

# AMANDA COSTON

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## Employment

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- 2024- UNIVERSITY OF CALIFORNIA, BERKELEY  
*Assistant Professor*, Department of Statistics
- 2023-2024 MICROSOFT RESEARCH (MSR) NEW ENGLAND  
*Postdoc researcher*, Machine Learning and Statistics

## Education

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- 2017-2023 CARNEGIE MELLON UNIVERSITY  
Ph.D. candidate in Machine Learning and Public Policy  
Advisors: [Alexandra Chouldechova](#) & [Edward Kennedy](#)  
Thesis: “Principled machine learning for societally consequential decision making”.  
Committee: [Edward Kennedy](#), [Alexandra Chouldechova](#), [Hoda Heidari](#), & [Sendhil Mullainathan](#)
- 2017-2019 CARNEGIE MELLON UNIVERSITY  
M.S. in Machine Learning.
- 2009-2013 PRINCETON UNIVERSITY  
B.S.E. *magna cum laude* in Computer Science  
Certificate in the Princeton School of Public and International Affairs  
Advisor: [Robert Schapire](#)  
Thesis: “Machine learning techniques for the diagnosis of pediatric tuberculosis”.

## Selected Awards & Honors

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### Research

- 2024 [Schmidt Sciences AI2050](#) Early Career Fellow
- 2023 CMU School of Computer Science [Dissertation Award Honorable Mention](#)
- 2023 Best Paper Award at [ACM Conference on Fairness, Accountability, and Transparency \(FAccT\)](#)
- 2023 William W. Cooper Doctoral Dissertation Award
- 2023 Best Paper Award at [IEEE Conference on Secure and Trustworthy Machine Learning \(SaTML\)](#)
- 2022 [Rising Star in EECS](#) by UT-Austin
- 2022 [Rising Star in Machine Learning](#) by University of Maryland
- 2022 [Rising Star in Data Science](#) by University of Chicago
- 2022 [Meta Research PhD Fellow](#)
- 2022 Future Leader in Responsible Data Science by University of Michigan Institute for Data Science
- 2020 K&L Gates Presidential Fellow in Ethics and Computational Technologies
- 2019 NSF Graduate Research Fellow
- 2019 Tata Consultancy Services Presidential Fellow
- 2019 Suresh Konda Best First Paper Award by Heinz College of Carnegie Mellon University

### Service

2020 Carolyn Comer Graduate Student Involvement Award by Carnegie Mellon University  
2013 Department of Computer Science Service Award by Princeton University

### Research & Industry Experience

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2021 FACEBOOK AI APPLIED RESEARCH (FAIAR)  
*Research intern, Responsible AI*  
Conducted a creator-centric fairness assessment of Instagram Reels.

2020 REGLAB, STANFORD UNIVERSITY  
*Research Fellow, Regulation, Evaluation, and Governance Lab at Stanford Law School*  
Conducted audit of mobility data for racial bias.

2018 IBM RESEARCH AI  
*Science for Social Good Fellow*  
Developed methods for fairness-aware learning under domain shift.

2017 HIVISASA  
*Technical Consultant, Kenya*  
Built full-stack analytics for citizen journalism website.

2015-2017 TENEO  
*Data Scientist*

2013-2015 MICROSOFT  
*Program Manager, Bing*

2010-2011 SHELTON PSYCHOLOGY LAB, PRINCETON UNIVERSITY  
*Research Assistant*  
Administered experiments testing stereotype priming effect on STEM performance

### Research Interests

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Theory: causal inference, machine learning, algorithmic fairness & societal impacts  
Application: child welfare, consumer credit lending, criminal justice, health policy

### Publications & Manuscripts

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\* indicates joint lead authors

**Working Papers** Coston A, Kennedy EH. Counterfactual audit of racial bias in police traffic stops. *American Causal Inference Conference (ACIC) 2022* oral presentation (20% selection rate).

