RENTIAN ZHU

Application: NBER Digital Economics and AI Tutorial · Stanford University · January 20–21, 2027

CONTACT INFORMATION

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GRADUATE STUDY

I am a third-year PhD student in Economics at Copenhagen Business School (CBS). I enrolled in September 2024 and expect to defend in 2028. I completed the two years of PhD coursework required by the CBS programme and the Danish Graduate Programme in Economics (DGPE) in 2024–2026, and I am now working full time on my dissertation. Before the PhD I completed the MSc in Advanced Economics and Finance at CBS (2022–2024, GPA 11.3/12), with a thesis on measuring skill requirements in the Danish labour market with large language models, and a BBA at The Chinese University of Hong Kong, Shenzhen (2018–2022, top 5%).

Since 2026 I am an Affiliated Researcher at the Pioneer Centre for AI, University of Copenhagen. I have spent research visits at the University of Oxford (Recognised Student, April–June 2025, and again in March 2026, hosted by Barbara Petrongolo and Mathias Fjællegaard Jensen), the Collège de France (April 2026, hosted by Philippe Aghion and Antonin Bergeaud), and the University of Chicago (May 2026, hosted by Anders Humlum). After the PhD I expect to take up a one-year postdoctoral position at the Department of Economics, University of Copenhagen.

RESEARCH INTERESTS

My research sits at the intersection of **AI**, **labour**, and **innovation**. I ask how people live and how they can live better: how work shapes wellbeing, and how technological change, from patents to large language models, reshapes the opportunities workers have. Methodologically, I combine Danish administrative registers with text data (job postings, patents) and treat large language models both as an object of study, the technology whose adoption and labour-market effects I measure, and as a measurement tool for turning text into economic variables at scale. The tutorial's focus on digital economics and AI is a direct match for this agenda, and I would value the chance to discuss measurement, identification, and the economics of AI adoption with the research leaders in the field.

DISSERTATION

Title. *Essays on the Future of Work: AI, Innovation, and Worker Wellbeing Using Large Language Models and Microdata*

Short description. The dissertation asks how AI and digital technologies change what firms demand from workers, how work is organised, and how these changes feed through to workers' productivity and mental health. It consists of empirical essays that link Danish full-population registers to text data and apply large language models to measure skills, workplace flexibility, and technology exposure. Three essays are at the working-paper or advanced stage and two are in progress.

Supervisors / committee. Moira K. Daly (primary supervisor, Associate Professor of Economics, CBS) and Dolores Romero Morales (secondary supervisor, Professor of Operations Research, CBS). The

assessment committee will be appointed closer to the defence.

ONGOING RESEARCH PROJECTS

Digital Readiness, Remote Work, and Mental Health During and After COVID-19
With Moira Daly · working paper, September 2026 · supported by the ROCKWOOL Foundation

The pandemic did not simply move work from offices to homes; it revealed a divide in which jobs could adapt when physical presence became costly. We link Danish registers for 2015–2023 to online job advertisements and follow white-collar workers employed in 2019, assigning each the digital intensity of her 2019 four-digit occupation and holding this exposure fixed through 2023. The estimand is an intention-to-treat effect of baseline occupational digital readiness. Workers in more digital occupations experienced relative declines in prescription-based mental-health treatment after 2019, with the clearest reductions in depression- and sleep-related prescriptions among women, persisting into 2022–2023. Realised work from home, commuting, and family outcomes move sharply around 2020, while earnings show no discrete break.

LLMs as Economic Measurement Tools: Skill Demand and Workplace Flexibility in Job Postings
With Daniel Hardt · ROCKWOOL Foundation working paper · PI of a Deic compute grant (LLM4Skill-Flexibility)

We build and validate a framework for turning job postings into firm-by-month measures of skill demand and workplace flexibility. A 25-category taxonomy covers digital skills, general skills, and flexibility amenities such as remote work and flexible hours. Prompted LLMs return a binary label and supporting text evidence for each category; we benchmark against 986 human-annotated postings and keyword baselines, tune decision thresholds on token log-probabilities, and fine-tune a small model. Open-source models (Llama 3.3 70B) match GPT-4.1-class accuracy (about 85%) and both clearly beat keyword methods. Two validations show that LLM-based skill measures predict firm productivity better than keyword measures, and that work-from-home measures correlate with survey-reported arrangements.

Making AI Productive: Evidence from the Danish Economy
With Anders Humlum, Evan K. Rose, and Emilie Vestergaard · in progress

This project studies how the adoption of generative AI tools translates into productivity in Danish firms, combining linked employer–employee registers with survey evidence on AI use at the worker and firm level.

The Age Bias of Innovation
With Kai Arvai, Antonin Bergeaud, and Katja Mann · in progress

We ask whether the direction of innovation is biased toward or against older workers, using patent text to characterise the age profile of the tasks and skills that new technologies complement or replace, and linking this to demographic change in the workforce.

The Role of Work and Workplaces on Mental Health
With Barbara Petrongolo, Marco Manacorda, and Mathias Fjællegaard Jensen · in progress; presented at SOLE 2026 and EEA 2026

Using Danish matched employer–employee data and prescription records, we estimate how employment and individual employers affect workers' mental health, separating the effect of having a job from the effect of the particular workplace.

SELECTED PRESENTATIONS

SOLE Annual Meeting 2026 (Denver) · EEA Annual Congress 2026 (Dublin) · AI in the Workplace Conference 2026 (University of Chicago) · Economics and Innovation of AI Network Workshop (talk and Methods Fair lightning pitch on using Claude Code for replication-package documentation, conference-paper scraping, and patent-text NLP).