Benjamin S. Manning - bmanning@mit.edu - (603) 776-1213 - 3rd year PhD student

## Education & Course of Study (professors in parentheses)

- Ph.D. in Management Science, Information Technology, MIT (2027, Expected)
  Committee: John J. Horton (Chair), Christopher Avery
- S.M. in Management Research, MIT (2024)
- M.P.P. in Economic & Social Policy, Harvard University (2021)
- B.A. in Mathematics (College Honors), Washington University in St. Louis (2017)

*Coursework (professors in parentheses)*

- Machine Learning (Tommi Jakkola)
- 4 Semesters of econometrics (Whitney Newey (2), Alberto Abadie, Josh Angirst)
- 2 Semeseters of Microeconomic Theory (Christopher Avery (2))
- Algorithms and Behavioral Science (Sendhil Mullainathan, Ashesh Rambachan)
- Experimental Economics (Benjamin Enke)
- Applied Networks Analysis (Sinan Aral)
- Design and Analysis of Experiments (Dean Eckles)
- Economics of Information and IT (John J. Horton)

## Research Interests

I focus on two main themes: (1) using AI systems as tools for studying human behavior, and (2) the implications of AI systems acting on behalf of humans—including their ability to represent preferences, facilitate information exchange, and make autonomous decisions. My work examines both how we can construct new tools and the impacts of generative AI in real-world contexts.

## Research in Progress

- **The Case and the Place for Homo Silicus**
  - *(with Kehang Zhu & John J. Horton). Working Paper.*
  - Extended the case for AI subjects in social science, arguing for their use as complements rather than substitutes to human subjects and demonstrating methods to optimize AI agents for replicating human decision-making in economic games while addressing their current limitations through rigorous validation and iterative refinement.

- **Evidence from the field: AI agents and Labor-market matching**
  - *(with Gili Rusack & John J. Horton). Working Paper.*

- Explores how AI agents can enhance the job search process by modeling the preferences of job seekers and employers, conducting screening conversations, and generating rankings processed through economic matching algorithms. By targeting compatibility and improving efficiency, the approach aims to reduce search time and improve match quality in an online labor market.

- **Trading Efficiency: Benchmarks, Bilateral Negotiations, and AI Agents**
  - *(with Kehang Zhu, Hal Abelson, James Wexler, Crystal Qian, and John J. Horton). Working Paper.*
  - Developing a framework to evaluate decentralized trading mechanisms by using linear programming as a theoretical benchmark and comparing it to bilateral trading simulations. This approach serves as the foundation for assessing the potential of large language models (LLMs) to act as proxies in negotiations, examining their ability to approximate efficient outcomes and incentive-compatible behavior under varying conditions of preference elicitation and trading complexity.

- **Automated Social Science: Language Models as Scientist and Subjects**
  - *(with Kehang Zhu & John J. Horton). The Quarterly Journal of Economics - Reject & Resubmit.*
  - Paper presenting a proof-of-principle approach to automated hypothesis generation and testing using structural causal models and large language models, demonstrating their capacity to simulate social scientific processes and generate insights across diverse scenarios like auctions, negotiations, and bail hearings.

- **Large Language Models as Simulated Economic Agents: What Can We Learn from Homo Silicus?**
  - *(with John J. Horton & Apostolos Filippas). The Review of Economics and Statistics - Revise & Resubmit.*
  - A study demonstrating the utility of LLMs as experimental AI subjects to simulate human decision-making in behavioral economics, shows that optimized AI agents can generate human-like predictions in classical economic games while highlighting the importance of rigorous validation and thoughtful application

- **As Generative Models Improve, People Adapt Their Prompts**
  - *(with Eaman Jahani, Joe Zhang, Hong-Yi TuYe, Mohammed Alsobay, Christos Nicolaides, Siddharth Suri, & David Holtz). Under Review.*
  - Experiment on how advancements in generative AI models, such as DALL-E 2 and DALL-E 3, influence user behavior and task performance, highlighting that both model improvements and user adaptations in prompt engineering contribute equally to enhanced outcomes.