Lu Zhang

Curriculum Vitae

Department of Statistics
Columbia University
1255 Amsterdam Avenue, New York, NY, 10027, USA
✉ *lz2786@columbia.edu*
🏠 *Homepage: https://luzhangstat.github.io/*

Employment

2020–current **Postdoctoral Researcher**, *Columbia University*, USA.
Supervisor: Bob Carpenter, Andrew Gelman

Education

2014–2020 **Ph.D. in Biostatistics**, *University of California, Los Angeles*, USA.
Advisor: Sudipto Banerjee

2010–2014 **B.S. in Mathematics and Applied Mathematics**, *Fudan University*, China.

Research Interests

Spatial analysis, Bayesian statistics, high dimensional inference, computational statistics and open-source software development

Papers (* co-first author)

Publications and Manuscripts Under Revision

1. Wenpin Tang*, **Lu Zhang***, Sudipto Banerjee, On identifiability and consistency of the nugget in Gaussian spatial process models. ***Journal of the Royal Statistical Society Series B***, accepted. `https://arxiv.org/abs/1908.05726`

2. **Lu Zhang**, Sudipto Banerjee, (2021) Spatial Factor Modeling: A Bayesian Matrix-Normal Approach for Misaligned Data. ***Biometrics***. `http://doi.org/10.1111/biom.13452`

3. **Lu Zhang**, Sudipto Banerjee, Andrew O. Finley (2021). High-dimensional multivariate geostatistics: A Bayesian matrix-normal approach. ***Environmetrics***. `https://onlinelibrary.wiley.com/doi/10.1002/env.2675`

4. Di Xiong*, **Lu Zhang***, Gregory L. Watson, Phillip Sundin, Teresa Bufford, Joseph A. Zoller, John Shamshoian, Marc A. Suchard, Christina M. Ramirez, (2020). Pseudo-likelihood based logistic regression for estimating COVID-19 infection and case fatality rates by gender, race, and age in California. ***Epidemics*** `https://www.sciencedirect.com/science/article/pii/S1755436520300396`

5. **Lu Zhang**, Abhirup Datta, Sudipto Banerjee. (2019). Practical Bayesian modeling and inference for massive spatial data sets on modest computing environments. ***Statistical Analysis and Data Mining: The ASA Data Science Journal*** `https://onlinelibrary.wiley.com/doi/full/10.1002/sam.11413`

6. Gregory L. Watson, Di Xiong, **Lu Zhang**, Joseph A. Zoller, John Shamshoian, Phillip Sundin, Teresa Bufford, Anne W. Rimoin, Marc A. Suchard, Christina M. Ramirez (2021). Pandemic velocity: forecasting COVID-19 in the US with a machine learning & Bayesian time series compartmental model. ***PLOS Computational Biology***, 17(3), e1008837.

Preprints

7. **Lu Zhang***, Wenpin Tang*, Sudipto Banerjee, Fixed-Domain Asymptotics Under Vecchia's Approximation of Spatial Process Likelihoods. Submitted. `https://arxiv.org/abs/2101.08861`

8. **Lu Zhang**, Bob Carpenter, Andrew Gelman, Aki Vehtari. Pathfinder: Parallel quasi-Newton variational inference. Submitted. `https://arxiv.org/abs/2108.03782`

Packages

1. **Lu Zhang** and Jun Yin (2018). *phase1PRMD: Personalized Repeated Measurement Design for Phase I Clinical Trials. R package version 1.0.2. CRAN:* `https://cran.r-project.org/web/packages/phase1PRMD/index.html`

2. Xiang Chen, **Lu Zhang**, Sudipto Banerjee (2018). *JAMAJniLite: A JAVA package providing a java interface for lapack and blas libraries and using the classes defined by JAMA Package Github:* `https://github.com/JAMAJni/JAMAJniLite`

3. **Lu Zhang**, LiZhen Nie, Sudipto Banerjee (2017). *JALAJni: A JAVA package providing a java interface for lapack and blas library Github:* `https://github.com/JaLAJni/JaLAJni`

Teaching Experience

Graduate Teaching Assistant at UCLA

2015-2020	Biostat 100A: **Introduction to Biostatistics**
	(Summer 2015, Fall 2015, Spring 2016, Summer 2017, Fall 2019)
2016-2020	Biostat 100B: **Introduction to Biostatistics**
	(Winter 2016, Winter 2017, Winter 2018, Winter 2020)
Fall 2016	Biostat 200A: **Basic Biostatistics**
Spring 2017	Biostat 411: **Analysis of Correlated Data**
Fall 2017	Biostat 255A: **Advanced Topics & Probability in Biostatistics**
Winter 2017	Biostat 255B: **Advanced Topics & Probability in Biostatistics**
Spring 2018	Biostat 257: **Statistical Computing**
Spring 2019	Biostat 241: **Spatial modeling**
Fall 2019	Public Health 200: **Foundations in Public Health**
Spring 2020	Biostat 214: **Finite Population Sampling**

Working Experience

Jun. - Sep. **Internship in Biostatistics**, *Mayo Clinic*, Rochester, Minnesota USA,
2018 Sponsor: Yin Jun, Ph.D.
- Statistical consultation to Physicians
- Experimental design (clinical trial design)
- Software development (develop R package)

Selected Awards

2020 **Dean's Outstanding Student Award in Biostatistics**, Department of Biotatistics, UCLA

2018 **Celia G. and Joseph G. Blann Fellowship**, Department of Biotatistics, UCLA

2016 **Graduate Summer Research Mentorship,** Department of Biotatistics, UCLA

Talks

Invited

Sep. 2021 **Spatial Factor Modeling: A Bayesian Matrix-Normal Approach for Massive Spatial Data with Missing Observations**.
Mathematics and Applied Mathematics at Fudan University, Shanghai, China

Sep. 2021 **Spatial Factor Modeling: A Bayesian Matrix-Normal Approach for Massive Spatial Data with Missing Observations**.
School of Statistics and Management at Shanghai University of Finance and Economics, Shanghai, China

Jun. 2021 **Spatial Factor Modeling: A Bayesian Matrix-Normal Approach for Massive Spatial Data with Missing Observations**.
Biostatistics at Columbia University, New York, New York, USA

Dec. 2020 **Spatial Factor Modeling: A Bayesian Matrix-Normal Approach for Misaligned Data**.
Johns Hopkins University BLAST working group, Baltimore, Maryland, USA

Mar. 2020 **High-dimensional Multivariate Geostatistics: A Bayesian Matrix-Normal Approach**.
ENAR, Nashville, Tennessee, USA

Contributed

Aug. 2021 **Pathfinder: A Parallel Quasi-Newton Algorithm for Reaching Regions of High Probability Mass**.
Joint Statistical Meetings

Aug. 2020 **Spatial Factor Modeling: A Bayesian Matrix-Normal Approach for Misaligned Data**.
Bernoulli-IMS One World Symposium 2020

Jul. 2019 **Bayesian Linear Model of Coregionalization (BLMC) for Large Scale Datasets with Accelerated Posterior Sampling Algorithm**.
Joint Statistical Meetings, Colorado, USA, poster presentation

Aug. 2017 **Practical Bayesian Inference Based on Nearest Neighbor Gaussian Processes Model for Massive Spatial Data**.
Joint Statistical Meetings, Baltimore, Maryland, USA

Referee Experience

Journal of the Royal Statistical Society: Series B (1)
Journal of Computational and Graphical Statistics (3)
Annals of Applied Statistics (1)
Statistical Science (1)
Environmetrics (1)