Xinyuan Lyu

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RESEARCH INTEREST

Industrial Organization, Structural Econometrics, AI & Deep Learning Methods in Economics and Business

EDUCATION

Duke University, Durham, USA   2024.08-present
***M.S.** in Economics and Computation* **GPA**: 4.00/4.00 (top 1%)
Core Curriculum: Econometrics (PhD) (A+, Ranked 1st), Deep Learning (A+, Ranked 1st), Real Analysis (A),
Advanced Deep Learning (A+), Natural Language Processing (A+), Causality and Machine Learning in Econ (A)
Ongoing Courses: Quantative Marketing (PhD), Industrial Organization (PhD), CS Advanced Topic: LLM

Peking University, Beijing, China   2020.09-2024.06
***B.A.** in Economics; **B.A.** in Philosophy* **GPA**: 3.91/4.00 (top 5%)
Core Curriculum: Calculus (A+), Probability & Statistics (A+), Microeconomics (A), Macroeconomics (A),
Econometrics (A+), Applied Micro Econometrics (A+, Ranked 1st), Applied Time-Series Analysis (A+), Labor
Economics (A+), Monetary Economics (A+), Finance (A+), Social-Econ Survey Data Analysis (A+, Ranked 1st)

University of California, Berkeley, Berkeley, USA   2023.06-2023.08
Summer School **GPA**: 4.00/4.00
Core Curriculum: Linear Algebra and Differential Equations (A+), Game Theory (A+)

RESEARCH EXPERIENCE

The Relationship Between U.S. Media Reporting and ATT of the China Industrial Policy
Research Assistant, Project Supervisor: Prof. Daniel XU & Shaoda WANG   2025.05-present
– Contributed to the project investigating the determinants and effects of China's industrial policy using novel
multi-source data. Responsibility involved constructing a comprehensive newspaper database from multi U.S.
news sources, and developing a large-scale pipeline to extract, process, and structure millions of news records.
Implemented natural language processing (NLP) methods, including multi-label classification and large language
models (LLMs), to systematically identify mentions of Chinese industrial policy as well as the sentiment analysis.

Spillovers of Housing Supply Shocks: Prices, Migration, and Workplaces
Research Assistant, Project Supervisor: Prof. Franklin QIAN   2025.03-present
– Contributed to research by developing and implementing a quantitative spatial equilibrium model to analyze
housing supply shock spillovers. Responsibilities included developing and deriving models and calibrating and
estimating model parameters using structural econometrics techniques, computationally solving for the model's
general equilibrium, and designing and executing counterfactual simulations to quantify the impact of hypothetical
policies on regional prices, migration flows, and workplace choices.

The Impact of Tele-Fraud Activity in Northern Myanmar on the China–Myanmar Border Region
Independent Research, Project Supervisor: Prof. Michael Pollmann   2025.02-2025.05
– Analyzed economic impacts of cross-border telecom fraud (China-Myanmar border) using grid-level NTL and
city-level migration panel data. Applied Difference-in-Differences, event study, and tailored Synthetic Control
Methods (SCM/ASCM) to address challenges of confounding factors and data limitations, identifying treatment
effects on local economic activity and population mobility.

Autoregressive Probabilistic Point Process Prediction Enhanced with Generative Methods
Independent Research, Project Supervisor: Prof. Vahid Tarokh   2024.09-2024.12
– Developed a hybrid point process prediction modeling framework that integrates autoregression method and
probabilistic generative models (including VAEs and GANs). Validated the approach on large-scale datasets, in-
cluding New York Taxi trip data and Taobao user interaction data, achieving superior performance in event type
prediction accuracy and event time prediction RMSE compared to prior discriminative models.

The Policy Evaluation of "Township Consolidation" and "County boundary adjustment" in China
Research Assistant, Project Supervisor: Prof. Xuan WANG   2023.09-2024.03

– Conducted comprehensive analysis using National Tax Survey Panel Data (Over 10 Million Records); leveraged mapping APIs for bulk geocoding of firms' addresses and integrated these coordinates with administrative division base maps to determine historical jurisdiction affiliations (GIS). Applied Difference-in-Differences methodology to evaluate the impact of governance area changes arising from Township Consolidation and County Boundary Adjustment policies (1997-2015) on firms' tax statuses.

