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Selection Committee
NBER Digital Economics and AI Tutorial
National Bureau of Economic Research

Dear Members of the Selection Committee,

I am writing to apply for the NBER Digital Economics and AI Tutorial in January 2027. I am a third-year PhD student in Economics at the University of Pittsburgh. I have taken second-year PhD courses in labor and health economics, environmental economics, and experimental economics. My research focuses on the economics of technology and innovation. I study how artificial intelligence affects economic outcomes and how large language models can help economic research.

I want to understand how AI changes people's everyday lives. My current research studies the economic and social consequences of digital technologies and AI. In my second-year paper, *The Local Air Pollution of Data Centers*, I examine the environmental externalities of digital infrastructure using facility-level permitting records and satellite-based air pollution measurements. I use a stacked spatial difference-in-differences design and find that data centers increase local sulfur dioxide concentrations. This is an often-overlooked social cost of the digital economy. In another paper, *Predictive AI Diffusion and Population Health: Evidence from U.S. Household Panel Data, 2011–2023*, coauthored with Nikhil Dilip, Osea Giuntella, and Robert Seamans, we examine the health consequences of predictive AI adoption. We construct a shift-share measure of AI exposure using LinkedIn data on the diffusion of AI skills across industries and baseline employment shares and link it to the NielsenIQ Consumer Panel Ailment Survey. We find no statistically or economically significant effects across a range of health outcomes, and our estimates are precise enough to rule out even modest adverse effects.

I want to understand how AI changes the way researchers work. I already use large language models in my own economic research. In my ongoing project, *A Flatter Ladder, Not an Open One: Race and Wages in American Steel, 1910–1950*, coauthored with Haihan Deng and Randall Walsh, I study how unionization affected racial inequality in the steel industry. We use vision-language models to digitize historical employee records and extract information on workers' occupations, wages, and demographic

characteristics. This work has made me interested in how generative AI can help researchers collect data at lower cost and conduct research faster. I am also designing a survey experiment on how researchers perceive and evaluate AI use in writing papers and peer review. I hope to learn where AI can help researchers and what determines whether they accept its use in academic work

I hope to learn more about current research in digital economics and AI at the NBER tutorial and get feedback from leading researchers working on these topics. I am particularly interested in new research questions in this field and how researchers design surveys or experiments to answer them. The tutorial would build on my graduate training and help me develop my research agenda.

Thank you for considering my application. I would be grateful for the opportunity to participate.

Sincerely,
Youzheng Jia

YOUZHENG JIA

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EDUCATION AND GRADES

PhD in Economics, University of Pittsburgh 2024.8 – Now

MA in Economics, University of Pittsburgh 2024.8 – 2025.12

Bachelor in Economics & Bachelor in Science, Peking University 2020.9 – 2024.7

RESEARCH

Working Papers

· The Local Air Pollution of Data Centers

This paper estimates the causal effect of data centers on local sulfur dioxide (SO_2) air pollution in the United States. Data centers test backup diesel generators after receiving air permits, and that commissioning process emits SO_2. I combine facility-level permit data with satellite-based grid-level measurements and estimate the effect of data centers permitted between 2021 and 2022 using a stacked spatial difference-in-differences design. In the year when data centers get permits, SO_2 rises by 0.16 ppb within 10 km, or 0.13 standard deviations. The SO_2-related mortality costs within the treatment region are around $800,000 in 2006 dollars in one year.

Presentation: University of Pittsburgh, CCERSI 2026, 2026APPAM(scheduled), ASSA 2027(scheduled)

· Predictive AI Diffusion and Population Health: Evidence from U.S. Household Panel Data, 2011–2023

with Nikhil Dilip, Osea Giuntella, and Robert Seamans

Presentation: University of Pittsburgh, ASHECON 2026, 2026APPAM(scheduled)

Working in Progress

· A Flatter Ladder, Not an Open One: Race and Wages in American Steel, 1910–1950

with Haihan Deng, and Randall Walsh

PROFESSIONAL SERVICES

Refereeing

Labour Economics

Student Organization

Graduate Representative to the Economic Graduate Committee, 2025–2026

RESEARCH INTERESTS

- Technology and innovation: what determines the use and supply of new technology?
- Economics of AI: what is the consequences of AI development?

REFERENCE

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