

Emily Aiken

PhD Student, UC Berkeley School of Information

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Research Interests

Intersection of machine learning, development economics, and social protection, with a focus on leveraging large-scale digital traces for evidence-based policymaking

Education

University of California, Berkeley, 2019-present

Ph.D. student, School of Information

M.S. student, Computer Science

Research advisor: Joshua Blumenstock

Projects focusing on using call detail records and satellite imagery for evidence-based development policy, including targeting aid, measuring mobility, and high-frequency estimation of vulnerability

Harvard University, 2015-19

A.B. with high honors in Computer Science, magna cum laude

Secondary field in Global Health

Honors thesis advisor: Mauricio Santillana

Research with Boston Children's Hospital Computational Health Informatics Program on machine learning methods using Internet-based data sources for outbreak tracking and forecasting

Awards

Microsoft Research PhD Fellowship, 2022-2024

Berkeley School of Information Outstanding Graduate Student Instructor Award, 2023

Berkeley AI Research Ignition Award, 2022-2023

Best Paper Award, ACM COMPASS, 2022

Journal Articles and Conference Proceedings

Emily Aiken, Suzanne Bellue, Dean Karlan, Chris Udry, and Joshua Blumenstock (2022). Machine learning and phone data can improve targeting of humanitarian aid. *Nature* Vol. 603 No. 7903 [[paper](#), [code](#), [talk](#)].

★ Selected for cover of the March 29, 2022 print edition of *Nature*

Emily Aiken, Viraj Thakur, and Joshua Blumenstock (2022). Phone sharing and cash transfers in Togo:

Quantitative evidence from mobile phone data. *ACM COMPASS* [[paper](#), [code](#)].

★ Best paper award

Emily Aiken, Guadalupe Bedoya, Aidan Coville, and Joshua Blumenstock (2022). Targeting development aid with machine learning and mobile phone data: Evidence from an anti-poverty intervention in Afghanistan.

Journal of Development Economics [[paper](#), [extended abstract](#), [code](#), [talk](#)].

Emily Aiken, Andre Nguyen, Cecile Viboud, and Mauricio Santillana (2021). Towards the use of neural networks for influenza prediction at multiple spatial resolutions. *Science Advances* 7 (25), eabb1237 [[paper](#), [extended abstract](#), [code](#)].

Emily Aiken, Sarah McGough, Maiamuna Majumder, Gal Wachtel, Andre Nguyen, Cecile Viboud, and Mauricio Santillana (2020). Real-time estimation of disease activity in emerging outbreaks using internet search information. *PLOS Computational Biology* 16 (8), e1008117 [[paper](#), [code](#)].

Workshop and Short Papers

Emily Aiken, Esther Rolf, and Joshua Blumenstock (2023). Urban-rural disparities in satellite-based poverty mapping. *ICLR Workshop on Machine Learning and Remote Sensing*.

Satej Soman, **Emily Aiken**, Esther Rolf, and Joshua Blumenstock (2022). Can strategic data collection improve the performance of poverty prediction models? *NeurIPS Workshop on AI for Humanitarian Assistance and Disaster Response*.

Emily Aiken, Joshua Blumenstock, and Esther Rolf (2022). Satellite-based poverty mapping: Accuracy, fairness, and policy implications. *KDD Workshop on Data Driven Humanitarian Mapping*.

Rachel Warren, **Emily Aiken**, and Joshua Blumenstock (2022). Home location detection from mobile phone data: Evidence from Togo. *ACM COMPASS (Poster Track)* [[paper](#)].

Nitin Kohli, **Emily Aiken**, and Joshua Blumenstock (2020). Privacy guarantees for personal mobility data in humanitarian response. *KDD Workshop on Humanitarian Mapping*.

Teaching

INFO251: Applied Machine Learning (spring 2022)

Head teaching assistant for a class of 100 graduate students. Taught sections, designed problem sets, and managed two other teaching assistants. Received the School of Information outstanding graduate student instructor award.

Other Research and Work Experience

Oxford Policy Management (consultant, fall 2022 - spring 2023)

Working with GIZ on building an assessment tool for country readiness for employing digital data sources in social protection, and co-organizing a session on digital data at the GIZ/World Bank Conference on Adaptive Social Protection in 2023.

