

# LIANG ZHONG

85 Brainerd Rd

Allston MA 02134 USA

Cell: (617) 369-2010

Email: [samzl@bu.edu](mailto:samzl@bu.edu)

Web site: <https://samzl.github.io/>

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## EDUCATION

Ph.D., Economics, Boston University, Boston, MA, May 2025 (expected)

Dissertation Title: *Synergizing Econometrics Tools with Empirical Applications*

Main advisor: Hiroaki Kaido

Dissertation Committee: Hiroaki Kaido, Jean-Jacques Forneron, M. Daniele Paserman

M.A., Econometrics and Quantitative Economics, Boston University, Boston, MA, 2019

B.S., Mathematics and Applied Mathematics, Zhejiang University, Hang Zhou, China, 2017

## FIELDS OF INTEREST

Econometrics, Labor Economics, Digital Economics, Optimization

## WORKING PAPERS

“Unconditional Randomization Tests for Interference,” September 2024. Job Market paper.

“[Convexity Not Required: Estimation of Smooth Moment Condition Models](#),” (with Jean-Jacques Forneron), September 2024, Revise and Resubmit, *Review of Economic Studies*.

“[COPPAcalypse? The Youtube Settlement's Impact on Kids Content](#),” (with Garrett Johnson, Tesary Lin, and James Cooper), April 2024, Revise and Resubmit, *Management Science*

“[Racial Screening on the Big Screen? Evidence from the Motion Picture Industry](#),” (with Angela Crema, and M. Daniele Paserman), November 2023.

## WORK IN PROGRESS

“Contextual Bandit Mechanism: Optimal Delegation in the Experimentation Cycle” (joint with Zixian Liu)

## PRESENTATIONS

NBER SI 2024 Digital Economics and Artificial Intelligence, Cambridge, MA, 2024

New York Camp Econometrics (Poster Session), Bolton Landing, NY, 2023

University of Rochester Simon Business School\*, Rochester, NY, 2023

Columbia Business School\*, New York, NY, 2023

SOLE Annual Meeting, Minneapolis, MN, 2022

WEAI Annual Conference\*, Portland, OR, 2022

United States Military Academy West Point\*, West Point, NY, 2022

EEA-ESEM Congress\*, Milano, Italy, 2022

Boston University, Econometrics Seminar, Boston, MA, 2021-2024

(\*: co-author presents)

## FELLOWSHIPS AND AWARDS

Doctoral Fellowship, Boston University, 2019-2024  
Optimization-Conscious Summer School Travel Grant, University of Chicago, 2023  
IED Travel Grant, Boston University, 2022-2024  
MA Prize for Best Paper, Boston University, 2019  
Distinction in the MA Comprehensive Examination, Boston University, 2018  
Excellence Award in the 7<sup>th</sup> Chinese Mathematics Competition, 2015

## WORK EXPERIENCE

### ACADEMIC

Research Assistant for Prof. Kevin Lang, Boston University, 2024  
Research Assistant for Prof. Jean-Jacques Forneron, Boston University, 2021-2023  
Research Assistant for Prof. Hiroaki Kaido, Boston University, 2020-2022  
Research Assistant for Prof. Adam Guren, Boston University, 2018  
Research Assistant for Prof. Raymond Fisman, Boston University, 2018

### NON-ACADEMIC

Summer Associate, Analysis Group, Boston, MA, 2022

## TEACHING EXPERIENCE

Teaching Fellow, Advance Econometrics II (2<sup>nd</sup> year Ph.D), Department of Economics, Boston University, Fall 2023  
Teaching Fellow, Econometrics (MA-level), Department of Economics, Boston University, Spring 2021 (Evaluation Score: 4.73/5, with course benchmark of 4.15)  
Teaching Fellow, Microeconomic Theory (MA-level), Department of Economics, Boston University, Fall 2020 (Evaluation Score: 4.69/5, with course benchmark of 4.03)

**LANGUAGES:** English (Fluent), Mandarin (Native)

**COMPUTER SKILLS:** C, MATLAB, R, Python, JULIA, STATA(MATA), Version Control(git)

**CITIZENSHIP/VISA STATUS:** China/F1

## REFERENCES

**Professor Hiroaki Kaido**  
Department of Economics  
Boston University  
Phone: (617) 358-5924  
Email: [hkaido@bu.edu](mailto:hkaido@bu.edu)

**Professor Jean-Jacques Forneron**  
Department of Economics  
Boston University  
Phone: (617) 353-4824  
Email: [jjmf@bu.edu](mailto:jjmf@bu.edu)

**Professor Daniele Paserman**  
Department of Economics  
Boston University  
Phone: (617) 353-5695  
Email: [paserman@bu.edu](mailto:paserman@bu.edu)

**Professor Kevin Lang**  
Department of Economics  
Boston University  
Phone: (617) 353-5694  
Email: [lang@bu.edu](mailto:lang@bu.edu)

## **Unconditional Randomization Tests for Interference** (Job Market Paper)

In social networks or spatial experiments, the outcome for one unit often depends on the treatment assigned to another, a phenomenon known as *interference*. Researchers are interested not only in the existence and magnitude of such interference but also in how it evolves based on factors such as distance, neighboring units, and connection strength. Hard-to-model correlations across units complicate clustering for robust standard error analysis. Existing studies use conditional randomization tests on subsets of units and treatment assignments where a null hypothesis is sharp. Although finite-sample exact with minimal model assumptions, these tests involve complex conditioning events, adding computational burden to the practical usage. This paper proposes an *Unconditional Randomization Testing* framework for general interference settings, addressing these challenges. The method eliminates the need for conditioning events, maintains finite-sample validity, and imposes no network structure assumptions. Simulations demonstrate desirable power properties, and I illustrate their applicability to general interference scenarios.

## **Convexity Not Required: Estimation of Smooth Moment Condition Models**

(with Jean-Jacques Forneron)

Generalized and Simulated Method of Moments are often used to estimate structural Economic models. Yet, it is commonly reported that optimization is challenging because the corresponding objective function is non-convex. For smooth problems, this paper shows that convexity is not required: under a global rank condition involving the Jacobian of the sample moments, certain algorithms are globally convergent. These include a gradient-descent and a Gauss-Newton algorithm with appropriate choice of tuning parameters. The results are robust to 1) non-convexity, 2) one-to-one non-linear reparameterizations, and 3) moderate misspecification. In contrast, Newton-Raphson and quasi-Newton methods can fail to converge because of non-convexity. The condition precludes non-global optima. Numerical and empirical examples illustrate the condition, non-convexity, and convergence properties of different optimizers.

## **Racial Screening on the Big Screen? Evidence from the Motion Picture Industry**

(with Angela Crema and M. Daniele Paserman)

We develop a model of discrimination that allows us to interpret observed differences in outcomes across groups, conditional on passing a screening test, as taste-based (employer,) statistical, or customer discrimination. We apply this framework to investigate the nature of non-white underrepresentation in the US motion picture industry. Leveraging a novel data set with racial identifiers for the cast of 7,000 motion pictures, we show that, conditional on production, non-white movies exhibit higher average revenues and a smaller variance. Our findings can be rationalized in the context of our model if non-white movies are held to higher standards for production.