Emma Harvey

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RESEARCH INTERESTS

Assessing and improving algorithmic fairness through practical and interdisciplinary methods

EDUCATION

University of Pennsylvania *Aug. 2013 - Dec. 2017*

BA in Computer Science and Philosophy, Politics, & Economics

Minor in Legal Studies and History

– Cumulative GPA: 3.84 / 4.00 (Summa Cum Laude)
– Relevant Courses: Machine Learning; Modern Regression; Database and Information Systems; Software Design and Engineering; Data Analytics and Statistical Computing; Probability; Judgments and Decisions; Algorithmic Game Theory; Justice, Law, and Morality; Law and Social Change

RESEARCH AND TEACHING

University of Cambridge *Jul. 2021 - present*

Research Assistant, Compliant and Accountable Systems

– Researching practical methods for conducting technical bias audits of decision-making algorithms when data on protected class membership is not available and proxy variables must be used instead under the supervision of Dr. Jatinder Singh

University of California San Diego *Aug. 2022 - present*

Capstone Mentor, Data Science

– Co-developed a Responsible AI section with Dr. David Danks for the Data Science Institute's undergraduate capstone course
– Delivering course lectures; leading discussion sections; and managing course logistics including syllabus, assignments, and readings

Carnegie Mellon University *Sep. 2019 - Dec. 2021*

Guest Lecturer, Integrated Innovation Institute

– Contributed to course development of a mini course entitled 'Designing Smart and Healthy Systems' and guest-lectured for a mini course entitled 'Communicating COVID: Using Data & Visualizations to Build Trust and Cause Action,' both taught by Dr. David Steier

University of Pennsylvania *May 2014 - Dec. 2017*

Teaching & Programming Assistant, Penn in Washington

– Helped plan, develop, and TA multiple courses taught by the Penn in Washington program in Philadelphia and in DC

The Wharton School *Mar. 2015 - Aug. 2015*

Research Assistant, Business Economics and Public Policy

– Researched and analyzed regulatory and financial history of tax inversions and presented findings for publication in the National Tax Journal

Service

The Algorithmic Justice League *Sep. 2020 - present*

Pro Bono Research Consultant

- Led a team of Deloitte consultants to provide pro bono research support to the Algorithmic Justice League (AJL) to inform their understanding of algorithmic auditing; conducted a field scan of the industry, interviews with industry leaders, and a survey of practitioners and researchers
- Supported AJL's efforts to combine art and research to advocate for equitable and accountable AI

Industry Experience

Deloitte Consulting *Feb. 2018 - present*

Senior Consultant, AI & Advanced Analytics (May 2021 - present)

- Leading Deloitte's first bias assessment of a hiring algorithm to ensure that a client remains compliant with upcoming New York City law requiring third-party audits
- Enhanced a client's 'trustworthy AI' framework by providing a roadmap of non-programmatic interventions to minimize harms in the implementation of a clinical algorithm

Consultant, Applied AI (Aug. 2019 - May 2021)

- Built an explainable model to predict real-time rare adverse event occurrence with 85% accuracy and identify key factors driving risk
- Performed causal inference to incorporate real-world data as a synthetic control arm for clinical trials, allowing clients to quantify the efficacy of drugs tested in single-arm trials

Analyst, Data Science (Feb. 2018 - Aug. 2019)

- Identified the need for and created Deloitte's first ethical AI toolkit, including a framework and codebase, to detect bias in decision-making systems; used to audit a financial aid award algorithm to determine whether protected class membership had impact on aid
- Developed a model to identify patients likely to drop out of treatment and understand the specific barriers leading to their drop-out

Publications

Peer-Reviewed Conference Publications

Sasha Costanza-Chock, **Emma Harvey**[1], Inioluwa Deborah Raji, and Joy Buolamwini. 2022. *Who Audits the Auditors? Recommendations from a field scan of the algorithmic auditing ecosystem.* In 2022 ACM Conference on Fairness, Accountability, and Transparency (FAccT '22). Association for Computing Machinery, New York, NY, USA, 1571–1583. doi.org/10.1145/3531146.3533213.

Conference Proceedings

Emma Harvey, Elena Gray, Kevin Coltin, and Greg Szwartz. 2022. *Creating a Covid-19 risk decision metric with an agent-based simulation model.* In 2022 American Public Health Association Annual Meeting and Expo (APHA '22).

Rhodri Dierst-Davies, Sarah Godby Vail, Sarah Ayton, Greg Lidrbauch, Jennifer Vargas, Nik Andric, **Emma Harvey**, Greg Szwartz, Miguel Garza, Javier Lozano, Alexandro Arias, Paulina Sosa, Paola Martinez and Jose Reyes. 2019. *A Mixed-Methods Approach Integrating Behavioral Insights and Data Analytics to Address Retention at Diabetes Clinics in Mexico: A Guide for Program Development.* In 2019 American Public Health Association Annual Meeting and Expo (APHA '19). Abstract.

Emma Harvey, Nik Andric, Rhodri Dierst-Davies, Sarah Godby Vail, Greg Szwartz, Alexandro Arias, Kevin Coltin, Javier Lozano, Miguel Garza, Sarah Ayton, Greg Lidrbauch, Jose Reyes, Paulina Sosa,

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[1]Due to a request from my employer, my name is currently dropped from the author list.

and Paola Martinez. *Pathway Analysis for Care Adherence Modeling.* In 2019 American Public Health Association Annual Meeting and Expo (APHA '19). Abstract.

Skills

Technology	Python, R, SQL, Java, Tableau
Languages	English (native), Spanish (conversational), Dutch (conversational)