

Lizzie Kumar

iekumar@brown.edu

iekumar.com

EDUCATION

- Brown University** expected 2023-2024
Ph.D. Computer Science *Providence, RI*
Advised by Suresh Venkatasubramanian
- University of Massachusetts** 2019
M.S. Computer Science, 3.8/4.0 *Amherst, MA*
- Scripps College** 2016
B.A. Mathematics (honors), 10.8/12.0 *Claremont, CA*

RESEARCH EXPERIENCE

- Graduate Research Assistant** Fall 2021-
Brown University *Providence, RI*
- Research on how to guide machine learning policy in finance and beyond
- Machine Learning Research Fellow** Summer 2021
Arthur AI *Remote*
- Studied the utility of machine learning fairness detection and mitigation methods for compliance and regulation in finance
- Graduate Research Assistant** Fall 2019 - Spring 2021
University of Utah *Salt Lake City, UT*
- Analyzed the effectiveness of methods to understand and explain machine learning models from both mathematical and social science perspectives

TEACHING EXPERIENCE

- Graduate Teaching Assistant** Fall 2020 - Spring 2021
University of Utah *Salt Lake City, UT*
- Held office hours, prepared course materials, and gave occasional lectures for undergraduate-level Algorithms
 - Led discussions for undergraduate-level Ethics in Data Science
- Undergraduate Teaching Assistant** Fall 2013 - Spring 2016
Scripps College *Claremont, CA*
- Mentored Scripps students in any math class twice a week at the walk-in tutoring center
 - Graded for Precalculus, Calculus I, Differential Equations, and Number Theory
 - Privately tutored Real Analysis
- Drawing Instructor** Summer 2014
Deerfield Academy *Deerfield, MA*
- Planned and led classes in drawing and other art activities for adolescent campers

INDUSTRY EXPERIENCE

Junior Data Scientist

Fall 2016 - Spring 2019

MassMutual

Amherst, MA

- Wrangled/analyzed data and developed machine learning models for the pricing and valuation of disability insurance and pension plans
- Supported codebases for data ingestion and model evaluation using R, Python, and SQL
- Implemented explanation systems for transparency into black-box underwriting models
- Fully funded for graduate coursework at UMass through the Data Science Development Program

PEER-REVIEWED PUBLICATIONS

Equal credit opportunity in algorithms: Aligning algorithmic fairness research with U.S. fair lending law.

I. Elizabeth Kumar, Keegan Hines, and John P. Dickerson.

In *Proceedings of the 5th AAAI/ACM Conference on Artificial Intelligence, Ethics, and Society (AIES)*, 2022.

The fallacy of AI functionality.

Deborah Raji, **I. Elizabeth Kumar**, Aaron Horowitz, and Andrew Selbst.

In *Proceedings of the 5th ACM Conference on Fairness, Accountability, and Transparency (FAccT)*, 2022.

Shapley Residuals: Quantifying the limits of the Shapley value for explanations.

I. Elizabeth Kumar, Carlos Scheidegger, Suresh Venkatasubramanian, and Sorelle Friedler.

In *Advances in Neural Information Processing Systems 34 (NeurIPS)*, 2021.

Epistemic values in feature importance methods: Lessons from feminist epistemology.

Leif Hancox-Li, **I. Elizabeth Kumar**. In *Proceedings of the 4th ACM Conference on Fairness, Accountability, and Transparency (FAccT)*, 2021. **Best paper award.**

Problems with Shapley-value-based explanations as feature importance measures.

I. Elizabeth Kumar, Suresh Venkatasubramanian, Carlos Scheidegger, and Sorelle Friedler.

In *Proceedings of the 37th International Conference on Machine Learning (ICML)*, 2020.

HONORS & AWARDS

Best Paper, ACM FAccT	2021
Noel de Nevers Memorial Fellowship, ARCS Foundation Utah	2019-2020
Grad Cohort Workshop for Women Travel Grant, CRA-WP	2020
Lind Family Prize in Mathematics, Scripps College	2015, 2016
James E. Scripps Scholarship, Scripps College	2012-2016
Finalist, National Merit Scholarship	2012

WORKSHOPS AND INVITED SPEAKING

- Ethics roundtable December 2021
Algorithmic Fairness through the Lens of Causality and Robustness (AFCR) Workshop
- The legal construction of black boxes September 2021
Privacy Law Scholars Conference, WeRobot
- Epistemic values in feature importance methods January 2021
Trustworthy ML Rising Star Seminar Series
- Shapley residuals; Interpretability panel July 2020
ICML Workshop on Human Interpretability in Machine Learning
- Problems with Shapley-value-based explanations as feature importance measures June 2020
CapitalOne Responsible AI Journal Club
- Why doing ethical data science makes better science April 2019
UMass Data Science Industry Mentorship Course
- Explaining an underwriting model with additive feature attribution October 2018
Five College Stats and Data Science Research Bytes

TECHNICAL STRENGTHS

Programming Languages	R, Python, SQL
Imaging / Typesetting	LaTeX, Photoshop, Illustrator

SERVICE & OUTREACH

Data Visualization Mentor, Five College Datafest	2018, 2019
--	------------