balanced ranking with diversity constraints. International Joint Conference on Artificial Intelligence (**IJCAI 2019**), Macao, China.
3. **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.
4. 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.
5. **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

6. Zehlike Meike, **Ke Yang**, and Julia Stoyanovich. Fairness in Ranking, Part I: Score-based Ranking. ACM Computing Surveys (**CSUR 2022**).
7. Zehlike Meike, **Ke Yang**, and Julia Stoyanovich. Fairness in Ranking, Part II: Learning-to-Rank and Recommender Systems. ACM Computing Surveys (**CSUR 2022**).

8. 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).
9. 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).
10. Qian Mo and **Ke Yang**. Overview of Web spammer detection. **Chinese Journal of Software**, 25(7): 1505-1526 (2014) (in Chinese).
11. Kai Wang and **Ke Yang**. A method and application system for detecting web spammers. China Invention Patent, (2015) (in Chinese), No. CN201510012860.

Peer-reviewed Workshops

12. 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.
13. **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.

Working Papers

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

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 at Summer Program "Data Science for Social Good" at 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 studies on fairness enhancing interventions"

Introductory Talks

- Data Bias and Impact on Machine Learning, 2022.11, webinar at MIT horizon
- Diversity in Set-wise Outcomes, 2019.07, AT&T Lab Research Weekly Symposium
- Fairness In Ranked Outputs, 2018.11, AT&T Research Graduate Student Symposium

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ACADEMIC SERVICE

Conference Organization

- Session co-chair: Responsibility and Privacy at Extending Database Technology (EDBT) 2022
- Technical chair: 4th Workshop on Data Management for End-to-End Machine Learning (DEEM) at SIGMOD 2020

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
- Workshop on Responsible Recommendation (FAccTRec), 2021
- 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

Student volunteer

- ACM Conference on Fairness, Accountability, and Transparency (ACM FAT*) 2019

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