EMILY BLACK

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EDUCATION

Carnegie Mellon University *July 2018 - May 2022*
PhD in Computer Science
Thesis: (Un)Fairness along the AI Pipeline: Problems and Solutions
Advisor: Matt Fredrikson

Wesleyan University *September 2013 - May 2017*
B.A. Double Major: Math, Computer Science
Honors in Computer Science
Thesis Advisor: Dan Licata

POSITIONS

Assistant Professor, Barnard College at Columbia University August 2023 - Present
Computer Science Department

Postdoctoral Fellow, RegLab, Stanford Law School August 2022 - August 2023
Advisor: Daniel Ho

Research Fellow, RegLab, Stanford Law School June 2020 - August 2020
Advisor: Daniel Ho

· Collaborated with the IRS to evaluate and prevent biases in auditing systems, largely on the axis of income.

Research Intern, Microsoft Research June 2021 - August 2021
Advisor: Solon Barocas

· Developed a framework to understand how the phenomenon of *model multiplicity* impacts US discrimination law.

SELECTED AWARDS

Amazon Graduate Research Fellowship 2021

Honorable Mention for School of Carnegie Mellon School of Computer Science Distinguished Dissertation Award 2022

PUBLICATIONS

Conference Papers

1. Emily Black, Rakshit Naidu, Rayid Ghani, Kit Rodolfa, Daniel E. Ho, and Hoda Heidari. Toward Operationalizing Pipeline-aware ML Fairness: A Research Agenda for Developing Practical Guidelines and Tools. (In *Proceedings of the 2023 ACM Conference on Equity and Access in Algorithms, Mechanisms, and Optimization (ACM EAAMO)*, October 2023. **(Selected for Oral Presentation)**

2. Emily Black, Manish Raghavan, Solon Barocas. Model Multiplicity: Opportunities, Concerns, Solutions. In (*2022 ACM Conference on Fairness, Accountability, and Transparency (ACM FAccT)*), June 2022.

3. Emily Black*, Hadi Elzayn*, Alexandra Chouldechova, Jacob Goldin, Daniel Ho. Algorithmic Fairness and Vertical Equity: Income Fairness with IRS Tax Audit Models. In (*2022 ACM Conference on Fairness, Accountability, and Transparency (ACM FAccT)*), June 2022.

4. Emily Black, Klas Leino, Matt Fredrikson. Selective Ensembles for Consistent Predictions. (In *2022 International Conference on Learning Representations (ICLR)*), April 2022.

5. Emily Black*, Zifan Wang*, Matt Fredrikson, Anupam Datta. Consistent Counterfactuals for Deep Models. (In *2022 International Conference on Learning Representations (ICLR)*), April 2022.

6. Emily Black, Matt Fredrikson. Leave-One-Out Unfairness. In (*2021 ACM Conference on Fairness, Accountability, and Transparency (ACM FAccT)*), March 2021.

7. Emily Black, Samuel Yeom, Matt Fredrikson. FlipTest: Fairness Testing via Optimal Transport. (In *2020 ACM Conference on Fairness, Accountability, and Transparency (ACM FAccT)*), January 2020.

8. Klas Leino, Emily Black, Matt Fredrikson, Shayak Sen, Anupam Datta. Feature-Wise Bias Amplification. (In *2019 International Conference on Learning Representations (ICLR)*), May 2019.

Law Reviews

9. Daniel E. Ho, Emily Black, Maneesh Agrawala, Li Fei-Fei. Evaluating Facial Recognition Technology: A Protocol for Performance Assessment in New Domains. (In *Denver Law Review, Vol. 98, Issue 4*), August 2021.

Workshop Papers

10. Emily Black*, Joshua Williams*, Michael Madaio, Priya Donti. A Call for Universities to Develop Requirements for Community Engagement in AI Research. (In *Fair and Responsible AI Workshop at 2020 ACM Conference on Human Factors in Computing Systems*), April 2020.

