Xingche Guo

Data & Applied Scientist, Ph.D in Statistics

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Research Interests

Functional data analysis, Nonparametric statistical methods, Sparse statistics in high-dimensional data analysis, Bayesian hierarchical models, Markov random field, Machine learning, and Data mining.

Education

Iowa State University

Ames, IA

Doctor of Philosophy, Statistics

Aug. 2016 – Aug. 2021

- GPA: 3.98/4.0
- Advisor: Prof. Dan Nettleton (ISU) / Prof. Somak Dutta (ISU) / Prof. Yehua Li (UC Riverside)
- Courses: Advanced Probability Theory / Advanced Statistical Methods / Advanced Statistical Inference / Nonparametric Statistical Methods / Statistical Computing / Advanced Spatial Statistics / Advanced Bayesian Theory / Missing Data Analysis / Modern Multivariate Statistical Learning.

University of Science and Technology of China

Hefei, China

Bachelor of Science, Statistics

Aug. 2012 – Jun. 2016

- Average Score: 87.4/100

Skills

Projects in R, Rcpp, Python, Matlab, C, C++, LaTeX

Knowledgeable in SAS, SQL, Shell, HTML

Research Experience

A RKHS Approach for Variable Selection in High Dimensional Functional Linear Models

Ames, IA

PhD Thesis

Feb. 2019 – PRESENT

- Advisor: Prof. Yehua Li.
- Proposed a sparse estimator for functional linear regression under a reproducing kernel Hilbert space framework.
- Proved variable selection consistency in the classical fixed p setting.
- To prove variable selection consistency in the large p setting.

A Hierarchical Spatial Finlay-Wilkinson Model for Multi-Environment Trial Analysis

Ames, IA

PhD Thesis

Jan. 2018 – PRESENT

- Advisor: Prof. Somak Dutta and Prof. Dan Nettleton.
- Developed a Bayesian hierarchical framework for understanding crop performance by integrating genetic, environment and within-field spatial information.
- Proposed novel constraint on the intrinsic autoregression prior that alleviates the identifiability problem raised in multi-environment trial analysis.
- Designed fast computation algorithm for simulating high-dimensional GxE and spatial effects in MCMC procedures.

Work Experience

Laurence H. Baker Center for Bioinformatics and Biological Statistics

Ames, IA

Research Assistant

Jan. 2018 – PRESENT

- To develop plant image segmentation algorithm by statistical and deep learning methods.
- Enhanced Finlay-Wilkinson modeling for genotype x environment interaction analysis by incorporating genetic, weather, and spatial information using Genomes-to-Fields (G2F) data.
- Performed statistical testing and clustering methods to analysis tobacco nectar metabolite levels across sections/species.

Department of Statistics, Iowa State University

Ames, IA

Research Assistant

Aug. 2017 – Dec. 2017

- Responsible for monitoring the randomization of experiment design in an exercise trail study.

Department of Statistics, Iowa State University

Ames, IA

Teaching Assistant

Aug. 2016 – May 2017

- Grader for course: Probability and Statistics for Computer Science.

Talks & Posters

Guo, X., Dutta, S., and Nettleton, D., "A Hierarchical Spatial Finlay-Wilkinson Model for Multi-Environment Trial Analysis", In: Joint Statistical Meetings, Denver, CO, Aug. 2019.

ISU DMC team 2, "Automated Fraud Detection Model for Self-Scanning Systems", In: Retail Intelligence Summit by Prudsys, Berlin, Germany, Jul. 2019.

Selected Honors & Awards

2019 **1st Place at Data Mining Cup** — *Prudsys AG*
1/149 Teams from 114 universities in 28 countries

2018 **Meritorious Research Award** — *ISU*
Advanced Spatial Statistics Course Project

2018 **The George W. Snedecor Award in Statistics** — *ISU*
Presented annually to honor the most outstanding Ph.D candidate in Statistics

Professional Membership

American Statistical Association (ASA)

International Chinese Statistical Association (ICSA)