Dear Members of the Selection Committee,

My name is Yuhe Li, and I am a fourth-year PhD student in Economics at the University of Wisconsin–Madison. I have been enrolled in the program since Fall 2023 and expect to complete my PhD in Spring 2029. My primary fields are industrial organization and labor economics, and my committee members are Professor Alan Sorensen and Professor John Kennan. My working dissertation title is *The Dynamic Economics of Generative AI: Firm Innovation, Skill Formation, and Public Knowledge.*

Research interests and current projects

My research studies how generative AI changes incentives for firm innovation, knowledge production and human learning. I focus on settings where AI is already widely applied: frontier AI firms competing with one another, online and academic communities where AI is commonly used, and students who learn with AI tools from the start. The first three working projects are mainly developed with a structural or game-theoretic model, followed by estimation or calibration with data, which enables me to conduct policy analysis by running counterfactuals; while the last project is an experiment.

1. *AI Benchmarking and the Direction of Innovation.* Benchmarks are the main way AI firms disclose quality, and firms choose which ones to report. If benchmarks are misaligned with the tasks users value, selective reporting can steer the innovation effort of the entire industry. I compare benchmark scores with human preference ratings from LMArena and develop a model of the welfare loss when benchmark design pulls firms' innovation incentives away from useful improvements. The policy question is what a standardized, externally determined set of benchmarks should look like, and who should set it.

2. *Strategic Product Releases in the Generative AI Industry.* This project asks how fast, and in what order, frontier capability arrives when release timing is a strategic choice. Combining release dates with performance scores, I document that releases cluster in time and that laggards respond asymmetrically to the leader's releases. I model the industry as a dynamic leader–laggard release game and estimate it by simulated method of moments. The estimated model allows me to ask whether competition accelerates the frontier or splits it into smaller, hastily shipped increments, and how the pace of improvement would change under policies such as pre-release evaluation requirements.

3. *Generative AI and the Knowledge Commons.* Platforms such as Stack Overflow and GitHub supplied the human-written data behind today's LLMs, and the same models now substitute for asking and answering questions on them. Using monthly data on six topic tags from the Stack Overflow API (2019–2026), I am developing a dynamic structural model of contribution decisions to ask whether generative AI crowds out or reshapes these platforms, and what this implies for the long-run supply of open knowledge. A related project treats academic publishing as a second knowledge commons. When AI makes polished manuscripts cheap, publication becomes a weaker signal of an author's underlying ability, which society values through teaching and applied expertise as much as through the paper itself. I model the resulting decline in the informativeness of publication and ask whether an oral component to refereeing, in which authors defend their work interactively, can restore the signal, and at what cost.

4. *AI and Human Capital Formation.* This project grew out of my experience as a TA for a Python course, where students with different prior coding experience used AI tools and ended

up with different learning outcomes. I plan to run classroom experiments comparing students who learn a skill before using AI with students who learn it with AI from the start, to identify when AI complements skill accumulation and when it substitutes for it. I plan to extend this project to explore how this will affect the productivity of knowledge workers, and discuss how firms may design employee training programs to maintain productivity level when more AI-native workers enter the workforce.

Fit with the tutorial

I am very interested in this tutorial as I saw the past programs map closely onto my projects. In particular, the lectures on organizational learning technologies and on AI and economic growth speak to my human capital and innovation projects. I hope to:

- hear which questions in the economics of AI the field's leaders consider underexplored, and what evidence they would find convincing on questions like mine;
- learn how researchers in digital economics combine industry data with theory and identification to get more insight on my benchmarking and product release projects;
- learn how frontier researchers use AI and ML methods in their own research workflow. I believe knowing how to use AI to do research is itself a research skill, and the relevant shift is in skill composition, from doing good research with conventional methods to harnessing AI tools well;
- meet other early-career researchers working on these problems, and share in return my knowledge on structural and game-theoretic approach and the data I have collected from the AI industry.

Attending the Digital Economics and AI meeting afterwards would let me see how papers in this area are presented, challenged, and revised, which is the stage my own projects are about to reach. I would be very grateful for the opportunity to participate in the tutorial and the associated meeting.

Sincerely,

Yuhe Li
Department of Economics, University of Wisconsin–Madison
yli2492@wisc.edu
Phone Number: +1 608 690 9938