11. Antonio Davola, Emily Black, Kalervo Gulson, Geoffrey Rockwell, Evan Selinger and Elana Zeide. Shortcut Or Sleight Of Hand? Why The Checklist Approach In The EU Guidelines Does Not Work. (In *2019 Summer Institute on AI and Society Workshop*), July 2019.

Preprints

12. *Working Paper:* Emily Black*, John Logan Koepke*, Solon Barocas, Pauline Kim, Mingwei Hsu. The Law of Less Discriminatory Algorithms. 2023.

13. *Working Paper:* Emily Black, Ryan Hess, Rebecca Lester, Daniel Ho, Jacob Goldin, Mansheej Paul, Annette Portz. The Spiderweb of Partnership Tax Structures. 2023.

14. *Working Paper:* Hadi Elzyan, Emily Black, Patrick Vossler, Nathaneal Jo, Jacob Goldin, Daniel Ho. Estimating and Implementing Conventional Fairness Metrics With Probabilistic Protected Features. 2023.

WORKSHOPS AND TUTORIALS

NeurIPS 2023: Governance & Accountability for ML: Existing Tools, Ongoing Efforts, & Future Directions (Tutorial) 2023

Co-organizer along with Hoda Heidari, Daniel Ho, Rayid Ghani, and Kit Rodolfa

· Tutorial Website

FAccT 2023: Practices and limitations of participatory methods: views from computer science, political science and design (Tutorial) 2023
Co-organizer along with Sofía Bosch Gómez and Luisa Godínez-Puig

· Presentation

ICLR 2021: Responsible AI (Workshop) 2021
Co-organizer along with Ahmad Beirami, Krishna Gummadi, Hoda Heidari, Baharan Mirzasoleiman, Meisam Razaviyayn, and Joshua Williams

· Papers and presentations.

TEACHING

Technology and Society: The Good, the Bad, and the Other September - Present
Barnard College at Columbia University

· (16 students, Undergraduate Seminar)
· Teaches a seminar class on the impacts of technology on society. The class is largely focused on AI, covering a variety of AI systems (facial recognition, content selection algorithms, etc), their effects, and the regulation surrounding them.

Teaching Assistant, Ethics and Policy Issues in Computing September - December 2020
Prof. Mike Skirpan, Institute for Software Research, Carnegie Mellon University

· (60 students) Undergraduate course meant to teach students in technical majors how to write effectively.
· Developed grading rubrics and guidelines, held office hours, and provided feedback on all writing assignments.

Teaching Assistant, Intro to Machine Learning (PhD) January -May 2020
Profs. Leila Webhe and Tom Mitchell, Machine Learning Dept., Carnegie Mellon University

· (200 students), Graduate Course
· Held recitations, wrote homeworks, contributed to assessments, wrote a research project prompt, gave guest lectures, oversaw student research projects, held office hours, and graded.

Team co-Leader, Auditing Algorithms for Bias Workshop October 2019
OurCS 2019, Carnegie Mellon University

· Co-created interactive materials for, and ran, labs investigating machine learning fairness problems for undergraduates.

Ethics Lecturer January 2020 - December 2020
Various Departments, Carnegie Mellon University

· Delivered guest ethics units to a variety of technical departments in the university, such as Robotics and Electrical Engineering. Co-wrote lectures and co-developed assignments, along with delivering lectures.

ACTIVISM AND SERVICE

Program Committee

· ACM FAccT 2021, ACM FAccT 2022, NeurIPS 2023, SaTML 2024

Department Service

· Barnard Faculty Hiring Committee 2023

Computer Science Department Graduate Student Assembly Representative 2018-2021

CONSULTING

Policing Project, NYU January 2021-May 2021
Consultant

· Served as machine learning subject matter expert to organize a series of convenings on the regulation of facial recognition technology. Helped create fact-sheets, helped attorneys understand technical aspects of facial recognition systems.