Field Research and Experiment on Migrant Workers in Gig Economy in Yangtze River Delta
Research Assistant, Project Supervisor: Prof. Dandan ZHANG   2023.09-2023.11
– Conducted comprehensive analysis of employment channels in the manufacturing sector; investigated the role of labor intermediaries in shaping labor market dynamics. Identified key factors driving employment instability and potential solutions through direct interviews and subsequent analysis. Additionally, contributed to the development of a research plan examining the influence of social networks and colleague relationships on labor market performance and employment stability by assisting in the design of a randomized controlled trial (RCT) and pilot surveys and questionnaires.

The Impact of Family Health Shocks on Individuals' Labor Market Outcomes and Mental Health
Independent Research, Project Supervisor: Prof. Xiaoyan LEI & Yaohui ZHAO   2023.03-2023.07
– Utilized the China Family Panel Studies data, and employed the staggered DiD method to identify the effects of various health shocks from different family members on individuals' labor market performance and mental health level, and took robustness checks to make the result convincing. Furthermore, conducted an exhaustive heterogeneity analysis, which validated with empirical results the great disparities in gender, age, urban-rural distinction, and job types in the labor market characters under unexpected shocks.

WORK EXPERIENCE

Treasury Department Intern   2025.06 – 2025.08
China Merchants Bank Co., Ltd., New York Branch   *New York, USA*
• Collected and processed market and trading data to assist in yield curve construction for daily FTP updates.
• Developed prediction models to forecast interest rates, yield curve, and liquidity indicators for liquidity planning.
• Researched and analyzed market indicators and various fixed income trading strategies, preparing reports and providing research support to assist asset management and other decision-making processes.

AI & Large Language Model Intern   2024.05–2024.08
China Unicom Digital Technology Co., Ltd, AI Innovation Center   *Beijing, China*
• Conducted research on robustness and security of Retrieval-Augmented Generation (RAG) systems, identifying key vulnerabilities and potential adversarial attack strategies targeting the LLM based RAG system.
• Experimented with and evaluated defense and mitigation techniques, such as confidence reasoning, to enhance LLM resilience against misinformation and harmful generation.
• Assisted in fine-tuning language models using high-quality, human-annotated datasets to guide models in converting inappropriate or harmful expressions into meaning equivalent but contextually appropriate, and safe outputs.

Leader of the Survey Team, The Fifth Wave of CHARLS   2022.07-2022.09
CHARLS Survey Project Group, China Social Sciences Survey Center   *Gansu, China*
• Directed and coordinated all survey operations, successfully completing fieldwork across six villages in Gansu and Shanxi provinces.
• Engaged with county and village officials to gather insights and information on local healthcare and eldercare policies and healthcare infrastructures.
• Collaborated with county-level medical institutions to facilitate comprehensive health examinations of residents.
• Managed communication with government entities and households, ensuring the efficient administration of in-home surveys for over one hundred families.

SKILLS & INTEREST

Programming: Stata, Python, R, Matlab, SQL and Spark (Currently Learning), LaTeX
Technical Skills: Causal Inference, RCT Design, Machine Learning, Deep Learning, GIS, Big-Data Processing
Languages: Chinese (native), English (proficient), Maltese (Beginner)
Interest: Poetic Composition, Tennis, Car Traveling

HORNORS AND AWARDS

- Duke Economics Master's Scholar Award (60 thousand dollars) (2024)
- China Economic Research Scholarship, First Class Award (Top 3 at PKU) (2022-2023)
- Society Talent Cultivation Scholarship, Peking University (2022-2023)
- Outstanding Student International Exchange Scholarship (2022-2023)
- Award for Social Work, Peking University (2022-2023)
- Bain Cap Business Case Analysis Competition Award (Top 30) (2022)
- Award for Academic Excellence, Peking University (2021-2022)
- Award for Academic Excellence, Peking University (2020-2021)