Application for NBER winter digitization tutorial 2027

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Course of Study:

I am a 3nd year PhD student in Public Policy at Carnegie Mellon University. My area of study is the AI, labor, and international trade. My advisors are Brian Kovak and Lee Branstetter (feel free to contact them for references).

Selected Coursework (all PhD level):

- Microeconomics
- Econometrics sequence
- Topics in Labor and Health Economics
- Structural models sequence (Robert Miller, Rebecca Lessem)
- Introduction to Deep Learning (Bhiksha Raj, Rita Singh)
- Foundations of Information Systems Research (Avinash Collis)
- Human and Algorithmic Bias (Yan Huang)

Research Interests:

I have passed my first research paper presentation which is going to be my first chapter of my dissertation, and I am currently working on my second chapter.

Paper 1: Generative AI and the labor effect in India (First chapter)

This research examines the impact of generative AI on the Indian labor market. Extending an emerging literature that has documented negative employment effects in the United States and Europe, this paper asks whether the same occupational exposure to large language models generates comparable labor market disruption in India's formal, knowledge-intensive sector — where generative AI adoption is likely to be most salient. Using LinkedIn profile data from 2021– 2025, the analysis applies a difference-in-differences design that treats the launch of ChatGPT in November 2022 as an exogenous shock, and estimates whether occupational exposure to generative AI tools is associated with employment declines. The results suggest that while in the U.S, higher occupational exposure is associated with significant employment declines, in India the same exposure measure yields null effects. The institutional characteristics of India's IT sector provide a plausible structural explanation for the null result. India's software services industry operates predominantly on headcount-based outsourcing contracts, in which firm revenue scales directly with the number of workers deployed rather than with output per worker. Under this commercial structure, AI-induced productivity gains need not translate into

workforce reductions; instead, firms may expand capacity and bid on additional contracts. This mechanism is consistent with the theoretical predictions of Acemoglu & Restrepo (2018), under which the introduction of new general-purpose technologies can generate new tasks and expand labor demand, particularly in economies with abundant labor supply. Given India's large and continuously replenished pool of IT-trained graduates, the extensive margin of adjustment — absorbing new entrants into exposed occupations rather than displacing incumbents — may dominate in the near term in a way that has no parallel in the tighter U.S. labor market. Taken together, the evidence suggests that the negative employment effects of generative AI documented in the U.S have not propagated to India over the 2021–2025 sample window in any discernible way. This evidence from developing economies shows how the same technological shock can generate different labor market outcomes depending on institutional context, and the possibility of a time lag in the realization of effects.

Committee members:

- Brian Kovak
- Lee Branstetter
- Andrew Garin
- Felix Koenig

Paper 2: Who Can Enter AI Capital Trade? Capability Accumulation and Diffusion in Taiwan

In this paper, I plan on studying whether previous trade exposure impacts the innovative capacity of Taiwanese firms in the AI capital supply chain, such as semiconductors, servers, and associated equipment. The main question is whether participation in AI capital trade primarily benefits firms that accumulated capital, technological knowledge, and customer relationships during Taiwan's earlier electronics expansion, or whether those capabilities also enable independent firms to enter and develop new products. Using firms' historical trade and investment trajectories to explain their subsequent participation in AI-related production and exports, I propose to link firm-level customs, financial, ownership, patent, and employer–employee records to follow firms that began as SMEs, distinguish expansion within existing corporate groups from independent entry, and investigate whether the movement of experienced workers transmits capabilities to new AI exporters. Building on Aw, Roberts, and Xu (2011), I hope to combine reduced-form evidence on historical integration and subsequent AI-market entry with a dynamic model in which trade-induced investment changes not only incumbent exporters' productivity, but also other firms' opportunities to innovate and export. The model would quantify how capability accumulation and diffusion affect entry, export concentration, and the gains from AI capital trade, helping distinguish policies that support productive investment in established firms from those that broaden access to the capabilities needed by new exporters.

Paper 3: Generative AI, entry, and product variety in creative industries
(with Mike Smith, CMU Heinz)

In this research agenda, I am interested in how GenAI has lowered the cost of producing books, images, music, and video, and hence the fixed cost of entering creative industries. The question is whether lower entry costs have produced more variety or more of the same. In theory, cheaper creation benefits consumers by expanding product variety, and because creative product quality is hard to predict before release, more entry also means more products that turn out to be good (Aguiar and Waldfogel, 2018). But if new entrants rely on the same few foundation models, their outcomes may be correlated, so more entry could mean a congested market of similar products rather than more variety or genuinely distinctive work. On the other hand, the opposite mechanism could dominate: people with creative ideas but without the technical skill to execute them can now produce, which could widen the range of ideas in the market. Through a collaboration with a publishing firm and a motion picture studio, I could combine title-level production and sales data with text and image embeddings to measure product similarity and novelty at scale.

The second question is what this means for creators. Digital technology has long pushed in two directions at once: it lowered the cost of production, while piracy and streaming undermined creators' revenue. So far the cost effect appears to have offset the revenue loss, as creative output and quality held up through digitization (Waldfogel, 2017). GenAI pushes both forces further, which raises the question of whether this precarious balance breaks. Related questions are whether, once a market is congested, large studios and publishers with brand value and consumer trust capture a larger share of demand, and whether we see entry of part-time creators using this as a secondary income source, alongside crowding out of incumbent creators, especially early-career ones. Through these empirical exercises, I hope to explore whether lower entry costs democratize creative production, or whether AI shifts the gains toward those who already own brands and audiences.