Ziyi Liang

Department of Statistics and Applied Probability, University of California, Santa Barbara
Santa Barbara, CA 93106
ziyiliang@ucsb.edu · liangziyi0521@gmail.com · (+1) 626-617-0521
ziyiliang.github.io

Research Interests

Data science for science; data integration; uncertainty quantification; computational neuroscience, trustworthy AI.

Academic Positions

Postdoctoral Researcher, University of California, Santa Barbara. July 2026–present
Department of Statistics and Applied Probability.
Research advisors: Annie Qu and Babak Shahbaba.

Postdoctoral Researcher, University of California, Irvine. July 2024–July 2026
Department of Statistics.
Research advisors: Annie Qu and Babak Shahbaba; domain-science mentor: Norbert Fortin.

Education

Ph.D. in Applied Mathematics, University of Southern California. 2024
Advisors: Matteo Sesia and Larry Goldstein.

B.S. in Mathematics / Computer Science, University of California, San Diego. 2018
Department of Mathematics.

Publications and Preprints

* *Equal contribution.*

Journal Articles

[1] Z. Liang, A. Qu, B. Shahbaba. Meta Fusion: A Unified Framework for Multimodal Fusion with Adaptive Mutual Learning. *Journal of the Royal Statistical Society: Series B* (2026). [Link]

[2] Z. Liang*, T. Xie*, X. Tong, M. Sesia. Structured Conformal Inference for Matrix Completion with Applications to Group Recommender Systems. *Journal of the American Statistical Association* (2026). [Link]

[3] Z. Liang, T. T. Cai, W. Sun, Y. Xia. A Locally Adaptive Algorithm for Multiple Testing with Network Structure. *Statistica Sinica* 36 (2026). [Link]

[4] Z. Liang, M. Sesia, W. Sun. Integrative conformal p-values for out-of-distribution testing with labelled outliers. *Journal of the Royal Statistical Society: Series B* (2024). [Link]

Conference and Workshop Papers

[5] Z. Moslemi, Z. Liang, N. Fortin, B. Shahbaba. Multi-Graph Meta-Transformer: An Interpretable Framework for Cross-Graph Functional Alignment in Neural Decoding. *NeurIPS Workshop on AI for Science (AI4Science)*, Spotlight (2025). [Link]

[6] Z. Liang*, Y. Zhou*, M. Sesia. Conformal inference is (almost) free for neural networks trained with early stopping. *International Conference on Machine Learning (ICML)* (2023). [Link]

[7] S. Bucci*, J. I. D. Centeno*, B. Gaffinet*, Z. Liang*, V. Bickel, B. Moseley, M. Olivares-Mendez. Thermophysical Change Detection on the Moon with the Lunar Reconnaissance Orbiter Diviner sensor. *NeurIPS Workshop on Machine Learning and the Physical Sciences* (2022). [Link]

Preprints (Under Review or Revision)

[8] Z. Moslemi, Z. Liang, B. Shahbaba. SCOPE Before You Sample: Conformal Scores Guide Posterior Exploration for Fast and Calibrated Bayesian Predictive Inference. *Preprint.* [Link]

[9] Z. Liang, H. Poursiami, Z. Yang, K. W. Cooper, A. Jaiswal, M. Parsa, N. Fortin, B. Shahbaba. ConformalHDC: Uncertainty-Aware Hyperdimensional Computing with Application to Neural Decoding. *Preprint.* [Link]

[10] T. Xie, Y. Zhou, Z. Liang, S. Favaro, M. Sesia. Conformal Inference for Open-Set and Imbalanced Classification. *Major revision at Biometrika*. [Link]

Work in Progress

[11] Z. Liang, X. Cao, W. Guo, A. Qu. Conformal prediction for multi-resolution time series with application to mobile health data.

[12] Z. Liang, A. Qu, B. Shahbaba. A Brain-inspired Reinforcement Learning Framework: Sequential Action via Graph-based Episodic Memory (SAGE).

Honors and Awards

Theodore Edward Harris Teaching Prize, University of Southern California 2024
Department of Mathematics.

Other Professional Activities

Machine Learning Research Intern, Frontier Development Lab Summer 2022
San Jose, California.

Teaching Experience

University of Southern California

Instructor: MATH 040 — Basic Mathematical Skills	Fall 2023
Teaching Assistant: MATH 541A — Introduction to Mathematical Statistics	Spring 2023
Teaching Assistant: MATH 114 — Foundations of Statistics	Spring 2020, Fall 2020, Fall 2021
Teaching Assistant: MATH 408 — Mathematical Statistics	Spring 2021
Teaching Assistant: MATH 129 — Calculus II for Engineers and Scientists	Spring 2019

Mentoring Experience

University of California, Irvine
Provided peer mentoring for:

- Xiaoke Cao (Ph.D., Statistics)
- Zahra Moslemi (Ph.D., Statistics)
- Zhishun (Zoey) Yang (Ph.D., Mathematical, Computational & Systems Biology)

Presentations

Conference and Workshop Presentations

Joint Statistical Meetings (JSM), Nashville, Tennessee *(contributed talk)*	August 3, 2025
International Conference on Machine Learning (ICML), Honolulu, Hawaii *(poster)*	July 27, 2023
NeurIPS Workshop on Machine Learning and the Physical Sciences, New Orleans, Louisiana *(poster)*	December 3, 2022

Invited Discussions

International Seminar on Selective Inference, online *(invited discussant)*	January 28, 2025

Seminar Presentations

USC Probability Seminar, Los Angeles, California	March 2022
USC Department of Mathematics, Los Angeles, California	December 2019

Industry Presentations

Frontier Development Lab 2022 Showcase, online	August 2022

Professional Service

Referee: *Journal of the American Statistical Association*, *Electronic Journal of Statistics*, *IISE Transactions*, and *ASA Discoveries*