Likun Zhang

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Research Interests

Causal inference, adaptive design, machine learning methods, precision medicine

Education

Renmin University of China (RUC), Beijing, China — *Aug 2021 – Jun 2026 (expected)*
PhD in Statistics, Institute of Statistics and Big Data

- Advisor: Drs. Wei Ma, Zheng Zhang, Yang Liu, Feifang Hu
- Performed preliminary reviews for manuscripts submitted to *Statistica Sinica*, *Statistics in Medicine*, and *Statistical Methods in Medical Research*

University of California, Berkeley (UCB), CA, United States — *Aug 2019 – Dec 2019*
Statistics Exchange Program

Sun Yat-sen University (SYSU), Guangdong, China — *Aug 2017 – Jun 2021*
B.S. in Statistics, School of Mathematics

- Advisor: Drs. Hui Huang, Xueqin Wang, Guang Yang
- GPA: 4.4/5.0 (Ranking: 1/79)
- 2018 National Scholarship for academic excellence and whole person development (Ranking: 1/231)

Publication and Revision

Zhang, L. **& Ma, W. (2025). Interaction Tests With Covariate-Adaptive Randomization. Statistical Analysis and Data Mining: The ASA Data Science Journal, 18(1), e70003; doi.org/10.1002/sam.70003** — Jan 2025

- Corrected standard interaction tests to achieve nominal rejection levels under covariate-adaptive randomization
- Proposed stratified-adjusted interaction tests that are simple, powerful, and broadly applicable
- Encompassed both stratification covariates and additional covariates not used in randomization
- Guided valid and efficient interaction testing and subgroup analysis for practical randomized controlled trials

Zhang, L. **& Ma, W. (2025). Efficient Interaction Analysis in Randomized Controlled Trials. Biometrics (Major revision)** — Jun 2025

- Introduced a model-free framework for interaction analysis in randomized controlled trials
- Advocated a clearly defined target parameter for interaction analysis
- Computed semiparametric efficiency bound and proposed novel semiparametric efficient methods, equipped with nonparametric and machine learning techniques

Working Paper

Zhang, L. **& Ma, W. (2025). Covariance-Driven Regression Trees: Reducing Overfitting in CART. Submitted** — Aug 2025

- Proposed a covariance-driven splitting criterion for regression trees (CovRT), which is more robust to overfitting than CART
- Demonstrated that CovRT attains the same high-dimensional consistency rate as CART
- Reduced prediction risk by approximately 24% on the Boston Housing dataset using a much shallower tree

Cui et al. (2025). Age-Related Variation and Associated Factors of Intrinsic Capacity Across Adulthood: Findings From the Nationwide PENG ZU Study in China. Submitted — Jul 2025

- Cooperated with doctors from Beijing Institute of Geriatrics, Beijing Hospital
- Characterized age-related variation in intrinsic capacity (IC) and identified factors associated with IC

Research Experience

Data Analyst: Impact of Atmospheric Pollutants on Respiratory Diseases — *Guangdong*, *Jan 2020 – Jun 2021*
Southern China Center For Statistical Science, SYSU

- Cooperated with doctors from Xi'an Jiaotong University
- Investigated lagged effects of atmospheric pollutants on respiratory diseases

Working Experience

Quant: Quantitative Investment Research With Machine Learning — *Guangdong*, *Feb 2019 – Dec 2019*
Southern China Center For Statistical Science, SYSU

- Simulated stock price prediction strategies with machine learning methods

Teaching Experience

TA: Advanced Language Programming — *Beijing*, *Spring 2025*
Institute of Statistics and Big Data, RUC

TA: Computer Skills in Data Science — *Beijing*, *Fall 2023, 2024*
Institute of Statistics and Big Data, RUC

Conference Talks

Interaction Analysis in Randomized Controlled Trials — *Beijing*, *Apr 2025*
Invited talk at *RUC Mathematics Time*

Interaction Tests With Covariate-Adaptive Randomization — *Yunnan*, *Jul 2024*
Contributed talk at *the 2nd Joint Conference on Statistics and Data Science in China (2024 JCSDS)*

Technologies

Languages: R, Python, C++, Java, C#, SQL, MATLAB