

Education

- 2020** PhD Computer Science, Worcester Polytechnic Institute
Dissertation: Ranking for Decision Making: Fairness and Usability
Advisor: Elke Rundensteiner
- 2017** MS Computer Science, Worcester Polytechnic Institute
Thesis: Pivot-based Data Partitioning for Distributed k Nearest Neighbor Mining
- 2013** Major Certificate in Computer Science, University of Massachusetts Boston
- 2007** BFA Fine Arts 3D, Massachusetts College of Art and Design

Research Experience

- Aug 2014 - Present** **Research Assistant** Advisor: Elke Rundensteiner
Computer Science Department, Worcester Polytechnic Institute
Researcher in the Data Science Research Group, focused on data mining and machine learning, human-computer interaction, and algorithmic fairness.

Lead researcher and developer on [MATTERS](#), an online analytics dashboard for understanding the economic competitiveness of U.S. states.

Supervisor of undergraduate student teams for Major Qualifying Projects including:

- RanKit, an interactive learning-to-rank analytics tool.
- A system to automatically integrate heterogeneous online datasets.
- A suite of tools for data management currently in use by MATTERS data curation team.
- A public-facing API providing access to a collection of over 30 datasets.

Technologies: Python, Java, PostgreSQL, Javascript, D3

- May - Aug 2016** **Data Science for Social Good Fellow**
IBM Research Yorktown Heights, NY

One of six researchers selected to work with IBM and partner social good organizations. Project focus: quantify innovation in countries around the world using open data. Analyzed over 1400 economic, demographic, and environmental datasets. Published an Open Innovation Index based on a group-lasso regression model and heirarchical clustering of features.

Technologies: Python, Jupyter

- June-Aug 2014, 2015** **Technical Intern**
MITRE Corporation Bedford, MA

Joined a small research team over two consecutive summers. Analyzed TB scale data for cyber-security applications and prototyped a supervised learning-based intrusion detection system.

Technologies: Java, MapReduce, Hadoop

- May– Aug 2013** **Research Assistant**
Knowledge Discovery Lab, University of Massachusetts Boston

Developed novel methods for object detection in geospatial imagery. Implemented a web client for image analysis and released an open source tool for image pre-processing.

Technologies: Java, Weka, Javascript

Honors and Awards

- 2018 **WIN Grant** Worcester Polytechnic Institute.
\$10,000 Women's Impact Network Grant to support the 2019 WiDS Central Mass Conference.
- 2018 **GAANN Fellowship** Worcester Polytechnic Institute.
- 2014 **ORISE Fellowship** Oak Ridge Institute for Science and Education.

Leadership

- 2018 **WiDS Ambassador**
Organized the first regional Women in Data Science Central Massachusetts Conference.
- 2017 **Tutorials Chair Broadening Participation in Data Mining Workshop**
Organized two tutorial sessions at workshop co-located with the ACM SIGKDD Conference.

Selected Publications

Caitlin Kuhlman, Latifa F. Jackson, Rumi Chunara. No computation without representation: Avoiding data and algorithm biases through diversity. *Ethics in Data Science Conference (EDSC)* 2020. [🔗](#)

Caitlin Kuhlman, MaryAnn VanValkenburg, Elke Rundensteiner. FARE: Diagnostics for Fair Ranking using Pairwise Error Metrics. *The Web Conference (WWW) Web and Society track* 2019. [🔗](#)

Caitlin Kuhlman, Paul-Henry Schoenhagen, MaryAnn VanValkenburg, Diana Doherty, Malika Nurbekova, Goutham Deva, Zarni Phyo, Elke Rundensteiner, Lane Harrison. Evaluating Preference Collection Methods for Interactive Ranking Analytics. *ACM Conference on Human Factors in Computing Systems (CHI)* 2019. [🔗](#)

Latifa F. Jackson, **Caitlin Kuhlman**, Fatimah L.C. Jackson, Keolu Fox. Including Vulnerable Populations in the Assessment of Data from Vulnerable Populations. *Frontiers in Big Data* 2019. [🔗](#)

Caitlin Kuhlman, MaryAnn VanValkenburg, Diana Doherty, Malika Nurbekova, Goutham Deva, Zarni Phyo, Elke Rundensteiner, Lane Harrison. Preference-driven Interactive Ranking System for Personalized Decision Support. *ACM International Conference on Information and Knowledge Management (CIKM)* 2018. [🔗](#)

Caitlin Kuhlman, Karthikenyam Natesan Ramamurthy, Prassana Sattigeri, Aurelie C. Lozano, Lei Cao, Chandra Reddy, Aleksandra Mojsilovic, Kush R. Varshney. How to foster innovation: a data-driven approach to measuring economic competitiveness. *IBM Journal of Research and Development* 2017.

Caitlin Kuhlman, Yizhou Yan, Lei Cao, Elke Rundensteiner. Pivot-based Distributed K-Nearest Neighbor Mining. *European Conference on Machine Learning, Principles and Practice of Knowledge Discovery (ECML-PKDD)* 2017. [🔗](#)

Yizhou Yan, Lei Cao, **Caitlin Kuhlman**, Elke Rundensteiner. Distributed Local Outlier Detection in Big Data. *SIGKDD Conference on Knowledge Discovery and Data Mining (KDD)* 2017. [🔗](#)

Lei Cao, Yizhou Yan, **Caitlin Kuhlman**, Qingyang Wang, Elke Rundensteiner, Mohamed Eltabakh. Multi-tactic Distance-based Outlier Detection. *IEEE International Conference on Data Engineering (ICDE)* 2017. [🔗](#)

Joseph Paul Cohen, Wei Ding, **Caitlin Kuhlman**, Aijun Chen, and Liping Di. Rapid building detection using machine learning. *Applied Intelligence* 45, no. 2: 443-457 2016. [🔗](#)