Eaman Jahani

University of Maryland, Business School
MIT Sloan School of Management
Email: eaman@umd.edu
URL: http://eamanjahani.com

Research Interests

I have two active lines of research: 1- Investigating how network processes and social incentives impact various outcomes, including economic inequality, the diffusion of misinformation, and hate speech. 2- Exploring human-AI collaboration and identifying structures that enhance the performance of human-AI teams. To advance these research areas, I employ computational techniques and causal inference in networks, develop new network structure models, and design online experiments.

Areas of Specialisation

Statistics, Network Science, Social Networks, Experiment Design, Causal Inference, Social Sciences

Employment

University of Maryland, Smith School of Business, College Park 2024 - Present
Assistant Professor in Decision, Operations & Information Technologies

UC Berkeley, Department of Statistics, Berkeley 2022 - 2024
RTG Postdoctoral Associate

Education

Massachusetts Institute of Technology, Cambridge 2015 - 2021

Institute for Data, Systems and Society, *PhD in Social and Engineering Systems*
Statistics and Data Science Center, *Interdisciplinary PhD in Statistics*
Thesis title: *Network Effects on Outcomes and Unequal Distribution of Resources*
Advisors: Alex 'Sandy' Pentland, Dean Eckles

University Of Michigan, Ann Arbor 2005 - 2011

Computer Science Department, *BSc and MSc in Computer Science*

Research Affiliations

World Bank, Washington DC 2022 - Present
Research Consultant

- Working on design and implementation of a field experiment in Nigeria that aims to evaluate and compare the effectiveness of several network-based interventions in reducing hate speech in Nigerian Twitter. A big component of the project is developing an efficient randomization design that accounts for treatment interference on the Twitter network.

Meta, Boston 2020 - 2022
Consulting Researcher, Core Data Science

- Analyzed billions of records in the Facebook network and established the link between frequency of long ties and economic well-being. Furthermore, identified why some individuals have more long ties and attributed that to certain life events. Developed a pipeline for publicly releasing part of the data.
- Designed a statistical framework for studying the causal link between network structure and outcomes, with fundraising in social networks as the case study. Showed how the random activation of ties in the network on any given day is a valid instrument for identifying the causal effect of different types of ties, in an otherwise endogenous network.

Teaching Experience

University of Maryland, Business School 2024 - Present

- *Data Mining and Predictive Analytics (Spring 2024):* The course is intended to provide an introduction to the tools and techniques of data mining and machine learning that are central to business analytics, with particular emphasis on classification and prediction. Topics include regression, classification, trees, complexity control, ensemble methods, neural networks, association rules and how these methods aid decision making in applied settings with a focus on R. I gave 3 hours of lecture per week and managed 2 teaching assistants.

UC Berkeley, Department of Statistics 2022 - 2024

- *Data, Inference, and Decisions (Spring 2023):* The course develops the probabilistic foundations of inference, modeling and decision-making in data science. Topics include frequentist and Bayesian decision-making, probabilistic interpretations of models, Bayesian hierarchical models, GLM, causal inference, differential privacy, fairness in classification, and an introduction to machine learning tools including decision trees, neural networks, ensemble methods and reinforcement learning. I gave six hours of lecture per month, and worked with 7 teaching assistants in designing weekly discussions and assignments.
- *Concepts of Statistics (Fall 2022):* The course was a comprehensive survey in statistical theory and methodology, meant for junior or graduate student with strong math background. Topics include parameter estimation, hypothesis testing, confidence intervals, parametric and non-parametric statistical tests, analysis of variance, linear regression and computing using R. I gave three hours of lecture per week, updated the existing curriculum, designed weekly assignments, quizzes and managed 3 teaching assistants.
- *Introduction to Statistics (Spring 2022, Fall 2023):* The course was an introduction to statistics for students without a math background. Course covers population and variables, standard measures of location, spread and association, normal approximation, regression, probability and sampling, interval estimation and significance tests. In a flipped classroom format, I held three hours of QA session per week, and managed 9 teaching assistants.

Professional Experience

Google, New York 2011 - 2014
Software Engineer, AdWords

- Worked on several projects around the AdWords ad auction, using statistical methods and building pipelines for making suggestions to advertises on how to improve their performance in the auction.

Publications

Working Papers or Under review

- *As Generative Models Improve, People Adapt Their Prompts*
  Mohammed Alsobaya, **Eaman Jahani**, Benjamin S. Manning, Christos Nicolaides, Siddharth Suri, Hong-Yi TuYea, Joe Zhange, David Holtz
  SocArxiv, 2024

- *Network interventions to reduce hate speech on Twitter*
  Eaman Jahani, Blas Kolic, Manuel Tonneau, Hause Lin, Niyati Malhotra, Ibrahim Farouq, Victor Orozco, Samuel Fraiberger
  Manuscript available upon request, 2024

- *The Power of Meta-Prediction Accuracy: Leveraging Predictions of Others' Predictions to Enhance Collective and Individual Intelligence*
  Yunhao Zhang, **Eaman Jahani**, Douglas Guilbeault, Juliana Schroeder
  Manuscript available upon request, 2024

- *The Network Structure of Unequal Diffusion*
  Eaman Jahani, Dean Eckles, Alex "Sandy" Pentland
  arxiv, 2022

- *Rivalrous Resource Sharing in Networks can Exacerbate Existing Inequalities*
  Eaman Jahani, Dean Eckles
  Manuscript available upon request, 2021

Selected Referred Articles

- *Long ties, disruptive life events and economic prosperity*
  Eaman Jahani, Samuel Fraiberger, Michael Bailey, Dean Eckles
  The Proceedings of the National Academy of Sciences, 2023

