Guanxun Li

guanxun@bnu.edu.cn https://guanxunli.github.io https://github.com/guanxunli

Academic Positions

Beijing Normal University, Zhuhai **Sep 2024–Present**
Assistant Professor, Department of Statistics

Texas A&M University **Sep 2022–Aug 2024**
Postdoctoral Research Associate, Department of Statistics *Advisor: Xianyang Zhang*

Education

Texas A&M University **Sep 2018–Aug 2022**
Ph.D. in Statistics *Advisor: Quan Zhou*
– Dissertation: *New Variational and Sampling Algorithms for Large-Scale Bayesian Model Selection.*

Texas A&M University **Sep 2017–May 2018**
M.S. in Mathematics

Beihang University **Sep 2013–Jun 2017**
B.S. in Applied Mathematics

Research Interests

Multiple Testing

Watermarking in Large Language Models (LLMs)

Markov Chain Monte Carlo (MCMC) Methodology

Bayesian Variable Selection

Single-cell RNA Sequencing Data Analysis

Microbiome Sequencing Data Analysis

Publications

Notation: ♯ corresponding author; * co-first author; † student supervised by me

Preprints

Li, G. and Zhang, X. (2025). A General Framework for Multiple Testing via E-value Aggregation and Data-Dependent Weighting. (arXiv).

Li, G., Smith, A., and Zhou, Q. (2024). Importance is Important: Generalized Markov Chain Importance Sampling Methods. (arXiv).

Li, G., Lin, G., Zhang, Z., and Zhou, Q. (2023). Fast Replica Exchange Stochastic Gradient Langevin Dynamics. (arXiv).

Journal Publications

Gao, J.[†], Chen, H., and **Li, G.**[♯] (2025). Data-Dependent Weighted E-value Aggregation for Fusion Learning. *Mathematics*.

Li, X., Liu, X.[*,†], and **Li, G.**[♯] (2025). Adaptive Testing for Segmenting Watermarked Texts From Language Models. *Stat*, 14(4).

Zhong, Y., Osorio, D., **Li, G.**, Xu, Q., Yang, Y., Huang, J. Z., and Cai, J. J. (2025). scTenifoldNet and scTenifoldKnk: A package suite for single-cell gene regulatory network construction, comparison, and perturbation analysis. *Statistical Theory and Related Fields*, pp. 1–10.

Li, G. and Zhang, X. (2025). A Note on E-values and Multiple Testing. *Biometrika*, 112(1).

Li, G. and Zhou, Q. (2024). Bayesian Multi-Task Variable Selection with an Application to Differential DAG Analysis. *Journal of Computational and Graphical Statistics*, 33(1), pp. 35–46.

Li, G., Lu, Y., Chen, J., and Zhang, X. (2023). Robust Differential Abundance Analysis of Microbiome Sequencing Data. *Genes*, 14(11), p. 2000.

Yang, Y., Lin, Y. T., **Li, G.**, Zhong, Y., Xu, Q., and Cai, J. J. (2023). Interpretable modeling of time-resolved single-cell gene–protein expression with CrossmodalNet. *Briefings in Bioinformatics*, 24(6), p. bbad342.

Yang, Y., **Li, G.**, Zhong, Y., Xu, Q., Chen, B. J., Lin, Y. T., Chapkin, R. S., and Cai, J. J. (2023). Gene knockout inference with variational graph autoencoder learning single-cell gene regulatory networks. *Nucleic Acids Research*, p. gkad450.

Yang, Y., **Li, G.**, Zhong, Y., Xu, Q., Lin, Y. T., Roman-Vicharra, C., Chapkin, R. S., and Cai, J. J. (2023). scTenifoldXct: A semi-supervised method for predicting cell–cell interactions and mapping cellular communication graphs. *Cell Systems*, 14(4), pp. 302–311.

Osorio, D., Zhong, Y., **Li, G.**, Xu, Q., Yang, Y., Tian, Y., Chapkin, R. S., Huang, J. Z., and Cai, J. J. (2022). scTenifoldKnk: An efficient virtual knockout tool for gene function predictions via single-cell gene regulatory network perturbation. *Patterns*, 3(3), p. 100434.

Xu, Q., **Li, G.**, Osorio, D., Zhong, Y., Yang, Y., Lin, Y. T., Zhang, X., and Cai, J. J. (2022). scInTime: A computational method leveraging single-cell trajectory and gene regulatory networks to identify master regulators of cellular differentiation. *Genes*, 13(2), p. 371.

Osorio, D., Zhong, Y., **Li, G.**, Huang, J. Z., and Cai, J. J. (2020). scTenifoldNet: A machine learning workflow for constructing and comparing transcriptome-wide gene regulatory networks from single-cell data. *Patterns*, 1(9), p. 100139.

Osorio, D., Yu, X., Zhong, Y., **Li, G.**, Serpedin, E., Huang, J. Z., and Cai, J. J. (2019). Single-cell expression variability implies cell function. *Cells*, 9(1), p. 14.

Conference Publications

Li, X., **Li, G.***, and Zhang, X. (2025). A Likelihood-Based Approach for Watermark Detection. *International Conference on Artificial Intelligence and Statistics (AISTATS) 2025*.

Li, X., **Li, G.***, and Zhang, X. (2024). Segmenting Watermarked Texts From Language Models. *Conference on Neural Information Processing Systems (NeurIPS) 2024*.

Academic Service

Journal Editorial Board

Mathematics, Guest Editor for the special issue "Advanced Mathematical and Statistical Methods for Modern Data Science and Scientific Machine Learning," 2025–2026.

Biomedical Informatics, Youth Editorial Board, 2025–2026.

Journal Reviews

Journal of the American Statistical Association, 2025.

TEST, 2025.

Stat, 2025.

Journal of Applied Statistics, 2025.

BMC Genomics, 2025.

BMC Bioinformatics, 2024.

ETRI Journal, 2024.

Statistics and Computing, 2023.

Conference Reviews

AISTATS, 2021, 2022, 2023, 2024, 2025.

Teaching Experience

Instructor

Nonparametric Analysis, Beijing Normal University, Zhuhai, Spring 2025; Fall 2025.

Bayesian Analysis, Beijing Normal University, Zhuhai, Spring 2025.

Introduction to Statistical Methods B, Beijing Normal University, Zhuhai, Fall 2024.

Introduction to Statistical Methods, Texas A&M University, Summer 2020.

Teaching Assistant

Statistical Methodology II—Bayesian Modeling and Inference, Spring 2022.

Design and Analysis of Experiments, Fall 2019, 2020, 2021.

Applied Multivariate Analysis and Statistical Learning, Fall 2018, 2019.

Oral Presentations

Conference Presentations

Guangdong Provincial Society for Applied Statistics, 2025.

Joint Statistical Meetings (JSM), August 2024.

National Industrial Statistics Annual Conference, 2024.

EAC ISBA Conference, August 2023.

Invited Presentations

International Seminar on Selective Inference, March 2024.