Kathleen Cachel

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Research Interests

Ranking Systems • Algorithmic Fairness • Responsible AI • Information Retrieval • Fairness Auditing

Education

Worcester Polytechnic Institute — Worcester, MA
Ph.D. in Data Science current GPA 4.0/4.0 — Aug. 2020 – Present
Dissertation: Ranked Candidate Fairness for Preference Aggregation
Committee: Elke Rundensteiner (Advisor - WPI), Lane Harrison (WPI), Andrew Trapp (WPI), Nicholas Mattei (Tulane)

Worcester Polytechnic Institute — Worcester, MA
M.S. in Data Science current GPA 4.0/4.0 — Aug. 2020 – May 2022

Tufts University — Somerville, MA
B.S. in Computer Science — Sept 2012 – May 2016

Publications

Conference Publications

- **Cachel, K**. and Rundensteiner, E. (2024) *Prefair: Combining Partial Preferences for Fair Consensus Decision-making.* ACM Conference on Fairness, Accountability, and Transparency (FAccT 2025).
- Alkhathlan, M., **Cachel, K**., Shrestha, S., Harrison, L, and Rundensteiner, E. (2024) *Balancing Act: Evaluating People's Perceptions of Fair Ranking Metrics*. ACM Conference on Fairness, Accountability, and Transparency (FAccT 2024).
- **Cachel, K**. and Rundensteiner, E. (2023) *Fair&Share: Fast and Fair Selections from Multi-Criteria*. ACM International Conference on Information and Knowledge Management (CIKM 2023).
- Shrestha, S., **Cachel, K**., Alkhathlan, M., Rundensteiner, E and Harrison, L. (2023) *Help or Hinder? Evaluating the Impact of Fairness Metrics and Algorithms in Visualizations for Consensus Ranking*. ACM Conference on Fairness, Accountability, and Transparency (FAccT 2023).
- **Cachel, K**. and Rundensteiner, E. (2023) *Fairer Together: Mitigating Disparate Exposure in Kemeny Rank Aggregation.* ACM Conference on Fairness, Accountability, and Transparency (FAccT 2023).
- **Cachel, K**. and Rundensteiner, E. (2022) *FINS Auditing Framework: Group Fairness for Subset Selections*. AAAI / ACM Conference on Artificial Intelligence, Ethics, and Society (AIES 2022).
- Shrestha, S., **Cachel, K**., Alkhathlan, M., Rundensteiner, E and Harrison, L. (2022) *FairFuse Interactive Visual Support for Fair Consensus Ranking*. IEEE Visualization and Visual Analytics (VIZ 2022).
- **Cachel, K**., Rundensteiner, E and Harrison, L. (2022) *MANI-Rank: Multiple Attribute and Intersectional Group Fairness for Consensus Ranking*. IEEE International Conference on Data *Engineering* (ICDE 2022).

Poster & Workshops

- **Cachel, K**. (2023) *Ranked Candidate Fairness in Preference Aggregation*. AAAI / ACM Conference on Artificial Intelligence, Ethics, and Society (AIES 2023 – Student Abstract).
- **Cachel, K**. and Rundensteiner, E. (2023) *FairRankTune: A User-Friendly Toolkit Supporting Fair Ranking Tasks*. AAAI / ACM Conference on Equity and Access in Algorithms, Mechanisms, and Optimization (EAAMO 2023 – Non-archival Track).

Working Papers

- **Cachel, K**. and Rundensteiner, E. (2023) *FairRankTune: A User-Friendly Toolkit for Fair Ranking Tasks*. Under Review.

Professional Experience

Microsoft Corporation Cambridge, MA

Program Manager, Manager: Maura FitzGerald Aug. 2016 - July. 2020

- Shipped O365 feature improvements (@-mentions, comments) to millions of active users informed by key usage metrics, data mining of customer-feedback, A/B testing, and experimentation.
- Built custom KPI pipelines joining and cleaning multiple data sources, ensuring GDPR and privacy compliance, along with the design and maintenance of a stakeholder-friendly dashboard.
- Taught employee lunch-and-learns on Office data pipeline, KPI visualization, and wrote a new-hire crash course handbook in the Kusto Query Language (SQL-like Azure Language).

Teaching and Mentorship

Teaching

Teaching Assistant WPI Data Science

DS 501: Graduate-level Introduction to Data Science Fall 2020

Teaching Assistant WPI Data Science

CS 539: Graduate-level Machine Learning Spring 2021

Mentorship

NSF Research Experience for Undergraduates, Worcester Polytechnic Institute WPI Data Science

Project lead and Mentor Summer 2022

- Guided a group of undergraduate students in their first research project, leading to publication at MIT IEEE Undergraduate Research Technology Conference. Taught algorithmic fairness techniques for bias-mitigation, data cleaning and analysis, manuscript preparation, communication, and devops skills.

Service

Reviewer:

- FAccT Reviewer 2024
- NeurIPS Ethics Reviewer 2023
- ACM Transactions on Social Computing 2023
- ICTIR 2023
- Workshop on Human and Machine Decision @ NeurIPS 2021

Working Group Co-head organizer at MD4SG, Mechanism Design for Social Good, (Since 2023)

Patents

Top-align Comments: Just-in-Time Highlights and Automatic Scrolling. With Apurv Suman, Dheeraj Agarwal, Nicholas Michael Simons, Sneha Jayaprakash, Sophia Isabel Vennix, Derik Bjorn Stenerson, Michael Augustine Tavis, Robin Emily Wakefield, Daniel John Niezgocki Chattan, Harold Sazon Gomez. US Patent #11030395, filed May 2018, granted June 2021.

Comment Notifications for Electronic Content. With Sophia Isabel Vennix, Benjamin Gustav Wilde, Anunaya Pandey, Raphael Jose Landaverde. US Patent #10657318, filed August 2018, granted May 2020.

Skills & Tools

Skills

- A/B testing, dashboard building, fair ranking systems, measuring algorithmic bias, technical writing, project management, data visualization, algorithmic auditing, and communication

Tools

- Python, Numpy & Pandas, R (Tidyverse & ggplot), Git, Gurobi, Sci-kit learn, Latex, Power BI, MS Office