Xingche Guo

Data & Applied Scientist, Ph.D Candidate in Statistics

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Research Interests

Machine/Deep learning; Nonparametric/Functional data analysis; High-dimensional statistics/Variable selection methods; Bayesian statistics; Spatial Statistics; Computational Statistics, Image analysis.

Technical/Professional Skills

Proficient with R, Rcpp, Python, Matlab, LaTeX, markdown, Keras.
Knowledgable in C, C++, SQL, Shell, SAS, HTML, RShiny, Tensorflow.

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)
- Selected Courses:
  - Machine Learning: Modern Multivariate Statistical Learning; Deep Machine Learning.
  - Statistics Theory: Advanced Probability Theory; Advanced Statistical Inference.
  - Statistics Methodology: Advanced Statistical Methods; Nonparametric Statistical Methods; Functional Data Analysis; Statistical Computing; Advanced Spatial Statistics; Advanced Bayesian Theory; Missing Data Analysis.

Bachelor of Science (B.S.), Statistics

Hefei, China

University of Science and Technology of China *Aug. 2012 – Jun. 2016*

- Average Score: 87.4/100

Work Experience

Statistics and Machine Learning Toolbox developer

Natick, MA

MathWorks *May. 2020 – Aug.2020*

- Code optimization for hundreds of functions in the Statistics and Machine Learning Toolbox.
- Add plot ROC curves feature for all MATLAB binary and multi-class classification models.
- Build multiple comparisons and Dunnett's test into MATLAB ANOVA models and (general) linear (mixed effect) models.
- Build optimal bandwidth selection methods into MATLAB univariate and bivariate kernel density estimation function with (possibly) boundary effects.

Statistics Research Assistant

Ames, IA

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

- Provide solutions for plant image segmentation, front and back plants classification, and automatic plant traits extraction and fitting for field high-throughput phenotyping systems using machine/deep learning.
- Develop Bayesian hierarchical models for simultaneously analyzing genomic, phenotypic, spatial and environmental data from agricultural and biological sciences and make prediction for the crop yields in US Midwest, publish Rcpp package (spFW) on Github.
- Perform statistical testing and clustering methods to analyze 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.

Research

Guo, X., Qiu, Y., Nettleton, D. "Automatic Traits Extraction and Fitting for Field High-throughput Phenotyping Systems". Work in Progress

Guo, X., Li, Y., Hsing, T. "A RKHS Approach for Variable Selection in High Dimensional Functional Linear Models". Work in Progress

Guo, X., Dutta, S., Nettleton, D. "A Hierarchical Spatial Finlay-Wilkinson Model for Analysis of Multi-Environment Field Trials". Manuscript in preparation for Journal of the American Statistical Association.

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)