

## Education

Carnegie Mellon University, Ph.D. candidate, Machine Learning and Public Policy

*Research*: human-centered machine learning; automated decision systems and societal impacts; causal inference, counterfactual predictions, doubly-robust estimation, selection bias, missing data; algorithmic fairness

*Advisors*: Alexandra Chouldechova and Edward H. Kennedy

*Dissertation Committee*: Alexandra Chouldechova, Edward H. Kennedy, Hoda Heidari, and Sendhil Mullainathan

Carnegie Mellon University, Masters of Science in Machine Learning, 2019

Princeton University, Bachelor of Science in Engineering, 2013

Magna cum laude in computer science

Certificate in the Princeton School of Public and International Affairs

*Senior Thesis*: Machine Learning Techniques for the Diagnosis of Pediatric Tuberculosis.

*Advisor*: Robert Schapire

## Lead Author Publications

[Characterizing Fairness over the Set of Good Models Under Selective Labels](#) with co-lead author Ashesh Rambachan and with Alexandra Chouldechova. International Conference on Machine Learning 2021.

[Leveraging Administrative Data for Bias Audits: Assessing Disparate Coverage with Mobility Data for COVID-19 Policy](#) with Daniel E. Ho et al. ACM Conference on Fairness, Accountability, and Transparency 2021.

- Feat. in *Wall Street Journal* “[Smartphone Location Data Can Leave Out Those Most Hit by Covid-19](#),” April 5, 2021.  
*VentureBeat* “[Stanford and Carnegie Mellon find race and age bias in mobility data that drives COVID-19 policy](#)” Nov. 18, 2020.

[Counterfactual Predictions under Runtime Confounding](#) with Alexandra Chouldechova and Edward H. Kennedy. Neural Information Processing Systems 2020.

[Counterfactual Risk Assessments, Evaluation, and Fairness](#) with Alexandra Chouldechova, Edward H. Kennedy, Alan Mishler. ACM Conference on Fairness, Accountability, and Transparency 2020.

[Fair Transfer Learning with Missing Protected Attributes](#) with Kush Varshney et al. at IBM Research. AAAI / ACM Conference on Artificial Intelligence, Ethics, and Society 2019.

## Lead Author Working Papers

*A Counterfactual Audit for Racial Bias in Police Traffic Stops* with Edward H. Kennedy. Oral presentation at American Causal Inference Conference 2022. Working paper.

*Counterfactual Risk Assessments under Unmeasured Confounding* with co-lead author Ashesh Rambachan and with Edward H. Kennedy. Poster presentation at American Causal Inference Conference 2022. Working paper.

*The Role of the Geometric Mean in Case-Control Studies* with Edward H. Kennedy. Working paper.

[A Validity Perspective on Evaluating the Justified Use of Data-driven Decision-making Algorithms](#) with Anna Kawakami, Ken Holstein, Haiyi Zhu, and Hoda Heidari. arXiv Preprint. arXiv:2206.14983.

## Other Research Papers

*The Opportunities and Pitfalls of Using Natural Language Processing for Risk Prediction: A Case Study in the Child Welfare System*. Anjalie Field, Amanda Coston, Emily Putnam-Hornstein, David Steier, Alexandra Chouldechova, and Yulia Tsvetkov. Working paper.

[Conditional Learning of Fair Representations](#). Han Zhao, Amanda Coston, Tameem Adel, Geoff J. Gordon. International Conference on Learning Representations 2020.

[\*Neural Topic Models with Survival Supervision: Jointly Predicting Time-to-Event Outcomes and Learning How Clinical Features Relate\*](#). Linhong Li, Ren Zuo, Amanda Coston, Jeremy C. Weiss, George H. Chen. International Conference on Artificial Intelligence in Medicine 2020.

### **Awards and Fellowships:**

Meta Research PhD Fellow Winner 2022

Future Leader at University of Michigan Institute for Data Science Summit on Responsible Data Science 2022

K&L Gates Presidential Fellow in Ethics and Computational Technologies

NSF Graduate Research Fellow

Tata Consultancy Services (TCS) Presidential Fellowship

Selected for Doctoral Consortium at ACM FAccT 2022, 2020

Suresh Konda Best First Paper Award for 2019

Awarded for *Counterfactual Risk Assessments and Evaluation for Child Welfare Screening*

Carolyn Comer Graduate Student Involvement Award 2020

Awarded for co-organizing a Personal Protective Equipment drive in response to COVID-19

Selected for Doctoral Consortium at AAAI/ACM AIES 2019

Phi Beta Kappa, Tau Beta Pi

### **Teaching**

Teaching Assistant for 10-301/10601 Introduction to Machine Learning

Spring 2021

Assisted Carnegie Mellon University course taught by Matt Gormley and Tom Mitchell.

