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Huizi Wang Ph.D. Candidate

Education

Department of Statistics, Oklahoma State University Stillwater, Oklahoma, USA
Ph.D. in Statistics August 2018 - August 2025 *(expected)*

- Advisor: Prof. Joshua D Habiger
- Title: Efficient Classification Methods for Sparse High-Dimensional Count Data with Model Selection as Motivated by Microbe Finder.

Department of Statistics, University of Missouri Columbia, Missouri, USA
M.S. in Statistics August 2015 - May 2017

College of Science, North China University of Technology Beijing, China
M.S. in Statistics September 2012 - June 2015

College of Science, North China University of Technology Beijing, China
B.S. in Information and Computing Science September 2008 - June 2012

Research Interests

High-Dimensional Classification Analysis; Statistical Methods for Bioinformatics and Genomics; Machine Learning Algorithms for Sparse Data; Categorical Data Analysis; Statistical Machine Learning Applications.

Publications

1. Bodaghi, S., Dang, T., **Wang, H.**, Espindola, A. S., Craddock, I. L., Osman, F., Ribeiro, M., Nascimento, D. D., Mitra, A., Habiger, J., Cardwell, K. & Vidalakis, G. (2024). E-probes targeting citrus pathogens as a new diagnostic standard. Citrograph Magazine Archive - Citrus Research Board, Spring 2024 Issue Vol. 15, No. 2: 44-47. https://citrus-research-board-static.sfo2.digitaloceanspaces.com/citrograph/pdf/CRB-Citrograph-Mag-Q2-Spring-2024-Web.pdf.
2. Dang, T., **Wang, H.**, Espindola, A. S., Habiger, J., Vidalakis, G., & Cardwell, K. (2023). Development and statistical validation of e-probe diagnostic nucleic acid analysis (EDNA) assays for the detection of citrus pathogens from raw high-throughput sequencing data. PhytoFrontiers™, 3(1), 113-123.

Works in Progress

1. Nascimento, D. D., Bodaghi, S., **Wang, H.**, Ribeiro, M., Campos, R., Dang, T., Osman, F., Habiger, J., Espindola, A. S., Vidalakis, G., & Cardwell, K. (2025). Development and validation of a suite of e-probes for electronic diagnostic nucleic acid analysis (EDNA) for 20 graft-transmissible pathogens of citrus using MiFi® and blind ring testing among novice users. (Under Revision)
2. Logistic Regression Models and Penalized Method of Moment Estimation for Sparse Count Data. (To be Submitted)
3. Statistical Methods for Pathogen Detection and E-probe Selection with Microbe Finder Data. (To be Submitted)

Invited Presentations

1. "Efficient Classification Methods for Sparse High-Dimensional Count Data with Model Selection as Motivated by Microbe Finder" Dissertation Defense, Department of Statistics, Oklahoma State University (April 2025).
2. "Comparison of Classification Methods for Pathogen Detection with High-Dimensional Microbe Finder Data", Department of Statistics, Oklahoma State University (April 2024).
3. "Classification Methods for High-Dimensional Microbe Finder Data", NCCC170 Annual Meeting, Department of Statistics, Oklahoma State University (June 2022).

Other Presentations

1. "Simple, Computational Efficiency and Quality Classification Methods for Pathogen Detection with High-Dimensional Microbe Finder Data" Poster Presentation, Department of Statistics 50th Anniversary Ceremony, Department of Statistics, Oklahoma State University (September 2024).
2. "Comparison of Classification Methods for Pathogen Detection with High-Dimensional Microbe Finder Data" Student Talk, Conference on Applied Statistics in Agriculture and Natural Resources, Iowa State University (May 2024).
3. "Comparison of Classification Methods for Pathogen Detection with High-Dimensional Microbe Finder Data" Poster Presentation, Oklahoma Conference for Statistics, Biostatistics, and Data Science, The University of Oklahoma (October 2023).
4. "Classification Methods for High-Dimensional Microbe Finder Data" Poster Presentation, Oklahoma Conference for Statistics, Biostatistics, and Data Science, The University of Oklahoma (October 2022).

Patent

1. Cardwell, K. F., Espindola, A. S., Dang, T., Habiger, J. D., & **Wang, H.** (2023). System and method for interactive pathogen detection. US Patent No.: US20230360731A1. https://patents.google.com/patent/US20230360731A1.

Research Assistant Experience

Graduate Research Assistant Summer 2019 - Fall 2024

- Supervisor: Dr. Kitty Cardwell, United States Department of Agriculture (USDA) National Plant Health Champion and Director of the Institute for Biosecurity and Microbial Forensics (IBMF) at Oklahoma State University (Emerita).
- Role: Statistician on a research team that includes professors and students from Oklahoma State University and the University of California, Riverside.
- Responsibilities: Algorithm Developing; Data Generation; Data Curation; Statistical Validation; E-probe Design; E-probe Validation; Weekly Meeting.

Teaching Assistant Experience

STAT 5063 Statistical Machine Learning with R Spring 2024 - Spring 2025

- Responsibilities: Holding Office Hours; Grading Homework Assignments.

STAT 5193 SAS and R Programming Fall 2022 - Spring 2025

- Responsibilities: Grading Homework Assignments.

STAT 5543 Applied Regression Analysis Fall 2018

- Responsibilities: Grading Homework Assignments.

Professional Activities

United States Department of Agriculture (USDA) | Workshop January 2023

- Role: Statistic instructor for this one-week workshop.
- Responsibilities: Give tutorials for R scripts for pathogen detection to USDA-APHIS: Plant Protection and Quarantine employees.

Computing Languages

Proficient in R, SAS, Python, C++, SPSS and High-Performance Computer (HPC).