JINGRU ZHANG

Contact Information

Address:	N107 Zibinyuan, 220 Handan Road, Yangpu District, Shanghai, China, 200433
E-mail:	jr_zhang@fudan.edu.cn
Website:	https://jingru-zhang.github.io/

Employment

02/2023-	Assistant Professor, School of Data Science, Fudan University
09/2019-02/2023	Postdoctoral Fellow, Biostatistics,
	University of Pennsylvania
	Advisors: Professors Hongzhe Li and Haochang Shou

Education

09/2013- 07/2019	PhD, Computational Mathematics
	Beijing International Center for Mathematical Research, Peking University
	Advisors: Professors Weinan E and Wei Lin
09/2016-09/2017	Visiting Student, Department of Statistics
	University of California, Davis
	Advisor: Professor Hao Chen
09/2009-07/2013	B.S., Applied Mathematics
	School of Mathematical Sciences, Nankai University
	Advisor: Professor Jishou Ruan

Teaching Experience

03/2016-06/2016	Teaching Assistant, School of Mathematical Sciences, Peking University: Multivariate Statistical Analysis (graduate course)
09/2015-01/2016	Teaching Assistant, School of Mathematical Sciences, Peking University: Mathematical Statistics (undergraduate course)
03/2015-06/2015	Teaching Assistant, School of Mathematical Sciences, Peking University: Algorithms of Big Data Analysis (graduate course)
03/2014-06/2014	Teaching Assistant, School of Mathematical Sciences, Peking University: Probability Theory (undergraduate course)
09/2013-01/2014	Teaching Assistant, School of Mathematical Sciences, Peking University: Linear Algebra (undergraduate course)

Honors and Awards

2019	Zhong Jiaqing outstanding paper award
2018	Outstanding research award, Peking University
2017	Outstanding research award, Peking Universit

Talks

- "Mediation analysis with densities as mediators with an application to iCOMPARE trial", CMStatistics, London, UK, December 2022.

- "Causal treatment effect estimation for outcomes measured with uncertainty", JSM, Washington, DC, USA, August 2022.

- "Empirical likelihood tests for variance components in linear mixed-effects models", (online) JSM, August 2021.

- "Two-sample tests for repeated measurements with applications to wearable device data", (online) JSM, August 2020.
- "Principal subspace analysis for high-dimensional compositional data", Beijing, Tianjin, and Hebei Youth Probability and Statistics Conference, University of International Business and Economics, Beijing, China, June 2019.
- "Graph-based two-sample tests for discrete data", ICSA Applied Statistics Symposium, Rutgers University, New Jersey, USA, June 2018.

Research Interests

High-dimensional statistics; Big and complex object data analysis; Compositional data analysis; Mobile health study and wearable device data; Collaborative biomedical research.

Publications – papers published/accepted

1. Xin Zhao, **Jingru Zhang**, and Wei Lin (2023). Clustering multivariate count data via Dirichlet-multinomial network fusion. *Computational Statistics & Data Analysis,* 179: 107634.

2. **Jingru Zhang**, Kathleen R. Merikangas, Hongzhe Li, and Haochang Shou (2022). Two-sample tests for multivariate repeated measurements of histogram objects with applications to wearable device data. *The Annals of Applied Statistics*, 16(4), 2396-2416.

3. **Jingru Zhang** and Hao Chen (2022). Graph-based two-sample tests for data with repeated observations. *Statistica Sinica*, 32: 391-415.

4. **Jingru Zhang** and Wei Lin (2019). Scalable estimation and regularization for the logistic normal multinomial model. *Biometrics*, 75(4), 1098-1108.

Manuscripts Submitted/in Preparation

1. **Jingru Zhang**, Hao Chen, and Xiao-Hua Zhou (2020). A new nonparametric test for multivariate paired data and pair matching. *arXiv preprint arXiv:2007.01497.*

2. **Jingru Zhang** and Wei Lin (2021). Principal component analysis for high-dimensional compositional data. *arXiv preprint arXiv:2109.04657.* (This paper won the 2019 Zhong Jiaqing outstanding paper award.)

3. **Jingru Zhang**, Mathias Basner, Christopher W. Jones, David F. Dinges, Haochang Shou, and Hongzhe Li (2023). Causal treatment effect estimation for outcomes measured with uncertainty.

4. **Jingru Zhang**, Wei Guo, Joanne S. Carpenter, Andrew Leroux, Kathleen R. Merikangas, Nicholas G. Martin, Ian B. Hickie, Haochang Shou, and Hongzhe Li (2022). Empirical likelihood inference of variance components in linear mixed-effects models. *arXiv preprint arXiv:2208.13936*

5. **Jingru Zhang**, Wei Guo, Joanne S. Carpenter, Nicholas G. Martin, Ian B. Hickie, Andrew Leroux, Kathleen R. Merikangas, Haochang Shou, and Hongzhe Li (2023). Non-transient heritability inference based on repeated measures wearable device data.

6. **Jingru Zhang,** Mathias Basner, Christopher W.Jones, David F.Dinges, Haochang Shou, and Hongzhe Li (2022). Mediation analysis with densities as mediators with an application to iCOMPARE trial. *arXiv preprint arXiv:2208.13939*

7. **Jingru Zhang**, Hongzhe Li, and Haochang Shou (2023). Integration of longitudinal wearable device data from multiple sources.

Software (R Package)

gTests: Graph-based two-sample tests.

gTestsPair: Nonparametric tests for multivariate paired data and pair matching.

ELmethodVar: Empirical likelihood inference of variance components in linear mixed-effects models.

Computer Skills

R, MATLAB, C/C++, Linux.