Application for NBER Digital Economics and AI Tutorial

Peyman Shahidi

To whom it may concern,

I am writing to express my interest in the NBER *Digital Economics and AI Tutorial* program for February 2026. I am a **3rd-year** Ph.D. student (enrolled in 2023) at the *Sloan School of Management, Massachusetts Institute of Technology*, with a background in engineering and economics. I have completed my doctoral coursework in economics and computer science, and I believe my profile and research interests align closely with the goals of the program.

Research. My primary research interests are in labor economics, market design, and the economics of artificial intelligence (AI). In one project, titled "The Economic Impacts of Generative AI on the Structure of Work," my co-authors and I ask what happens to the structure of work when a general-purpose technology such as AI can facilitate or autonomously perform a large share of tasks. We study how firms reorganize sequences of tasks into jobs, and how they decide which parts of a workflow to keep with humans, which to augment with AI, and which to fully hand over to AI. The goal of this paper is to provide a framework for thinking about how AI changes firms' organizational structures and the boundaries of workers' responsibilities, and to show that the main impacts of AI may come not from "replacing" isolated tasks but from reshaping whole stretches of work. Our findings help reconcile micro evidence on AI's effectiveness at particular tasks with macro evidence on employment and wages, and they offer a way to interpret emerging patterns in job design and AI adoption across occupations as part of a coherent story about how AI reorganizes production inside the firm.

In a complementary project, and as a natural next step to the previous paper, I have begun studying how AI has changed the skill requirements of jobs. The goal of this project is to develop a structural model and measure how AI has shifted the composition of skills needed within jobs, as well as to examine the distributional impacts of AI across industries. More broadly, this line of work contributes to a growing effort to understand how generative AI is reshaping work. A central theme of these projects is examining how firms reorganize the division of tasks between AI systems and human workers, whether AI is deployed as an autonomous performer of tasks or as a complementary tool that restructures what workers do, and the implications for worker skills, wages, and career outcomes.

I have also recently contributed to a book chapter in the NBER volume *Economics of Transformative AI* titled "The Coasean Singularity? Demand, Supply, and Market Design with AI Agents." In that chapter, my co-authors and I discuss how AI agents may reshape economic activity by lowering transaction costs and outline several promising research directions in this domain. Relatedly, an early-stage project I am exploring focuses on how AI agents can facilitate matching in online platforms, especially in environments with strong complementarities where standard matching algorithms fail to deliver stable outcomes. Without AI, theoretical market design has long struggled with settings involving complementarities. With large language models and their natural language processing capabilities, identifying or representing complementarities in a rich, high-dimensional space becomes far easier, leaving room to improve matching outcomes relative to conventional approaches currently used in practice.

Coursework and Skills. During my first two years at MIT, in addition to the core Ph.D. microeconomics and econometrics sequences, I completed coursework in labor economics, market design, industrial organization, advanced econometrics, and machine learning.

I have experience with both theoretical and empirical research, including developing and implementing models for quantitative analysis. Through past projects, I have become proficient in multiple programming languages and statistical software, including Python, R, and Stata. I regularly use these tools, along with causal inference and machine learning methods, in my research.

Closing Remarks. Given my research interests and background, I see a strong alignment between my work and the *Digital Economics and AI Tutorial* program. It would be an excellent opportunity and a privilege for me to learn from and engage with scholars working at the frontier of these domains while further developing tools that will enhance my doctoral research.

Thank you for considering my application.

Sincerely,

Peyman Shahidi

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Peyman Shahidi

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Education

Massachusetts Institute of Technology *2023 – (2029)*
Ph.D. in Management Science

Sharif University of Technology *2013 – 2018*
B.Sc. in Electrical Engineering, Minor in Economics

Work Experience

University of Chicago, Booth School of Business *2021 – 2023*
Research Assistant to *Prof. Eric Budish* and *Prof. Anthony Lee Zhang*

- Theory and empirical research on topics in Industrial Organization, Market Design, Market Microstructure, and Economics of Cryptocurrencies.

Research Interests

Applied Microeconomics, Market Design, Labor Economics, Economics of AI

Working Papers

Remote Work and The Ruble Collapse: A Global Labor Market Equilibrating?
(with John Horton and Anand Shah)
Revise and Resubmit at Journal of Labor Economics

The Economic Impacts of Generative AI on the Structure of Work
(with Mert Demirer, John Horton, Nicole Immorlica, and Brendan Lucier)

Changes in Online Taxi Drivers' Labor Supply: Experience or Price Effect? Evidence from an Iranian Ridehailing Platform

Book Chapter

The Coasean Singularity? Demand, Supply, and Market Design with AI Agents
(with Gili Rusak, Benjamin Manning, Andrey Fradkin, John Horton)
Economics of Transformative AI

Programming Skills

Python, R, Stata, MATLAB, C#

Selected Graduate Courses

Market Design: *Theory and Empirics of One- and Two-sided Matching Markets, Auctions, Waitlist Mechanisms*
Labor Economics: *Supply and Demand of Labor, Search Models, Roy Model, Assignment Models, Labor Market Unions*
Econometrics: *Extremum Estimators, Distributional Regression, Debiased & Doubly Robust ML, High Dim. Panels*
Nonlinear Econometrics: *RCT, IV (ATE, ATT, LATE), SMM, Quantile Regression, Matching, Synthetic Controls, Discrete Choice Models, Nonparametric and Semi-parametric Inference*
Machine Learning: *Supervised & Unsupervised Learning, Neural Networks, Auto-Regressive & Diffusion Models, Q-Learning, Distribution Shift, Few-Shot Learning, Foundation Models*