Xiaojun Guan

☐ +1 236-865-7256 | @ xiaojunguan.xg@gmail.com | in LinkedIn | Latest Version | Canadian PR

Education

University of British Columbia — Spring 2025 (Expected)

Ph.D., M.A. in Economics — *Vancouver, Canada*

- **Research Fields:** Development Economics, Labor Economics, Macroeconomics
- **Relevant Coursework:** Computational Economics with Data Science Applications, Econometric Theory I & II, Topics in Applied Econometrics, Machine Learning (CPSC 540)

New York University — 2013–2017

B.A. in Economics and Mathematics (with honors) — *New York, USA*

- **Relevant Coursework:** Calculus, Discrete Math, Linear Algebra, ODE, Statistics, Stochastic Processes, Probability Theory

Skills

Programming Languages: Python (proficient), R (proficient), Julia (experienced), SQL (experienced), MATLAB (experienced)

Methods: A/B Testing, Clustering, Decision Trees, Difference-in-Differences, Causal Machine Learning, Dynamic Programming, Ensemble Methods, Event Studies, Instrumental Variables, Optimization, Propensity Scores, Regression

Libraries and Tools: pandas, NumPy, SciPy, scikit-learn, CatBoost, Matplotlib, Optuna, Git, GitHub, VS Code, Stata

Foreign Languages: Mandarin (native), English (fluent)

Work Experience

Teaching Assistant — 2019–Present

University of British Columbia — *Vancouver, Canada*

- TA for 12 courses. Led discussion sessions, held office hours, and received an average rating of 4.7/5.0 on evaluations.

Research Assistant for Professor Jesse Perla — 2018–2020

University of British Columbia — *Vancouver, Canada*

- Contributed to the QuantEcon Lectures in Julia project through testing, debugging, and code reviews on GitHub.
- Converted MATLAB code to Julia. Implemented automated unit tests and a continuous integration (CI) pipeline.
- Reformulated stochastic stopping time problems into Linear Complementarity Problems (LCPs) for efficient computation.

Research Projects

The Cost of Compliance: Informality, Technological Change, and Structural Transformation in Brazil *(JMP)*

- Constructed a data pipeline to clean, merge, and transform over 60 million data points from diverse sources.
- Employed fixed effects (FE) and instrumental variable (IV) methods to causally evaluate the effects of technological advancements on local labor market outcomes.
- Developed a multi-sector dynamic general equilibrium model with heterogeneous firms and solved it numerically using fixed-point iteration and least squares minimization in Python.
- Enhanced computation speed by over 90% through Numba just-in-time compilation and vectorization.
- Calibrated model parameters using the Simulated Method of Moments with basin-hopping and Nelder-Mead algorithms.
- Boosted calibration efficiency through parallelization with Python's multiprocessing module.

Growth Through Industrial Linkages *(with Alejandro Rojas-Bernal)*

- Applied advanced time series techniques, such as local projections, to estimate impulse responses to productivity shocks.
- Conducted counterfactual analyses using an open economy model with production networks, showing that TFP growth in China and India would have been 26.6% and 9.7% lower from 1965 to 2000 without shifts in global input-output networks.

Do Political Connections Affect Corporate Innovation? Evidence from Chinese Firms

- Estimated the causal effect of political ties on corporate innovation (e.g., patenting, R&D expenditures) in Chinese firms using two-way fixed effects (TWFE) and event study methodologies.

Heterogeneous Firm Sorting and Local Monopsony Power *(with Sudipta Ghosh, Jan Rosa)*

- Built a spatial equilibrium model integrating methods from Industrial Organization (IO) and Game Theory to examine how firms' location choices and wage-setting strategies affect labor market competition and spatial wage disparities.
- Currently estimating the model using two administrative panel datasets of firms and workers in Germany.

Machine Learning Project

- Trained a customer churn prediction model using CatBoost and fine-tuned model hyperparameters using Optuna.
- Conducted comprehensive exploratory data analysis (EDA) to identify key patterns in customer behavior.
- Analyzed feature importance using SHAP values to identify key predictors of churn, deriving actionable insights.