- *Implications of COVID-19 vaccination heterogeneity in mobility networks*
  Yuan Yuan, **Eaman Jahani**, Shengjia Zhao, Yong-Yeol Ahn, Alex "Sandy" Pentland
  Nature Communications Physics, 2023

- *A Randomized Online Experiment during the 2020 US-Iran Crisis shows that Exposure to Common Enemies can Increase Political Polarization*
  Eaman Jahani, Natalie Gallagher, Friedolin Merhout, Nicolo Cavalli, Douglas Guilbeault, Yan Leng, Christopher A. Bail
  Nature Scientific Reports, 2022

- *Social Debunking of Misinformation on WhatsApp: The Case for Strong and In-group Ties*
  Irene Pasquetto, **Eaman Jahani**, Shubham Atreja, Matthew Baum
  Proceedings of the ACM on Human-Computer Interaction-CSCW, 2022

- *Segregated Interactions in Urban and Online Spaces*
  Xiaowen Dong*, Alfredo J. Morales*, **Eaman Jahani***, Esteban Moro, Bruno Lepri, Burcin Bozkaya, Carlos Sarraute, Yaneer Bar-Yam, Alex "Sandy" Pentland
  EPJ Data Science, 2020

- *Measuring the Predictability of Life Outcomes with a Scientific Mass Collaboration*
  Matthew J. Salganik in Mass Collaboration with 111 Authors
  Proceedings of the National Academy of Sciences, 2020

- *Winning Models for Grade Point Average, Grit, and Layoff in the Fragile Families Challenge*
  Daniel E Rigobon, **Eaman Jahani**, Yoshihiko Suhara, Khaled AlGhoneim, Abdulaziz Al-ghunaim, Abdullah Almaatouq
  Socius: Sociological Research for a Dynamic World, 2019

- *ScamCoins, S*** Posters, and the Search for the Next Bitcoin^{TM}: Collective Sensemaking in Cryptocurrency Discussions*
  Eaman Jahani, Peter M. Krafft, Yoshihiko Suhara, Esteban Moro, Alex "Sandy" Pentland
  Proceedings of the ACM on Human-Computer Interaction-CSCW, 2018

- *Improving official statistics in emerging markets using machine learning and mobile phone data*
  Eaman Jahani, Pål Sundsøy, Johannes Bjelland, Linus Bengtsson, Alex "Sandy" Pentland, Yves-Alexandre de Montjoye
  EPJ Data Science, 2017

- *Differential Network Effects on Economic Outcomes: A Structural Perspective*
  Eaman Jahani, Guillaume Saint-Jacques, Pål Sundsøy, Johannes Bjelland, Esteban Moro, Alex "Sandy" Pentland
  International Conference on Social Informatics, 2017

- *Deep learning applied to mobile phone data for individual income classification*
  Pål Sundsøy, Johannes Bjelland, Bjørn-Atle Reme, Asif M Iqbal, **Eaman Jahani**
  International Conference on Artificial Intelligence: Technologies and Applications, 2016

- *Automatic Optimization for MapReduce Programs*
  Eaman Jahani, Michael J. Cafarella, Christopher Ré.
  VLDB, 2011

Honors and Awards

NSF Graduate Research Fellowship 2015-2018
Software Engineering Promotion, Google 2013
Dean's List and James B. Angell Scholar, University of Michigan 2009

Recent Talks

- *Network interventions to reduce hate speech on Twitter*, Statistics and Econometrics Seminar, Booth School of Business, Chicago, 2024

- *Network Processes can Exacerbate Existing Inequalities*, Conference Networks Science and Economics, Chicago, 2022

- *Network Processes can Exacerbate Existing Inequalities*, Conference Networks Science and Economics, Chicago, 2022

- *Exposure to Common Enemies can Increase Political Polarization: Evidence from an Experiment with Automated Partisans*, Conference on Digital Experimentation (CODE), Boston, 2020

- *Network Structure of Unequal Diffusion*, International Conference of Computational Social Science, Boston, 2020 *Network Structure of Unequal Diffusion*, International Conference of Computational Social Science, Boston, 2020
- *The Role of Social Ties in Debunking False Claims*, International Conference of Computational Social Science, Boston, 2020
- *Collective Sensemaking in Online Groups: The case of Cryptocurrency Discussions*, Sunbelt Conference, Montreal, 2019
- *ScamCoins, S*** Posters, and the Search for the Next Bitcoin^{TM}: Collective Sensemaking in Cryptocurrency Discussions*, CSCW Conference, New York, 2018
- *Differential Network Effects on Economic Outcomes: A Structural Perspective*, Network Science Conference, Paris, 2018
- *Differential Network Effects on Economic Outcomes: A Structural Perspective*, International Conference of Computational Social Science, Cologne, 2017
- *Bubbles and Network Structure: a study in cryptocurrencies*, International Conference of Computational Social Science, Helsinki, 2015

Service

Organizing

- *Summer Institute for Computational Social Science, Partner Site*, Boston, 2019

Reviewing

- *Annals of Applied Statistics*, 2024
- *IC2S2*, 2023, 2024
- *Statistical Methods & Applications*, 2022
- *Social Forces*, 2020, 2021
- *ICIS*, 2018

Mentorship

- Mentored several undergraduate students on various research projects, both at MIT and UC Berkeley. Example research projects include: development of an online lab experiment platform, analysis of data collected from an randomized survey experiment on sharing and debunking false information

Technical Skills

R, Python, C++, C, Java, UNIX shell scripting, SQL, Presto, Spark, PHP

Last updated: July 20, 2024