Coston A, Kennedy EH. The role of the geometric mean in case-control studies. [arxiv.org:2207.09016](https://arxiv.org/abs/2207.09016)

Rambachan A, Coston A, Kennedy EH. Robust design and evaluation of predictive algorithms under unmeasured confounding. *ACIC 2022. NeurIPS 2022 Workshop on Algorithmic Fairness through the Lens of Causality and Privacy*. [arxiv.org:2212.09844](https://arxiv.org/abs/2212.09844)

Guerdan L, Coston A, Wu ZS, Holstein K. Predictive Performance Comparison of Decision Policies Under Confounding.

## Publications

Kawakami A, Coston A, Zhu Y, Heidari H, Holstein K. The Situate AI Guidebook: Co-Designing a Toolkit to Support Multi-Stakeholder Early-stage Deliberations Around Public Sector AI Proposals. *To appear in ACM Conference on Human Factors in Computing Systems (CHI)*. 2024. ([arxiv.org:2402.18774](https://arxiv.org/abs/2402.18774))

Kawakami A, Coston A, Heidari H, Holstein K, Zhu Y. Studying up public sector AI: Shifting our gaze upwards to study systems of power in public sector AI. *To Appear in SIGCHI Conference on Computer-Supported Cooperative Work & Social Computing (CSCW)*. 2024.

Guerdan L, Coston A, Wu ZS, Holstein K. Counterfactual decision support under outcome measurement error. *Proceedings of the ACM Conference on Fairness, Accountability, and Transparency (FAccT)*. 2023; 1584–1598. doi:10.1145/3593013.3594101. ([arxiv.org:2302.11121](https://arxiv.org/abs/2302.11121)) **Best Paper Award** by FAccT

Field A, Coston A, Gandhi N, Chouldechova A, Putnam-Hornstein E, Steier D, Tsvetkov Y. Examining risks of racial biases in NLP tools for Child Protective Services. *Proceedings of the ACM Conference on Fairness, Accountability, and Transparency (FAccT)*. 2023; 1479–1492. doi:10.1145/3593013.3594094

Guerdan L, Coston A, Wu ZS, Holstein K. Ground(Less) truth: A causal framework for proxy labels in human-algorithm decision making. *Proceedings of the ACM Conference on Fairness, Accountability, and Transparency (FAccT)*. 2023; 688–704. doi:10.1145/3593013.3594036 ([arxiv.org:2302.06503](https://arxiv.org/abs/2302.06503))

Coston A, Kawakami A, Zhu Y, Holstein K, Heidari H. A validity perspective on evaluating the justified use of data-driven decision-making algorithms. *IEEE Conference on Secure and Trustworthy Machine Learning (SaTML)*. 2023. ([arxiv.org:2206.14983](https://arxiv.org/abs/2206.14983)). **Best Paper Award** by SaTML

Coston A\*, Rambachan A\*, Chouldechova A. Characterizing fairness over the set of good models under selective labels. *International Conference on Machine Learning 139 (ICML)*. 2021; 2144-2155. [http://proceedings.mlr.press/...](http://proceedings.mlr.press/) ([arxiv.org:2101.00352](https://arxiv.org/abs/2101.00352))

Coston A, Guha N, Ouyang D, Lu L, Chouldechova A, Ho DE. Leveraging administrative data for bias audits: Assessing disparate coverage with mobility data for COVID-19 policy. *Proceedings of the ACM Conference on Fairness, Accountability, and Transparency (FAccT)*. 2021; 173-184. doi:10.1145/3442188.3445881 ([arxiv.org:2011.07194](https://arxiv.org/abs/2011.07194))

Coston A, Kennedy EH, Chouldechova A. Counterfactual predictions under runtime confounding. *Advances in Neural Information Processing Systems 33 (NeurIPS)*. 2020; 4150-4162. [https://papers.nips.cc/paper/...](https://papers.nips.cc/paper/) ([arxiv.org:2006.16916](https://arxiv.org/abs/2006.16916))

Coston A, Mishler A, Kennedy EH, Chouldechova A. Counterfactual risk assessments, evaluation, and fairness. *Proceedings of the ACM Conference on Fairness, Accountability, and Transparency (FAccT)*. 2020; 582-593. doi:10.1145/3351095.3372851 (arxiv.org:1909.00066)

