AMANDA COSTON

(current as of August 2024)

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Employment

2024- UNIVERSITY OF CALIFORNIA, BERKELEY
Assistant Professor, Department of Statistics

Education

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

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

2023-2024	MICROSOFT RESEARCH (MSR) NEW ENGLAND *Postdoc researcher*, Machine Learning and Statistics
2021	FACEBOOK AI APPLIED RESEARCH (FAIAR) *Research intern*, Responsible AI
2020	REGLAB, STANFORD UNIVERSITY *Research Fellow*, Regulation, Evaluation, and Governance Lab at Stanford Law School
2018	IBM RESEARCH AI *Science for Social Good Fellow*
2017	HIVISASA *Technical Consultant*, Kenya
2015-2017	TENEO *Data Scientist*
2013-2015	MICROSOFT *Program Manager*, Bing
2010-2011	SHELTON PSYCHOLOGY LAB, PRINCETON UNIVERSITY *Research Assistant*

Research Interests

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

Publications & Manuscripts

* *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

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

Publications

Guerdan L, Coston A, Wu ZS, Holstein K. Predictive performance comparison of decision policies under confounding. *Proceedings of the International Conference on Machine Learning (ICML).* 2024; 16673-16705. http://proceedings.mlr.press/... (arxiv.org:2404.00848)

Kawakami A, Coston A, Zhu H, Heidari H, Holstein K. The Situate AI Guidebook: Co-designing a toolkit to support multi-stakeholder early-stage deliberations around public sector AI proposals. *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI)*. 2024. doi:10.1145/3613904.3642849. (arxiv.org:2402.18774)

Kawakami A, Coston A, Heidari H, Holstein K, Zhu H. 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. (arxiv.org:2405.12458)

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) **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)

Coston A, Kawakami A, Zhu H, 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). **Best Paper Award** by SaTML

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

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/... (arxiv.org: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 H. 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, Zhu H, 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 H, 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

Invited Talks

2024	Statistical Approaches to Fair Decision Making, Joint Statistical Meetings, Virtual
2024	Schmidt Sciences AI2050 Fellows Summit, Palo Alto, CA
2024	Bridging Prediction and Intervention Problems in Social Systems, Banff International Research Station (BIRS), Banff, CA
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 Analyisis & 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 Unversity, 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 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

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

Organization

2019-2023 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 Benchmarkts
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 Benchmarkts
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

Instructor

2024 Fall Causal Inference (STAT 156/256), UNIVERSITY OF CALIFORNIA, BERKELEY

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.

Mentorship

2022-2023	Women@SCS Mentor
2019-2023	CMU AI Mentor
2019	Women@SCS Roundtable Leader
2016-2017	Read Ahead Mentor
2014-2015	MySkills4Afrika (Microsoft) Virtual Mentor

Hackathon Distinctions

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

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

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