Lili Zheng

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Working Experience

Assistant Professor 07/2024 – Now
Department of Statistics, University of Illinois Urbana-Champaign
Postdoctoral researcher 06/2021 – 05/2024
Department of Electrical and Computer Engineering, Rice University
Advisor: Genevera I. Allen

Education

University of Wisconsin - Madison 2016 – 2021
Ph.D., Statistics
Advisor: Garvesh Raskutti
University of Science and Technology of China 2012 – 2016
B.S., Statistics

Research Interest

Distribution-free inference, multiple testing, data integration, spectral methods, missing data, graphical models, tensor data analysis, time series

Honors

Gold Medal Young Researcher Poster Competition Award,
Conference on Recent Advances in Statistics and Data Science at Rutgers. 2023
IMS Hannan Graduate Student Travel Award. 2021
Travel grant from Institute for Foundations of Data Science (IFDS), UW-Madison. 2019
Travel grant from IMA workshop on Forecasting from Complexity. 2018
Honorable Mention in Mathematical Contest of Modeling, COMAP (Top 20%) 2015
National scholarship, USTC. (Top 2%) 2015
Outstanding freshman scholarship, USTC(Top 20%) 2012

Publications

(*: equal contribution)

Preprints

16. C. O. Little, **L. Zheng**, G. I. Allen, "iLOCO: Distribution-Free Inference for Feature Interactions".

15. **L. Zheng***, A. Chang*, G. I. Allen, "Cluster Quilting: Spectral Clustering for Patchwork Learning". *Under revision*, https://arxiv.org/pdf/2406.13833.

14. J. Liu*, **L. Zheng***, Z. Zhang, G. I. Allen, "Joint Semi-Symmetric Tensor PCA for Integrating Multi-modal Populations of Networks". *Under revision*, https://arxiv.org/abs/2312.14416.

13. **L. Zheng**, G. Raskutti, "High-dimensional Multi-class Classification with Presence-only Data". https://arxiv.org/abs/2304.09305

12. L. Gan*, **L. Zheng***, G. I. Allen, "Model-Agnostic Confidence Intervals for Feature Importance: A Fast and Powerful Approach Using Minipatch Ensembles". https://arxiv.org/abs/2206.02088.

11. A. Chang, **L. Zheng**, G. I. Allen, "Low-Rank Covariance Completion for Graph Quilting with Applications to Functional Connectivity". https://arxiv.org/abs/2209.08273.

Peer-reviewed Journal Publications

10. **L. Zheng**, G. I. Allen, "Graphical Model Inference with Erosely Measured Data", *Journal of the American Statistical Association, Theory and Methods*, 2023.

9. A. Chang*, **L. Zheng***, G. Dasarathy, G. I. Allen,"Nonparanormal Graph Quilting with Applications to Calcium Imaging", *STAT*, 2023.

8. G. I. Allen, L. Gan, **L. Zheng**, "Interpretable Machine Learning for Discovery: Statistical Challenges & Opportunities", *Annual Review of Statistics and Its Application*, 2023.

7. H. Chen*, **L. Zheng***, R. A. Kontar, G. Raskutti (∗: equal contribution), "Gaussian Process Parameter Estimation Using Mini-batch Stochastic Gradient Descent: Convergence Guarantees and Empirical Benefits", *Journal of Machine Learning Research*, 2022.

6. Y. Zhou, A. R. Zhang, **L. Zheng**, Y. Wang, "Optimal High-order Tensor SVD via Tensor-train Orthogonal Iteration", *IEEE Transactions on Information Theory*, 2022.

5. **L. Zheng**, G. Raskutti, R. Willett, B. Mark, "Context-dependent Networks in Multivariate Time Series: Models, Methods, and Risk Bounds in High Dimensions", *Journal of Machine Learning Research*, 2021.

4. **L. Zheng**, G. Raskutti, "Testing for High-dimensional Network Parameters in Auto-regressive Models", *Electronic Journal of Statistics*, 2019.

Peer-reviewed Conference Publications

3. **L. Zheng**, Z. T. Rewolinski, G. I. Allen, "A Low-Rank Tensor Completion Approach for Imputing Functional Neuronal Data from Multiple Recordings", *IEEE Data Science and Learning Workshop (DSLW)*, 2022.

2. **L. Zheng**, G. I. Allen, "Learning Gaussian Graphical Models with Differing Pairwise Sample Sizes", *IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, 2022.

