Sutianjie Zhou (Joe)

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Education

University of Colorado at Boulder — Boulder, CO
Ph.D. in Economics — *Aug 2018 – May 2024 (Expected)*
M.S. in Computer Science — *May 2021 – May 2023*

Boston University — Boston, MA
M.A. in Economics — *Sep 2015 – Jan 2017*

Fudan University — Shanghai, China
B.S. in Theoretical Mechanics, minor in Economics — *Aug 2011 – Jul 2015*

Research Interests

Econometrics, Applied Microeconomics, Statistics, Machine Learning

Job Market Paper

Simultaneous Equations with Censored Outcomes and Social Interactions

- Abstract: This paper introduces a censored-outcome simultaneous-equation model with social interactions. The construction of the microeconomics foundation for this model is from the equilibrium in a large-network-based game with incomplete information, in which each agent conducts multiple actions and interacts with other agents through a network and a linear quadratic utility function. The sufficient condition of the unique Bayesian Nash Equilibrium (BNE) existence is characterized. We also discuss the identification of the econometric model. We propose a two-stage method to estimate the model in which we apply the nested pseudo-likelihood (NPL) to estimate the reduced parameters and then derive the structural form parameters by Amemiya Generalized Least Square estimator (AGLS). Monte Carlo simulation shows that the estimation performs well in finite samples. The estimation also shows the feasibility of the computation when the network size is large.

Working Paper and Research In progress

Simultaneous Tobit Model with Social Interactions

- Abstract: This paper proposes a simultaneous Tobit model with social interactions. Derive the Bayesian Nash Equilibrium (BNE) and find the sufficient condition for the unique fixed point existence. We develop the identification and a nested pseudo-likelihood (NPL) estimation of the econometric model.

A Spatial Autoregressive Model with Endogenous Network Structure and Limited Dependent Variable

- Abstract: Spatial Autoregressive model (SAR) has been widely discussed in recent decades. This paper focuses on the SAR model with limited dependent variables (Probit and Tobit) and rational expectations when the network structure is endogenous.

Industrial Experience

Senior Data Scientist Intern — May 2023 – Dec 2023
BILL Holdings Inc (Bill.com) — San Jose, CA

Compliance Analyst — Mar 2017 – Mar 2018
Bank of China USA — New York, NY

Data & Programming Project

U.S. Census Data Analysis

- Used statistical tools in Python to process, clean, summarize, and visualize data from the IPUMS American Community Survey (ACS), and derived conclusions related to the census attributes about the U.S. population. Identified the international trade exposure's influence on local unemployment rate by combining the local demographic characteristic and UN Comtrade data. Predicted the discrete characteristics among the agents in the dataset by Machine Learning tools (Logistic and KNN) with an average accuracy rate of over 80%.

Java-Based Advanced Undergraduate Course Advising System

- Used Java-based objected-oriented programming method to develop a system that advised students on advanced course selection based on their attributes. Built the machine-human interaction system to simulate the students' advising process for advanced undergraduate course registration. Developed advanced general interface for future system improvement, combining with other higher education-related functions. (For example, career development advising system) Extended the application of the system to financial-related usage, including asset management, fraud detection advising system, potential risky transaction alert system, etc.

Teaching Experience

Instructor

Intermediate Macroeconomic Theory	Fall 2023, Summer 2022
Intermediate Macroeconomic Theory	Summer 2021, Spring 2021
Introduction to Statistics w/ Computer Applications	Fall 2020
Mathematical Tools for Economists	Fall 2021, Spring 2022, Fall 2022, Spring 2023

Teaching Assistant

Introduction to Econometrics	Summer 2020
Intermediate Macroeconomic Theory	Spring 2020
Introduction to Statistics w/ Computer Applications	Fall 2019
Data and Decision (MBA)	Fall 2019
Principles of Microeconomics	Fall 2018, Spring 2019

Certificate

Machine Learning | Coursera & Stanford & Deeplearning.Ai
Deep Learning | Coursera & Deeplearning.Ai

Skills

- Regression analysis with large datasets. (Linear, Logit, Tobit)
- Neural Network, Deep Learning, Machine Learning.
- Financial Risk modeling and computational finance.
- Statistical modeling and causal inference.
- Programming: Python, SQL, Matlab, STATA, R, C++.
- Data engineering with AWS, Azure, and other APIs.
- Model evaluation, validation, and testing.
- Scikit-learn, TensorFlow, Keras, PyTorch, PySpark, Scala

Honor & Reward

Lead Graduate Instructor Fellowship(University of Colorado at Boulder)	*2022 - 2023*
Sieglinde Talbott Haller Endowed Economics Scholarship(University of Colorado at Boulder)	*2021*
Robert and Lauri McNown Award(University of Colorado at Boulder)	*2020*
Prize in Macroeconomics(University of Colorado at Boulder)	*2019*
Graduate Endowment Fellowship(University of Colorado at Boulder)	*2018*
Outstanding Graduate(Fudan University)	*2015*

References

Professor Xiaodong Liu (Chair)
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