Xingche Guo

Data & Applied Scientist, Ph.D Candidate in Statistics

2215 Snedecor Hall, 2438 Osborn Drive, Ames, IA

+1-(515)-509-6883 | xguo@iastate.edu | xingcheg.github.io | xingcheg

Research Interests

Nonparametric models; Functional data analysis; High-dimensional statistics/Variable selection methods; Bayesian statistics; Spatial Statistics; Image analysis; Statistical machine learning.

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 (with Prof. Yehua Li)

Feb. 2019 – PRESENT

- 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 Analysis of Multi-Environment Field Trials

Ames, IA

PhD Thesis (with Prof. Somak Dutta and Prof. Dan Nettleton)

Jan. 2018 – PRESENT

- Developed a statistical framework for understanding and predicting crop performance across environments by integrating genomic, environmental, and within-field spatial information.
- Proposed projected intrinsic autoregression prior (PIAR) for spatial adjustment of fertility that alleviates an identifiability issue.
- Designed matrix free fast computation algorithms 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 under noisy backgrounds using 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

A Hierarchical Spatial Finlay-Wilkinson Model for Multi-Environment Trial Analysis, Joint Statistical Meetings, Denver, Colorado, Aug. 2019.

Automated Fraud Detection Model for Self-Scanning Systems, Retail Intelligence Summit by Prudsys, Berlin, Germany, Jul. 2019 **(Data Mining Cup 1st Place Solution)**.

Selected Honors & Awards

2019	**MLCAS Best paper award** Travel grant for International Workshop on Machine Learning for Cyber-Agricultural Systems	*MLCAS*
2019	**1st Place at Data Mining Cup** 1/149 Teams from 114 universities in 28 countries	*Prudsys AG*
2018	**Meritorious Research Award** Advanced Spatial Statistics Course Project	*ISU*
2018	**The George W. Snedecor Award in Statistics** Presented annually to honor the most outstanding Ph.D candidate in Statistics	*ISU*

Professional Membership

American Statistical Association (ASA)

International Chinese Statistical Association (ICSA)