NBER PhD Workshop on the Economics of Artificial Intelligence Application

Contact Information

Lindsey Raymond
lraymond@mit.edu
978-621-7554 (cell)
100 Main Street, E62-489, Cambridge, MA 02142

Summary of Applicant Interest in AI

My interest in artificial intelligence (AI) is reflected in my current research and early stage future work. In existing joint work with Danielle Li and Peter Bergman, I explore the use of reinforcement learning algorithms, which power most existing "AI" technology, in the labor market. In looking for the best workers over time, firms must balance exploitation (selecting from groups with proven track records) with exploration (selecting from under-represented groups to learn about quality). Yet modern hiring algorithms, based on "supervised learning" approaches, are designed solely for exploitation. In this paper, we view hiring as a contextual bandit problem and build a resume screening algorithm that values exploration with a reinforcement learning approach. Using data from professional services recruiting within a Fortune 500 firm, we show that this approach improves both the quality (as measured by eventual offer and acceptance rates) and diversity of candidates selected for an interview, relative to the firm's existing practices. The same is not true for traditional supervised learning based algorithms, which improve quality but select far fewer minority applicants. In an extension, we show that exploration-based algorithms are also able to learn more effectively about simulated changes in applicant quality over time.

I am also currently exploring the way in which available data, a crucial input into AI algorithms, affect the direction of innovation in AI. Specifically, I am interested in the way access to state-controlled data sets from surveillance systems impact direction of commercial innovation in artificial intelligence. I also plan to explore the distributional consequences of use of AI driven technologies in surveillance systems.

Lindsey Raymond

100 Main Street, E62-489, Cambridge, MA 02142
lraymond@mit.edu | 978-621-7554 (c)

Education

Ph.D., Massachusetts Institute of Technology, 2017-2022 (expected)
Sloan School of Management
PhD Candidate
Technological Innovation, Entrepreneurship and Strategic Management Group
Committee: Scott Stern (chair), Erik Brynjolfsson and Danielle Li

SM., Massachusetts Institute of Technology, 2019
Sloan School of Management
Thesis: *Predicting the Obvious: A Machine Learning Approach to Superstar Inventions*

Key Coursework: Economics PhD sequences in Labor, Industrial Organization, Econometrics
Computer Science PhD sequence in Machine Learning and Statistical Learning Theory

B.A., Yale University, *cum laude*, 2012
Major: Economics with Honors
Advisor: Robert J. Shiller

Research Interests

economics of artificial intelligence, digitization, use of machine learning methods in economics

Working Papers

- *Hiring as Exploration* (with Danielle Li and Peter Bergman)

Research in Progress

- *Predicting Patent Impact: A Machine Learning Approach* (with Scott Stern)
- *Punctuated Equilibrium: Digital Goods Consumption and Market Concentration* (with Erik Brynjolfsson and Daniel Rock)

Invited Presentations and Attended Workshops

2020: NBER IT and Digitization Summer Institute, MIT Initiative on the Digital Economy Seminar (Cambridge, MA), Computational Models Summer School (Cambridge, MA)
2019: NBER Innovation Information Initiative (Cambridge, MA)

Professional Service

Reviewer: *International Conference on Information Systems, Proceedings of the National Academy of Sciences*