Zhao H, Coston A, Adel T, Gordon GJ. Conditional learning of fair representations. *International Conference on Learning Representations (ICLR)*. 2020. https://iclr.cc/... (arxiv.org:1910.07162)

Li L, Zuo R, Coston A, Weiss JC, Chen GH. Neural topic models with survival supervision: Jointly predicting time-to-event outcomes and learning how clinical features relate. *International Conference on Artificial Intelligence in Medicine (AIME)*. 2020; 371-381. https://link.springer.com/... (arxiv.org:2007.07796)

Coston A, Ramamurthy KN, Wei D, Varshney KR, Speakman S, Mustahsan Z, Chakraborty S. Fair transfer learning with missing protected attributes. *Proceedings of the AAAI / ACM Conference on Artificial Intelligence, Ethics, and Society (AIES)*. 2019; 91-98. doi:10.1145/3306618.3314236

**Book  
Chapter**

Coston A, Rubio MD, Kennedy EH. Statistical analysis of randomized experiments. *AI for Social Impact*. ai4sibook.org

**Peer-reviewed  
non-archival  
papers**

Kawakami A, Coston A, Heidari H, Holstein K, Zhu Y. Studying up public sector AI: Shifting our gaze upwards to study systems of power in public sector AI. *ACM conference on Equity and Access in Algorithms, Mechanisms, and Optimization (EAAMO 2023)*. oral presentation (18% selection rate)

Kawakami A, Coston A, Y Zhu, Heidari H, Holstein K. Recentering validity considerations through early-stage deliberations around AI and policy design. *CHI 2023 Workshop on Designing Technology and Policy*.

Rambachan A, Coston A, Kennedy EH. Counterfactual risk assessments under unmeasured confounding. *ACIC 2022. NeurIPS 2022 Workshop on Algorithmic Fairness through the Lens of Causality and Privacy*. arxiv.org:2212.09844

Guerdan L, Coston A, Wu ZS, Holstein K. Counterfactual decision support under treatment-conditional outcome measurement error. *NeurIPS 2022 Workshop on Causality for Real-world Impact*.

Guerdan L, Coston A, Wu ZS, Holstein K. Ground(less) truth: The problem with proxy outcomes in human-AI decision making. *NeurIPS 2022 Workshop on Human-Centered AI*.

Coston A, Kennedy EH. Counterfactual audit of racial bias in police traffic stops. *ACIC 2022* oral presentation (20% selection rate).

Coston A, Kawakami A, Zhu Y, Holstein K, Heidari H. A validity perspective on evaluating the justified use of data-driven decision-making algorithms. *ACM conference on Equity and Access in Algorithms, Mechanisms, and Optimization (EAAMO 2022)*. arxiv.org:2206.14983

Coston A, Kennedy EH, Chouldechova A. Counterfactual risk assessments, evaluation, and fairness. *NeurIPS 2019 Workshop on Causal Machine Learning*.

Coston A, Kennedy EH, Chouldechova A. Counterfactual risk assessments and evaluation for child welfare screening. *ACIC 2019*.

Coston A, Leqi L. Offline heterogeneous policy evaluation: A causal approach. *ICML 2018 Workshop on Causal ML*.

## Presentations

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\* indicates presentation scheduled for future date

