

Xiangyu Zhang

Email: zhan6004@umn.edu Phone: (651)-424-9579

Education Background

University of Minnesota, Twin Cities

MN

Ph.D., Statistics

Sep. 2020 - May. 2026 (Expected)

University of Minnesota, Twin Cities

MN

B.A., Mathematics, and Statistics, minor in Computer Science, with high distinction

Sep. 2016 - May. 2020

Experience

Research Assistant

Jun. 2021 - Present

- **Universal distribution-free testing framework for goodness-of-fit**

- Developed a universal and more powerful framework for testing the group means (A/B testing) compared to the usual chi-square tests.
- Similar methods are implemented to perform the goodness-of-fit tests for any postulated models and for mean function in a parametric regression setting when the distribution of the response is unknown.

- **Spatial time series modeling for epidemic diseases**

- Developed a new class of epidemiological spatial time series models for predicting the outbreaks and trends of epidemic diseases based on the MCMC, SMC, and Extended Kalman filters.
- Organized and managed large volumes of wastewater datasets using Snowflake, enabling early prediction of pandemics like COVID-19 by leveraging the model and the dataset.

Consultant

Sep. 2020 - Aug. 2021

- Utilized causal inference tools (e.g., IPTW, Propensity score matching) to discover causal relationships between the rare disease awareness of physicians and their ages, career lengths, specialties, and hospitals.

Instructor and Teaching Assistant

Sep. 2020 - Present

- Instructor for an introductory-level course in statistical analyzing tools (A/B Testing, ANOVA, etc.).
- Teaching assistant for courses in machine learning, design of experiments, and statistical computing including topics about **Random Forest, XGBoosting, GLM, LDA, SVM, Mixed effect models, RNN, etc.**

Selected Publications

- *A novel approach to detect line emission under high background in high-resolution X-ray spectra* 2023
 - Zhang X., Algeri S., et al. Monthly Notices of the Royal Astronomical Society.
- *Exhaustive goodness-of-fit via smoothed inference and graphics* 2022
 - Algeri S., Zhang X. Journal of Computational and Graphical Statistics.
- *Rare disease awareness and perspectives of physicians in China: a questionnaire-based study* 2021
 - Li X., Zhang X., et al. Orphanet Journal of Rare Diseases.

Skills & Software

- Programming: R (package: [LPsmooth](#)), Python (package: [LPbkg](#)), Pytorch, SAS, C, C++, Shiny, Tableau, Spark, Snowflake.
- Others: Casual Inference, A/B testing, Deep learning, Algorithm&Data Structure, Unix, Git. • Database: MySQL

Honors & Awards

- Data Science Initiative-MnDRIVE Graduate Assistantship Award for Ph.D. candidate (\$30,250), 2023-2024.
- Summer Research Scholarship and Fellowship for first-year Ph.D. students (\$6,500), 2021-2022.
- Buehler Memorial Scholarship for statistics undergraduate students (\$1,000), 2020.
- Global Excellence Scholarship offered to excellent incoming students (\$15,000 per year), 2016-2020.

Invited Talks

- Joint Statistical Meetings 2024, Portland, Oregon. August, 2024.
- International CHASC Astro-Statistics Collaboration, Harvard University, Cambridge, Massachusetts. February, 2024.