1. H. Chen*, **L. Zheng***, R. A. Kontar, G. Raskutti (∗: equal contribution), "Stochastic Gradient Descent in Correlated Settings: A Study on Gaussian Processes", *Neural Information Processing Systems (NeurIPS)*, 2020.

Software

- "tt_TTOI: Tensor-Train Orthogonal Iteration", contribute python functions to the `Python` library **TensorLy**, 2022.
- "Network inference for autoregressive models", `R` and `Matlab` functions with tutorials, 2020.

Professional Service

- Organizer for an invited session in Joint Statistical Meetings, 2025
- Session chair for an invited session at the International Indian Statistical Association (IISA) Conference, 2025
- Session chair for IMSI workshop: Statistics Meets Tensors, 2025
- Organizer for a topic-contributed session in Joint Statistical Meetings, 2022
- Session chair for ICASSP, 2022

- Journal referee (20 in total, # in parenthesis): *Journal of the Royal Statistical Society: Series B* (1), *Journal of the American Statistical Association* (1), *Biometrika* (1), *Journal of Machine Learning Research* (8), *SIAM Journal on Mathematics of Data Science* (1), *Electronic Journal of Statistics* (1), *Annals of Applied Statistics* (2), *IEEE Transactions on Information Theory* (2), *Journal of Computational and Graphical Statistics* (1), *Computational Statistics and Data Analysis* (1), *ACM Transactions on Probabilistic Machine Learning* (1).
- Conference reviewer: *International Conference on Artificial Intelligence and Statistics (AISTATS) 2021*, *International Conference on Machine Learning (ICML) 2022*.

Teaching and Mentoring Experience

Teaching

The Summer Institute for Statistics in Big Data, Teaching Assistant — Summer 2023
Stat 301 (Introduction to Statistical Methods), Teaching Assistant — Fall 2016/ Spring 2017

Mentoring

1. Heming Liu, PhD student, Statistics, UIUC.
2. Xuhui Liu, PhD candidate, Statistics, UIUC.
3. Yinan Cheng, UIUC, PhD candidate, Statistics, UIUC.
4. Camille Little, PhD candidate, Electrical and Computer Engineering, Rice University.
5. Jiaming Liu, PhD candidate, Statistics, Rice University.
6. Quan Le, former undergraduate student, Computer Science and Mathematics, Rice University, 2023; now a PhD student at Yale.
7. Zach Rewolinski, former undergraduate student, Statistics and Computer Science, Rice University, 2023; now a PhD student at UC Berkeley.

Presentations

- Invited talk at the IISA conference, 06/12/2025
- Poster presentation at IMSI workshop: Statistics Meets Tensors, 05/06/2025
- Invited talk at 2024 IMS International Conference on Statistics and Data Science (ICSDS), 12/16/2024
- Invited talk at CFE-CMStatistics, 12/15/2024
- Invited talk at Cornell University, 2/28/2024
- Invited talk at the University of California, San Diego, 2/15/2024
- Invited talk at the University of British Columbia, 2/8/2024
- Invited talk at the University of Waterloo, 2/5/2024
- Invited talk at the University of California, Irvine, 1/30/2024
- Invited talk at the University of Illinois at Urbana-Champaign, 1/25/2024
- Invited talk at the University of Michigan, 1/19/2024
- Invited talk at the University of California, San Diego, 1/12/2024
- Invited talk at the University of Florida, 12/6/2023

- Contributed talk at Joint Statistical Meetings, 2023
- Poster presentation at "Conference on Recent Advances in Statistics and Data Science," Rutgers University, 2023
- Poster presentation at the conference "Statistical Foundations of Data Science and their Applications," Princeton University, 2023
- Talk in a topic-contributed session at Joint Statistical Meetings, 2022
- Poster presentation at "Workshop on Distribution-Free Uncertainty Quantification," ICML, 2022
- Talk at IEEE Data Science and Learning Workshop, 2022
- Poster presentation at ICASSP, 2022
- Poster presentation at the "Conference on Advances in Bayesian and Frequentist Statistics," Rutgers University, 2022
- Poster presentation at the workshop "Perspectives in Statistical Modeling and Inference," University of Pennsylvania, 2021
- Poster presentation at Joint Statistical Meetings, 2020
- Poster presentation at NeurIPS, 2020
- Poster presentation at Joint Statistical Meetings, 2019