### *Invited Talks*

- 2024\* Toronto Data Workshop, Virtual
- 2024\* Workshop on Operationalizing NIST AI RMF, Northeastern University, Boston, MA
- 2024 Applied Statistics Workshop, Department of Government and Institute for Quantitative Social Science, Harvard University, Boston, MA
- 2024 Econometrics Seminar, Department of Economics, Harvard University, Boston, MA
- 2023 Bringing Statistical Thinking into Fair, Transferrable Machine Learning, Institute of Mathematical Sciences International Conference on Statistics and Data Science, Lisbon, Portugal
- 2023 Department of Human Services: Analytics, Technology, and Planning, Allegheny County, Pittsburgh, PA
- 2023 Theory of Computing for Fairness (TOC4Fairness) Seminar Series, Simons Foundation, Virtual
- 2023 Public Policy and the AI Revolution, Association for Public Policy Analysis & Management, Atlanta, GA
- 2023 Quantitative Methods Workshop, Yale University, New Haven, CT
- 2023 Statistically Significant: Equity Concerns in Algorithmic Bias, Privacy, and Survey Representation, Joint Statistical Meetings, Toronto, CA
- 2023 K&L Gates Conference in Ethics and AI, Carnegie Mellon University, Pittsburgh, PA
- 2023 Multigroup Fairness and the Validity of Statistical Judgment, Simons Institute for the Theory of Computing, Berkeley, CA
- 2023 Automated Decision Systems Reading Group, University of California, Berkeley, CA
- 2023 Center for Information Technology Policy Lecture, Princeton University, Princeton, NJ
- 2023 Department of Computer Science, George Mason University, Fairfax, VA
- 2023 AI Seminar, New York University, New York, NY
- 2023 Data Science Initiative seminar, Brown University, Providence, RI
- 2023 Department of Engineering and Public Policy seminar, Carnegie Mellon University, Pittsburgh, PA
- 2023 Khoury College of Computer Sciences Lecture, Northeastern University, Boston, MA
- 2023 Department of Computer Science, University of Maryland, College Park, MD
- 2023 Halicioglu Data Science Institute and the School of Global Policy and Strategy, University of California, San Diego, CA
- 2023 Department of Statistics, University of California, Berkeley, CA
- 2023 McCourt School of Public Policy, Georgetown University, Washington, D.C.
- 2023 Information Science Colloquium Series, Cornell University, Ithaca, NY
- 2023 The Division of Decision, Risk, and Operations, Columbia Graduate School of Business, New York, NY

2023 The School of Data Science Colloquium, University of Virginia, Charlottesville, VA  
 2023 Econometrics & Statistics group, University of Chicago Booth School of Business, Chicago, IL  
 2022 Operations, Information, and Decisions Department, Wharton School of the University of Pennsylvania, Philadelphia, PA  
 2022 Symposium on Frontiers of Machine Learning & AI, University of Southern California, LA, CA  
 2022 INFORMS Session on Finding Sets of Near-Optimal Solutions for Mixed-Integer Programs, Indianapolis, IN  
 2022 American Mathematical Society Sectional Meeting on Causality, Amherst, MA (*declined*)  
 2022 Brown University Bravo Center Workshop on the Economics of Algorithms, Providence, RI  
 2022 Stanford University RegLab Summer Institute Speaker Series, Virtual  
 2021 Merck Data Science All Hands, Virtual  
 2021 Johns Hopkins University Causal Inference Working Group, Virtual  
 2021 PlaceKey COVID-19 Data Consortium, Virtual  
 2021 University of Pennsylvania Department of Biostatistics and Epidemiology, Virtual  
 2020 University of Chicago Crime Lab, Virtual

#### *Doctoral Consortia*

2022 EAAMO (ACM conference on Equity & Access in Algorithms, Mechanisms, and Optimization)  
 2022 FAccT (ACM Conference on Fairness, Accountability, and Transparency)  
 2020 FAccT (ACM Conference on Fairness, Accountability, and Transparency)  
 2019 AIES (AAAI / ACM Conference on Artificial Intelligence, Ethics, and Society)

#### Patents

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2022 Enhancing Fairness in Transfer Learning for Machine Learning Models with Missing Protected Attributes in Source or Target Domains. Supriyo Chakraborty, Amanda Coston, Zairah Mustahsan, Karthikeyan Natesan Ramamurthy, Skyler Speakman, Kush R. Varshney, and Dennis Wei. US 11,443,236. *Granted*.

