Hongyuan Xia - Digital Economics and AI Tutorial Application

CONTACT INFORMATION

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COURSE OF GRADUATE STUDY

Cornell University — Sep 2020 - (*Scheduled*) Jun 2026
Rising 4th Year Ph.D. in Economics — *Ithaca, NY, U.S.A.*

I am a first-generation doctoral student with major in economics. I received rigorous training in econometrics, micro- and macroeconomics. Meanwhile, I have also taken courses in areas other than economics, such as management and computer science. and participate in interdisciplinary work. The courses that I have taken are as below:

Graduate Courses - Economics and Management: Microeconomic Theory (I, II, III), Macroeconomics (I, II), Econometrics (I, II), Empirical Strategies (I, II), Industrial Organization, Advances in Labor Economics (Micro and Macro), Economics of Networks, PhD Seminar in Strategy, PhD Seminar in Entrepreneurship.

Graduate Courses - Computer Science: Intro to Machine Learning, Natural Language Processing, Causal Inference and Machine Learning, Theory of Causal Inference & Decision-Making.

RESEARCH INTEREST

Economics of Artificial Intelligence, Innovation and Entrepreneurship.

My research focuses on the implications of artificial intelligence and knowledge diffusion, which I examine in various contexts including labor markets, universities, startups, and superstar firms. I have tackled these questions by using novel large-scale data, natural language processing, and empirical techniques. The specific research questions that I am working on are as below:

- First, I am interested in how the imitation and competition between superstar firms and startups affect their adoption of digital technology, such as AI.
- Second, I investigate how prediction technology affects the knowledge production process, firms' skill requirements, and the dynamics of Schumpeter competition.
- Third, I am working on topics pertaining to how scientists in academia choose their research topics and commercialize their research outputs.

Working Papers

- Dancing with Stars: Superstar Firms' Role Model Effect on AI Adoption (w/ *Chris Forman*)

  Abstract: Does the superstar firms' adoption of AI foster or deter other firms' adoption of AI? There are two competing mechanisms: imitation and competition. By using comprehensive job posting data and a novel instrumental variable, this study will examine the empirical salience of these competing effects of superstar firms on the AI adoption process.

- Gender Identity, Peer Effects, and Research Focus: Evidence from PhD Dissertations (w/ *Paul Dai*)

  Abstract: Using a universe record of PhD dissertations in the US, we document the gender gap in producing female-focused research and causally identify the peer effects of producing female-focus research: a higher female ratio in the PhD cohort encourages females but discourages male PhDs from doing FFR, which is in favor of a competition effect in addition to knowledge diffusion in FFR production. These effects last for at least 5 years after graduation. Further investigation indicates the homophily and coauthor network explain the differential effects on female and male PhDs.

Work in Progress

- Attention to Exploration: The Effect of Technology Clusters on Scientific Knowledge Production (w/ *Matt Marx*)

  Abstract: Do technology clusters of firms affect the direction of local university researchers' academic research and inspire more applied, commercializable research? By taking advantage of the announcement of previously-unanticipated entry of high-tech firms, we will identify the causal effect of technology clusters on scientists' research direction.

- AI and Labor Downskilling: Evidence from Job Postings

  Abstract: This paper examines how artificial intelligence influence firms' decisions to hire workers across the labor skill spectrum and across different local labor markets. Skilled labor has become a key driver of economic growth in the US (see, e.g., Autor et al. (2003)), yet there is virtuall scarce research on how disruptive technology, such as artificial intelligence, influences the quality of human capital employed by firms, the composition of the workforce inside corporations, or the profile of skilled workers in a local labor market. This paper investigate this question by using a unique database containing the near-universe of job postings by US corporations over a number of years.

- From Exploitation to Exploration: The Role of AI

  Abstract: Recent work on AI focuses on how AI changes the productivity and labor markets and documents that the extent to which automating technologies substitute for or complement human labor depends on the extent to which such technologies substitute for the specific tasks associated with production. However, little attention has been paid to how automating technologies, such as AI, affect knowledge production, especially, the direction of scientists' exploration.

In this project, I plan to investigate how AI enables researchers to explore more diverse topics (i.e. exploration) instead of digging further into existing topics (i.e. exploitation).

Awards and Grants

Cornell Center for Social Sciences Research Grant, Cornell University, 2022 & 2023
The Howard and Abby Milstein Graduate TA Award, Cornell University, 2022
Sage Fellowship, Cornell University, 2021 & 2022

Committee Members

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