GIZ: German Agency for International Cooperation (consultant, fall 2021)

Coauthor of a GIZ report on digital data in social protection. Conducted interviews with stakeholders in social protection and data science sectors in industry and academia and crafted a report and recommendations.

GiveDirectly (consultant, summer 2021)

Consultant in uses of big data (satellite imagery and mobile phone data) for targeting emergency cash transfers. Developed open source python package “[cider](#)” for targeting aid with machine learning, mobile phone data, and satellite imagery, provided guidelines for software use and guidance to ethical review committee on big data targeting, performed ad hoc data science analysis and helped train new GiveDirectly data science employees.

École Polytechnique Fédérale de Lausanne (EPFL) (research intern, summer 2018)

Intern in Karl Aberer’s Distributed Information Systems Laboratory working on applying facial similarity algorithms for identifying missing people in social media streams.

InSTEDD (intern, summer 2016; consultant, 2016-2019)

Long-term consultant focused on technical and non-technical aspects of several ICTD (Information & Communication Technologies for Development) projects; focused mainly on data and analytics platforms for open-source tools for health and social protection.

Invited Talks

2023: POMS-HK Conference (Hong Kong Polytechnic University), Stanford, Cornell Tech, Georgetown, Center for Health Policy and Research (UC Davis)

2022: World Bank Measuring Development Conference, MIT Media Lab, Conference on Digital Experimentation @ MIT, CMU Africa, Harvard Center for Research on Computation and Society, Georgetown

2021: Good Tech Fest, IPA Methods and Measurement Conference, What Works Global Summit, CEGA Evidence to Action, Microsoft Research PhD Fellowship Research Showcase, NeurIPS Workshop on AI For Humanitarian Action and Disaster Response

2020: UC Davis Big Data for Agriculture Conference, Harvard Center for Research on Computation and Society (CRCS) Workshop on AI for Social Good, Pacific Conference on Development Economics, World Bank Measuring Development Conference, Mechanism Design for Social Good (MD4SG)

2019: African Union Workshop on Big Data for Disease Surveillance, NeurIPS workshop on machine learning for health (ML4H)

Professional Service

Program Committee Membership

ICLR Workshop on Practical ML for Developing Countries (May 2023)

ACM EAAMO Conference on Equity and Access in Algorithms, Mechanisms, and Optimization (October 2022)

ACM SIGCAS COMPASS Conference on Computing and Sustainable Societies (June 2022)

KDD Workshop on Humanitarian Mapping (August 2021)

IJCAI Workshop on AI for Social Good (October 2020)

Harvard CRCS Workshop on AI for Social Good (July 2020)

Journal Reviewing

World Bank Economic Review

Communications of the ACM

Journal of Development Economics

Journal of Development Engineering

National Science Foundation

Selected Press Coverage

Machine learning and phone data can improve targeting of humanitarian aid

R. Leven (2022). "Mobile phone data and machine learning helped Togo government provide assistance."

Berkeley CDSS News [\[link\]](#).

E. Aiken and J. Blumenstock (2022). "How AI helped deliver cash to many of the poorest people in Togo."

The Conversation [\[link\]](#).

H. Gelbart (2021). "Using satellite photos to help distribute cash." *BBC* [\[link\]](#).

M. Gharib (2021). "The pandemic pushed this farmer into deep poverty. Then something amazing happened."

NPR [\[link\]](#).

S. Elks (2020). "Charity uses mobile phone data to identify aid recipients in Togo." *Reuters* [\[link\]](#).

T. Simonite (2020). "A clever strategy to distribute Covid aid -- with satellite data." *Wired* [\[link\]](#).

T. Visram (2020). "How GiveDirectly is finding the poorest people in the world -- and sending them cash."

FastCompany [\[link\]](#).

Targeting development aid with machine learning and mobile phone data: Evidence from an anti-poverty intervention in Afghanistan

Unknown (April 2021). "In poor countries, statistics are both undersupplied and underused." *The Economist* [\[link\]](#).