Application for NBER Summer Camp (Liujie Wu)

Cover Letter

Dear Members of the Committee,

I am writing to apply for the NBER Innovation Research Boot Camp in July 2026. I am currently a third year PhD student in Public Policy and Management at Carnegie Mellon University's Heinz College (liujiew@andrew.cmu.edu). My primary research interests lie in the economics of technological innovation and diffusion, with a particular focus on the impact of artificial intelligence.

My current research examines how AI advances are transforming firm productivity and workforce dynamics. Given that the economics of innovation is often dispersed across fields, I see the boot camp as a setting for concentrated intellectual exchange that will help strengthen and clarify my research.

A recommendation letter will be submitted by my PhD supervisor, Prof. Lee Branstetter. Thank you very much for your consideration. I would be honored to participate in the 2026 Innovation Research Boot Camp.

Best regards,



Liujie Wu

Curriculum Vitae

Education

- Renmin University of China, Bachelor of Public Management, 2016-2020
- University of Chinese Academy of Sciences, Master of Public Policy, 2020-2023
- Carnegie Mellon University, Public Policy & Management, 2023-

Research Experience

- Quantifying the Impact of AI on Productivity and Labor Demand, Carnegie Mellon University, 2024-
    - Worked with Lee Branstetter (CMU), Sonny Tambe (Wharton), and Ed Hovy (University of Melbourne) to build comprehensive data sets on AI-related inventions and the education and movement of elite AI talent.
- Annual report on China's manufacturing innovation and development 2021, Chinese Academy of Sciences, 2022
    - Led the construction and calculation of industry-level innovation indices and developed visualization models to analyze and illustrate the evolutionary trends and structural characteristics of innovation in key sectors.
- Mechanism of innovation-driven development funded by the National Social Science Major Project, 2021
    - Examined the temporal and spatial evolution of urban collaborative innovation networks using entropy-weighted indices and a gravity-model framework.

Published/Working Papers

[1] The Transmission of Frontier AI Science from Academia to Industry: The Role of Students of Superstar Scientists, CMU working paper
[2] Elite Talent and Firm Productivity in the Age of AI, CMU working paper
[3] Mu, R., & Wu, L. (2025). The impact of local government cooperation on regional collaborative innovation: Evidence from the Yangtze River Delta Urban Economic Coordination Council. Science & Technology Progress and Policy, 42(13), 36–47. (Chinese)
[4] Wu, L., & Guo, J. (2024). Evolutionary trends of China’s strategic emerging industries policies: A policy mix perspective. Innovation Science and Technology, 24(3), 12–26. (Chinese)

Completed PhD Courses

Econometrics Theory and Methods	Machine Learning
PhD Econometrics	Natural Language Processing
PhD Microeconomics	Judgment and Decision Making
Information Economics	Analytical & Structural Marketing Models
Behavioral Economics	Generative AI: Economic & Social Aspects

My Research Agenda: Human Capital and AI Invention

My current research studies the relationship between AI-driven innovation and firm performance. Using a combination of patent data, publicly available financial data on publicly traded companies, and confidential micro data maintained by the U.S. Census Bureau, I analyze how firms' engagement with AI technologies influences productivity, innovative output, and growth.

A second line of research focuses on the education, allocation, and movement of AI talent, including experts trained up to the Ph.D. level by the world's top AI scientists. As AI changes the nature of knowledge production, it may also alter how inventors and AI-skilled workers sort across firms, teams, and locations. In ongoing and planned projects, I study worker mobility using data on elite AI talent, examining how exposure to AI technologies affects movement, collaboration, and career trajectories. This research highlights the role of labor market dynamics in shaping knowledge diffusion and firm performance.

To support this research, I have worked with a team of CMU graduate students to construct two complementary large-scale datasets capturing both human capital and technological activity. The first tracks the academic lineage and subsequent U.S. labor market careers of over 15,000 PhD-level AI researchers. This dataset is built by identifying elite AI scholars across 9 sub-disciplines of AI and linking them to their doctoral students and post-doctoral advisees using bibliometric data, faculty websites, and dissertation records from ProQuest. We then trace out the career histories of these students and advisees using data from LinkedIn and Revelio Labs. The second dataset begins with all U.S. utility patents granted between 1990 and 2024. AI-related patents are identified using PaLLaFi, a multi-stage classification framework that integrates fine-tuned supervised models, large language models, and human-in-the-loop validation to capture the evolving and interdisciplinary nature of AI inventions as reflected in the text of U.S. patent documents. These patents are then linked to the firms that invent them, using data from Compustat and confidential microdata from the U.S. Census Bureau. Together, these data allow us to link AI innovation, firm outcomes, and the allocation and mobility of AI talent at scale.

Looking ahead, we plan to extend this research by linking AI-related patents to the scientific publications they cite, to trace the underlying technological trajectories that connect frontier research to applied innovation. This approach will help map how AI knowledge diffuses across firms and fields, and whether technological progress in AI follows distinct paths or converges toward a more homogeneous set of methods and ideas, as some prominent computer scientists suggest has happened since the advent of LLMs.

I am eager to attend the NBER Innovation Research Boot Camp because it offers a focused forum for intellectual exchange in an inherently interdisciplinary field. The opportunity to engage with leading scholars and peers would be invaluable as I refine my research agenda and position my work within the economics of innovation.

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Lee G. Branstetter
Professor of Public Policy and Economics

February 10, 2026

To Whom It May Concern:

I am pleased to write a letter of recommendation for the NBER Innovation Boot Camp on behalf of my student and collaborator, Liujie Wu. Over the years, I have nominated a number of Carnegie Mellon doctoral students for participation in this outstanding program. Many of them have gone on to successful academic careers at leading universities in the U.S. (Britta Glennon, Wharton), China (Huiyan Zhang, Tsinghua University), Latin America (Ricardo Laverde, INSPER), and elsewhere.

At this relatively early stage in her academic career, Liujie has already demonstrated a growing mastery of economic theory, standard econometric tools, and natural language processing techniques. To these skills, she adds an increasingly effective and creative use of LLMs to advance research, an impressive work ethic, and an abiding interest in advancing our field. Our Ph.D. program pushes students to begin the research process early, and Liujie displayed impressive intellectual independence, grit, and creativity in the completion and presentation of her first thesis chapter. She seems every bit as likely as her aforementioned predecessors to make significant scientific contributions in the coming years. Participation in the Innovation Boot Camp will broaden her knowledge of the literature, introduce her to leading scholars, and provide her with the opportunity to interact with her peers at other leading institutions.

If you have any questions about Liujie, I would be happy to address them. Please feel free to contact me using the information provided above. I give Liujie's application my strongest possible recommendation.

Best regards,



Lee Branstetter
James Walton Professor of Economics
Carnegie Mellon University