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Graduate Study Pursued

I am a third-year PhD student in the Technology and Operations Management (TOM) Unit at Harvard Business School. The TOM unit is quite interdisciplinary; it brings together perspectives from operations management, the economics of innovation, and computer science. This has helped me better understand how different disciplines frame and study questions about AI and its impacts on society.

Research Interests

I broadly study measurement and decision-making in AI-mediated systems. I am particularly interested in two related questions: how we measure and audit socially meaningful constructs when they are imperfectly observed or represented computationally, and how AI mediation and delegation change human behavior and downstream economic and societal outcomes.

My research often begins with questions about AI's economic or societal effects (e.g., how will the use of AI agents impact humans' purchasing behaviors?), but trying to answer them can reveal gaps in available data or opportunities to make better use of existing data. These challenges motivate methodological questions about how to measure and study social phenomena. For example, one of my projects is a collaboration with a computer scientist and a sociologist, where we develop a framework that extracts interpretable themes from unstructured survey responses for downstream statistical analysis. This project grew out of an interest in how AI can better capture the multifaceted aspects of identity that standardized categories miss, with broader implications for whose experiences are represented in research analyses.

Current Research

Shopping Without Shoppers: How AI Agents Navigate Product Assortments (with Antonio Moreno, Nil Karacaoglu)

In this project, I study whether delegating shopping to AI agents expands product discovery or concentrates demand on a narrower set of products and brands. This project connects the growing capabilities of AI shopping agents to longstanding questions in digital economics, marketing, and information systems about consumer search, product visibility, and market concentration. We were motivated to study this question by two competing predictions. By reducing the effort required to explore

a large assortment, agents could help consumers discover products that receive little attention under human search. At the same time, systematic preferences (popularity bias) for particular products or brands could lead agents to repeatedly select similar options.

We study whether agent-mediated shopping expands or concentrates demand and the mechanisms underlying these changes. One of our main goals is to understand how agents navigate product assortments and how their search and choice processes differ from those of human consumers. We are also developing behavioral extensions to examine how assigning the final purchase decision to a human or an AI agent affects demand concentration and retailers' outcomes. These questions, in turn, motivate research on how retailers' assortment and ranking decisions interact with automated shopping.

In Your Own Words: Computationally Identifying Interpretable Themes in Free-Text Survey Data (with Emma Pierson and Aliya Saperstein)

In this project, I develop a computational framework for identifying interpretable themes in open-ended survey responses using a sparse autoencoder (SAEs) and LLM-based pipeline. The project addresses an important measurement challenge in survey research: standardized survey categories can omit meaningful differences in people's experiences, while free-text responses are often difficult to incorporate into statistical analysis.

We apply our framework to descriptions of race, gender, and sexual orientation from 1,004 U.S. participants. Combining text embeddings, SAEs, and large language models, the framework discovers recurring themes and represents each response through the themes it expresses. These representations capture dimensions such as belonging and identity fluidity that conventional categories often miss.

The themes reveal heterogeneity within standardized categories, explain additional variation in health, well-being, and identity importance, and help characterize differences between self-described and perceived identities. These findings illustrate how computational methods can make open-ended data useful for exploratory statistical analysis and inform the design of future surveys. The paper has been conditionally accepted at Public Opinion Quarterly in a Special Issue about Artificial Intelligence and the Future of Survey Research. It was also recently cited in Melissa Dell and Ashesh Rambachan's NBER Working Paper 35744: *The Measurement Revolution? Credible Measurement and Inference in the Age of AI.*

Longitudinal Effects of AI Use

I am also one of the primary student researchers collaborating with a team of economists and computer scientists across Harvard, UC Berkeley, and the University of Toronto to develop research on the longitudinal effects of AI use, with an interest in causally evaluating how sustained interaction with AI changes behavior and outcomes. A major challenge is distinguishing the effects of AI use from differences in who adopts these systems and how they choose to use them. I am particularly interested in effects that emerge through repeated interaction, including changes in how people seek information, make decisions, and engage with services.

Interest in the Tutorial

I currently work most closely with Professors Toni Moreno, Emma Pierson, Hima Lakkaraju, and Edward McFowland III, whose diverse perspectives have helped shape my interdisciplinary approach to studying AI's economic impacts. As I develop my own research agenda, I hope the NBER tutorial will help me connect these perspectives through a stronger grounding in digital economics and identify the questions and methodological approaches I want to prioritize. I would particularly value learning how economists approach causal identification and measurement as AI models evolve and people's familiarity with these tools changes. At this stage of my PhD, I know I would greatly benefit from discussions with faculty and other doctoral students interested in similar topics. I would bring a background in computer science, economics, and computational social science, together with a research agenda focused on how AI changes decisions and how we measure its consequences.