Application for the NBER Digital Economics and AI Tutorial

Jie Zheng

1. Contact Information

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Position:	Ph.D. Candidate in Management Information Systems
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2. Course of Graduate Study

I am a fourth-year Ph.D. student in Management Information Systems at the Daniels School of Business, Purdue University, where I enrolled in August 2023. I have completed all required coursework and passed my preliminary examination in my third year, and I am now a Ph.D. candidate working on my dissertation. My cumulative graduate GPA is 3.91/4.0. My doctoral training combines economics and econometrics with machine learning, which allows me to study AI both as an economic phenomenon and as a technology I build and deploy myself. Before my Ph.D., I earned an M.S. in Management Science and Engineering and B.S./B.E. degrees in Finance and Electrical and Computer Engineering from the University of Electronic Science and Technology of China.

Selected doctoral coursework

Economics and Econometrics	*Grade*	*Digital Economics and AI*	*Grade*
Microeconomic Theory I	A	Economics of Digitization	A+
Microeconomic Theory II	A	Economics of Technology	A
Econometrics I	A	Technology and Business Decisions	A
Econometrics II	A	Digital Transformation Research Topics	A
Bayesian Econometrics I	A	Ph.D. Seminar: IT Management	A
Bayesian Econometrics II	A	Artificial Intelligence	A
Ph.D. Seminar: Empirical Methods	A	Deep Learning	A−
Seminar in Marketing Models	A	Reinforcement Learning	A
		Reasoning with Large Language Models	A−
		Data Mining	A

3. Research Interests, Dissertation, and Ongoing Research

Research interests. I am extremely passionate about how AI can create value for firms and drive firm growth and productivity. My research asks why hundreds of billions of dollars of investment in AI, especially generative AI, have yet to translate into broad economic returns, and how firms and investors can close that gap. I combine field experiments, causal inference, and large language model development to locate the bottlenecks: in how firms deploy AI to create value, in how AI changes the decisions of investors who allocate capital to new ideas, and in whether AI adoption actually pays off in firm performance. Because realizing the value of AI is also a policy problem, I study how AI regulation shapes these outcomes.

Dissertation title: *Realizing the Economic Value of AI: Deployment, Investment, and Firm Growth*

Dissertation committee: Yu Jeffrey Hu (Co-Chair) and Mohammad Rahman (Co-Chair)

Dissertation description. My dissertation follows AI from the moment a firm deploys it to its ultimate effect on firm growth. It consists of three essays.

Essay 1: Pushing the Performance Frontier: How Expert Knowledge Reshapes Scaling Laws in Enterprise AI (with Mohammad Rahman and Yu Jeffrey Hu; under review at *Management Science*). Scaling laws, the foundational laws of AI development, offer a low-risk recipe for allocating capital and have been a primary engine of AI's rapid progress. As massive investment flows into AI deployment, whether these laws govern enterprise AI remains unknown. We partner with a consulting firm and deploy large language models for its quality check task. Under the common recipe of enterprise deployment, which scales the firm's knowledge base and model size, performance reaches a low ceiling quickly. By contrast, expert knowledge shifts the scaling curve itself upward. In particular, experts' reasoning data substantially expand the performance frontier, with performance rising log-linearly in their amount. Scaling reasoning data also significantly raises the profit of the deployment. Mechanism analyses reveal that the common recipe falls short because the raw knowledge base is noisy, whereas reasoning data convey information about the patterns behind experts' judgments. This study provides guidance to firms on how to allocate resources in AI deployment. It has been presented at WISE, INFORMS, SCECR, BIG.AI@MIT, BizAI, and the AI and the Future of Work Conference.

Essay 2: AI-Driven Investors (with Yu Jeffrey Hu; drafting stage). Venture capital investors decide which ideas get funded and built, and they are increasingly using AI to source, screen, and evaluate startups. This essay studies how AI changes the performance of venture capital investors: whether investors that adopt AI make better investment decisions, which types of deals and investors benefit most, and how AI reshapes the allocation of capital across startups. The essay connects AI adoption to one of the most important channels through which capital flows to innovation.