#### Service

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##### *Organization*

2019-Now Steering Committee of Machine Learning for Developing World (ML4D) NeurIPS Workshop  
 2019-2020 Co-organizer of Fairness, Ethics, Accountability, and Transparency Reading Group at CMU  
 2019-2020 Co-organizer of Machine Learning Department (MLD) Tea at CMU  
 2018-2019 Co-organizer of ML4D NeurIPS Workshop

##### *Journal Referee*

Nature Human Behaviour  
 Journal of the Royal Statistical Society (JRSS-B)  
 Journal of the American Statistical Association (JASA)  
 Transactions on Machine Learning Research  
 Data Mining and Knowledge Discovery  
 Harvard Data Science Review

##### *Program Committee and Conference Reviewer*

2024 Reviewer, ICML

2023	Ethical Reviewer, NeurIPS
2023	Program Committee, EAAMO
2023	Reviewer, ICLR
2022	Ethical Reviewer, NeurIPS
2022	Reviewer, NeurIPS
2022	Reviewer, NeurIPS Datasets and Benchmarks
2022	Program Committee, EAAMO
2022	Program Committee, FAccT
2022	Reviewer, ICML
2022	Reviewer, ICLR
2021	Area Chair, Responsible AI workshop at ICLR
2021	Ethical Reviewer, NeurIPS
2021	Reviewer, NeurIPS
2021	Reviewer, NeurIPS Datasets and Benchmarks
2021	Program Committee, FAccT
2021	Reviewer, ICML
2020	Reviewer, NeurIPS
2020	Program Committee, FAccT
2020	Reviewer, ICML
2020	Program Committee, AIES
2020	Program Committee, AAAI Emerging Track on AI for Social Impact
2019	Program Committee, IJCAI Workshop on AI for Social Good

### *Leadership*

2012-2013	Committee on Discipline, Princeton University
2012-2013	Computer Science Undergraduate Council, Princeton University

### *Invited Conference & Workshop Roles*

2022	Roundtable Lead for NeurIPS Workshop on Algorithmic Fairness through Lens of Causality
2022	Breakout Group Moderator for CCC & INFORMS Workshop II on AI/OR
2022	Breakout Group Moderator for NSF-Amazon Fairness in AI Principal Investigator meeting
2022	Session Chair for Responsible Data Management Session at FAccT

## Teaching Experience

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### *Teaching Assistant*

2021 Spring	Introduction to Machine Learning (10-301/10-601), CARNEGIE MELLON UNIVERSITY
2012 Fall	Computers in our World (COS 109), PRINCETON UNIVERSITY

### *Project Instructor*

2019 Summer	AI4ALL, CARNEGIE MELLON UNIVERSITY ▷ Developed and led a project on algorithms, criminal justice, & fairness for high schoolers from historically excluded communities.
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## Mentorship

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2022-Now	Women@SCS Mentor
2019-Now	CMU AI Mentor
2019	Women@SCS Roundtable Leader
2016-2017	Read Ahead Mentor
2014-2015	MySkills4Afrika (Microsoft) Virtual Mentor

## Hackathon Distinctions

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2015	Microsoft OneWeek Hackathon, Bing Finalist ▷ Web answer to enable victims of revenge porn to remove content from Bing and OneDrive
2013	NYU-Abu Dhabi Hackathon for the Social Good, 2nd Place ▷ Android app for sharing a travel route to facilitate safe travel for women
2012	Tiger Launch, Social Entrepreneurship, 3rd Place ▷ Web service using QR codes to empower consumers to support value-aligned businesses

## Civic Engagement

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2014-2015	Court Appointed Special Advocate, Family Law CASA ▷ Represented the child's interest in family law cases
2010-2012	Engineers Without Borders ▷ Obtained & configured 50 One Laptop Per Child netbooks for a library in Ashaiman, Ghana
2007-2008	Congressional Intern, U.S. House of Representatives ▷ Office of Congressman John Spratt representing South Carolina's 5th congressional district

## Media Coverage

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2021	“Smartphone Location Data Can Leave Out Those Most Hit by Covid-19.” <i>Wall Street Journal</i> . <a href="https://www.wsj.com/articles/...">https://www.wsj.com/articles/...</a>
2020	“Stanford and Carnegie Mellon find race and age bias in mobility data that drives COVID-19 policy.” <i>VentureBeat</i> . <a href="https://venturebeat.com/ai/...">https://venturebeat.com/ai/...</a>