Project Leader at AI4ALL

Summer 2019

Organized and led a project on fairness in algorithmic risk assessments for high schoolers

### **Service**

Session Chair for Responsible Data Management session at FAccT

Sprint 2022

Area Chair for Responsible AI workshop at ICLR

Spring 2021

Machine Learning for Development (ML4D) Workshop Co-organizer for NeurIPS 2018 and 2019

Workshop for methods and applications of machine learning for problems in the developing world

Program Committee Member/Reviewer

JRSS-B, Data Mining and Knowledge Discovery, EAAMO 2022, ICLR 2022, ICML 2020-2022, FAccT 2020-2022, NeurIPS 2020-2022, NeurIPS Datasets and Benchmarks 2021-2022, NeurIPS ethical reviewer 2021-2022, AIES 2020

Fairness, Ethics, Accountability, and Transparency Reading Group at Carnegie Mellon

Fall 2019—Spring 2020

Co-organizer

### **Work**

Facebook AI Applied Research (FAIAR)

Summer 2021

Research intern at Responsible AI. Conducted a creator-centric fairness assessment of Instagram Reels.

RegLab Summer Research Fellow

Summer 2020

Researcher at the Regulation, Evaluation, and Governance Lab at Stanford Law School

IBM Research AI, Science for Social Good Fellow

Summer 2018

Developed methods for fair risk assessments in domain adaptation when access to the protected attribute is limited (to either source or target)

Hivisasa.com, Technical Consultant (Kenya)

Spring 2017

Built data analytics pipeline for the CEO and CTO to track most popular authors and content for the news site Hivisasa.com in Kenya

Teneo, Data Scientist

Fall 2015—Jan 2017

Built predictive models and analytics dashboards to drive client insights in strategic communications and shareholder activism.

Microsoft Program Manager in Bing Local

Fall 2013—Fall 2015

Shipped local search features for global markets that boosted revenue by \$5M annually, including the local recommendation engine.

### Research talks

Stanford University RegLab Invited Talk

July 2022 (scheduled)

On auditing for racial bias in administrative records

Brown University Bravo Center Workshop on the Economics of Algorithms Invited Talk

September 2022 (scheduled)

On learning and evaluating counterfactual risk assessments under unmeasured confounding

American Causal Inference Conference

May 2022

On counterfactual auditing for racial bias in police traffic stops

University of Michigan Institute for Data Science Summit on Responsible Data Science

April 2022

On the overlooked role of validity in responsible data science

Merck Data Science All Hands Invited Talk

October 2021

On algorithmic fairness and decision support systems

Johns Hopkins University Causal Inference Working Group Invited Talk

May 2021

On counterfactual learning, evaluation, and fairness assessments

PlaceKey COVID-19 Data Consortium Invited Talk

April 2021

On auditing mobility data for disparate coverage by age and race

University of Pennsylvania Epidemiology Invited Talk

February 2021

On causal inference and fairness in algorithmic-assisted decision support systems

University of Chicago Crime Lab Invited Talk

September 2020

On algorithmic-assisted decision support systems in public services

### Mentorship

Women@SCS Mentor

2022-current

Mentor for undergraduate women in School of Computer Science (SCS)

CMU AI Mentor

2019-current

Mentor for undergraduate women majoring in Artificial Intelligence (AI)

Women@SCS Roundtable Leader

Fall 2019

Research roundtable discussion leader for women in School of Computer Science (SCS)

### Civic Engagement

Court Appointed Special Advocate, Family Law CASA

Winter 2014—Fall 2015

Investigated the child's interest in family law cases and made recommendations to the court on the child's behalf

Committee on Discipline, Princeton University

Fall 2012—Spring 2013

Adjudicated cases of alleged academic and behavioral violations

Engineers Without Borders

Fall 2010—Fall 2012

**Skills:** R; Python including NumPy and Pandas; proficient in French