Essay 3: Generative AI and Firm Growth (with Yu Jeffrey Hu; data analysis stage). This essay studies how generative AI adoption shapes the growth of public firms. Using measures of firms' generative AI adoption linked to firm outcomes, and causal inference methods such as staggered difference-in-differences, I examine whether, when, and for which firms generative AI translates into growth and productivity, and which uses and organizational practices drive these gains. The essay speaks directly to the gap between AI investment and its measured economic return.

Other ongoing research. *AI Regulation and Venture Capital Investment* (single-authored; Proceedings of ICIS 2026; under review at *Management Science*). This paper examines how comprehensive AI regulation affects venture investment. Using PitchBook venture capital data from January 2022 through December 2025 and a difference-in-differences design that compares EU countries with U.S. states without comprehensive AI laws across the phased rollout of the EU AI Act, I find no significant decline at the Parliament vote or at entry into force, but a substantial reduction once concrete obligations begin to apply: during the general-purpose AI and governance phase, EU venture deal counts fall by about 34% relative to comparable non-EU locations. The effects are uneven across regulatory exposure, venture size and age, syndication, and investment stage. They are especially pronounced for consumer-facing, IT, smaller, and younger ventures, and for industries more exposed to the Act. The key mechanism is that financial risk moderates the effect: ventures and deal structures with less capacity to absorb or share downside risk experience larger reductions, as single-investor deals decline while syndicated deals do not, and seed-stage deals fall more than early- and later-stage deals. The paper has been presented at CIST, SCECR, and BizAI.

Designing AI for High-Stakes Medical Decisions: Evidence from Organ Offers (with Mohammad Rahman;

data analysis stage). When a donor organ becomes available, transplant centers must decide within hours whether to accept it for a waiting patient, and many usable organs are ultimately declined. This project studies how AI should be designed to support such high-stakes decisions, and whether AI-assisted decisions can improve organ utilization and patient outcomes. It extends my dissertation's focus on how AI creates value to a setting where better decisions save lives.

Why this tutorial. The tutorial would give me a deeper grounding in the frontier economics of digitization and AI, and the chance to receive feedback from leading scholars in the field. I am especially eager to learn how economists measure AI adoption and its productivity effects, which is central to my dissertation.

4. Publications

- Yuan, H., **Zheng, J.**, Ye, Q., Yang, M., Qian, Y., 2027. Harvesting trade partners online with AI: A joint learning method for predicting the business role of massive web pages. *Journal of Business Research* 219, 116538.
- **Zheng, J.**, 2026. AI Regulation and Venture Capital Investment. *Proceedings of the International Conference on Information Systems (ICIS)*.
- Yuan, H., **Zheng, J.**, Ye, Q., Qian, Y., Zhang, Y., 2021. Improving fake news detection with domain-adversarial and graph-attention neural network. *Decision Support Systems* 113633.

5. Honors and Awards

- **Gayle and Frank Johnston Scholarship**, Regenstrief Center for Healthcare Engineering ($2,500), 2025
- **Crowe Graduate Student Scholarship**, Regenstrief Center for Healthcare Engineering ($5,000), 2024
- **The Bravo Award**, 2024
- **Chinese National Scholarship** (top 0.1% of graduate students nationally), 2021
- **First-Prize Academic Scholarship**, 2021
- **The 3rd Prize (National) in the 2020 CCF Big Data & Computing Intelligence Contest**, Fake News Detection on the Internet during COVID-19 Track (top 3 among nearly 2,000 teams nationwide), 2020
- **The 24th Place (National) in the 2020 National Artificial Intelligence Challenge**, AI + Wireless Communication Track (top 24 among around 2,000 teams nationwide), 2020
- **First-Class Scholarship for Incoming Graduate Students**, 2019
- **The 1st Prize (National) in the 2017 National Undergraduate Electronics Design Contest**, 2017