Xingche Guo

Data & Applied Scientist, Ph.D Candidate in Statistics

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Professional Summary

- Statistician & data scientist with over 5 years experience in data & application-driven modeling and programming.
- Diversely trained to perform statistical and machine & deep learning methods for $100+$ datasets of all varieties.
- Positive and reliable team worker with strong problem solving and collaboration skills — Led an ISU team of 12 graduate students and won international data mining competition.
- Successfully gave 3 presentations & posters in international conferences and 1 talk in ISU department seminar.

Technical/Professional Skills

Programming Language	**Proficient with**: R, Rcpp, Python, Matlab, Keras, LaTeX. **Knowledgable in**: C/C++, Tensorflow, SQL, Shell, SAS, HTML
Data Analysis	Linear models, Multivariate analysis, Nonparametric/Functional data analysis, Bayesian statistics, Spatial statistics, Image analysis, Machine/Deep learning, Data visualization

Education

Doctor of Philosophy (Ph.D.), Statistics

Ames, IA

Iowa State University

Aug. 2016 – May. 2021

- GPA: 3.98/4.0
- Advisor: Prof. Dan Nettleton (ISU) / Prof. Somak Dutta (ISU) / Prof. Yehua Li (UC Riverside)

Bachelor of Science (B.S.), Statistics

Hefei, China

University of Science and Technology of China

Aug. 2012 – Jun. 2016

- Average Score: 87.4/100

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

- Propose an elastic-net type estimator for functional linear regression with scalar responses and functional predictors under a reproducing kernel Hilbert space framework.
- To establish precise conditions on the problem dimension, the number of nonzero elements, and the number of observations that are necessary and sufficient for sparsity pattern recovery using the functional elastic-net method.

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*

- Develop a statistical framework for understanding and predicting crop performance across environments by integrating massive data from different sources (i.e. genomic, environmental, and within-field spatial data).
- Propose projected intrinsic autoregression prior (PIAR) for spatial adjustment of fertility that alleviates an identifiability issue.
- Design matrix free fast computation algorithms for simulating high-dimensional GxE and spatial effects in MCMC procedures.
- Publish Rcpp package (*spFW*) in Github.

Work Experience

Biological Statistics Research Assistant

Ames, IA

Laurence H. Baker Center for Bioinformatics and Biological Statistics *Jan. 2018 – PRESENT*

- To provide solutions for automatic and real-time plant traits measurement providing a sequence of plant field photos over time using statistical and computer vision methods.
- Improve image segmentation algorithm to better distinguish plant from noisy field backgrounds using deep neural network.
- Build Bayesian hierarchical models to predict crop yields in US Midwest providing the genomic and environmental information.
- Develope methodologies for simultaneously analyzing genomic, phenotypic, spatial and environmental data from agricultural and biological sciences.
- Perform statistical testing and clustering methods to analysis plant nectar metabolite levels across sections/species.

Statistics Research Assistant

Ames, IA

Department of Statistics, Iowa State University *Aug. 2017 – Dec. 2017*

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

Statistics Teaching Assistant

Ames, IA

Department of Statistics, Iowa State University *Aug. 2016 – May 2017*

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

Talks & Posters

Talk & Poster: A Hierarchical Spatial Finlay-Wilkinson Model for Analysis of Multi-Environment Field Trials, Second International Workshop on Machine Learning for Cyber-Agricultural Systems, Ames, IA, Sep. 2019.

Talk: Automated Fraud Detection Model for Self-Scanning Systems, Statistics Department Seminar, Iowa State University, Ames, IA, Sep. 2019.

Talk: A Hierarchical Spatial Finlay-Wilkinson Model for Analysis of Multi-Environment Field Trials, Joint Statistical Meetings, Denver, Colorado, Aug. 2019.

Poster: 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)