HAO WANG
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EDUCATION

Iowa State University — **Ames, Iowa**
Doctor of Philosophy in Statistics — Oct 2023 (Expected)
Teaching/Research Assistant — GPA: 3.83/4.0

Iowa State University — **Ames, Iowa**
Master of Science in Statistics — December 2019

Colorado State University — **Fort Collins, Colorado**
Bachelor of Science in Statistics — May 2018

WORK EXPERIENCE

Statistician Intern at Corteva Agriscience — **Iowa, U.S.**
Statistician in Seeds & Crop Protection Data Science — May 2021 – Present

- Researched dose proportionality detection for TK study, and proposed a new statistical approach for locating kinetically derived maximal dose (KMD)
- Designed and conducted simulation studies to compare approaches for locating KMD and drafted an internal white paper
- Analyzed Ecotoxicology dose-response data with non-linear models for determining effective concentrations, developed statistical protocol and implemented SAS macro per regulatory guidelines
- Researched Benchmark Dose (BMD) analysis, reviewed and interpreted USEPA & EFSA guidelines including model selection, model averaging, and Bayesian BMD analysis
- Developed protocol for statistical analysis of BMD for different endpoints from avian reproduction study
- Quality-checked statistical reports of Composition Expression Agronomic (CEA) trials for regulatory submission

Research Assistant at Iowa State University — **Iowa, U.S.**
Research Assistant — January 2019 – May 2021

- Designed and conducted simulation studies to evaluate model performance for gene network analysis
- Proposed novel network inference procedure and reconstructed gene network with real plant transcriptomic data
- Aggregated multi-omics data, conducted statistical learning per biologists' questions, including assessing treatments' effect on large scale metabolome profiles, testing feature associations and network analysis of microbiome and metabolome
- Analyzed and defined core leaf and root metabolomes for sorghum grown
- Conducted machine learning methods for the prediction of biomass to learn how to maximize plant growth
- Coded and documented solutions with R for reproduction

Teaching Assistant at Iowa State University — **Iowa, U.S.**
Teaching Assistant — January 2021 – May 2021

- STAT 501 Multivariate Statistical Methods, STAT 571 Design of Experiments
- Duties include holding office hours, grading homework and exams, explaining difficult homework/lab problems

Remote Researcher at Principal Financial Group — **Iowa, U.S.**
Researcher — August 2019 – Dec 2019

- Aggregated and pre-processed stock return data, transformed the stock returns via Gaussianized Distributional Transformation
- Predicted and ranked massive stock returns data within industrial groups using hierarchical models
- Defined the benchmark and model evaluation procedure, and proposed ensemble models to improve prediction accuracy
- Documented reusable code with R, and presented the final report to non-technical audiences

SELECTED PROJECTS

Association study, at Iowa State University — **Iowa, U.S.**
Statistical Consultant — December 2019 – January 2020

- Conducted analyses on clinical data, tested the association between peripheral and central hearing impairment with confounding effect controlled
- Revised the manuscript and wrote the statistical analysis section

High dimensional statistical learning, at Iowa State University — **Iowa, U.S.**
Statistical Consultant — December 2018 – May 2019

- Researched the importance of women's status for child nutrition in Ghana with a Ph.D. candidate major in Nutrition
- Processed and cleaned survey data with 5884 observations and 677 variables with R, applied multivariate analysis with R
- Successfully identified most significant factors/covariates corresponding to different response variables

Statistical consulting, at Colorado State University — **Colorado, U.S.**
Team Member — January 2018 - May 2018

- Worked with Dr. Johnson identifying treatment effect on superficial digital flexor tendon (SDFT) injuries in horses
- Analyzed the longitudinal clinical data and developed a linear mixed model with SAS
- Found the overall quadratic trend in time, estimated horse random effect, identified non-significant treatment fixed effect

SKILLS/QUALIFICATIONS

- Proficient in Statistics & Math theory and application through academic coursework, passed Ph.D. written exams
- Skillful in using R, SAS, and GitHub (5 years' experience), familiar with R Shiny
- Familiar with Python, MATLAB, and high-performance computing platform (Amazon AWS)

- Fluent in Chinese and English (written and verbal)
- Research focusing on network analysis, high-dimensional inference, mixed-effect model, omics-data analysis, multivariate data analysis, statistical learning

PUBLICATIONS (* indicating major professors)

- **Wang, H.**, Liu, P.*, Qiu, Y.*, 2022+. Variable Selection and REML estimation for High-dimensional Linear Mixed-effects Model. Under preparation.
- **Wang, H.**, Qiu, Y.*, Guo, H., Yin, Y., Liu, P.*, 2022+. Constructing Large Scale Gene Networks by Partial Correlation Graphs with Information Incorporation. To be submitted.
- Wang, Z., Zhang, L., Huang, T., Yang, R., **Wang, H.**, Yin, H. and Lyu, J., 2022. Developing an Explainable Machine Learning Algorithm to Predict the Mechanical Ventilation Duration of Patients with ARDS in Intensive Care Units.
- Wang, Z., Zhang, L., Wa, W., **Wang, H.**, Yin, H. and Lyu, J., 2022. Association Between Blood Pressure During Vasopressor Weaning and Hospital Survival: What are the Optimal Targets of Vasopressor Support?. EMERGENCIAS, 34(5).
- Zhang, L., Wang, Z., Xu, F., Ren, Y., **Wang, H.**, Han, D., Lyu, J. and Yin, H., 2021. The Role of Glucocorticoids in the Treatment of ARDS: A Multicenter Retrospective Study Based on the eICU Collaborative Research Database. Frontiers in medicine, 8.
- Bao, J., Yu, Y., Li, H., Hawks, J., Szatkowski, G., Dade, B., **Wang, H.**, Liu, P.*, Brutnell, T., Spehar, B. and Tye-Murray, N., 2020. Evidence for independent peripheral and central age-related hearing impairment. Journal of Neuroscience Research, 98(9), pp.1800-1814.

PRESENTATIONS

Department of Statistics 75^{th} Anniversary, at Iowa State University **Sep 2022**
Constructing Large Scale Gene Networks by Partial Correlation Graphs with Information Incorporation
Stat-Genetics Group at Iowa State University **Oct 2019**
Gene Network Analysis with c-level Partial Correlation Graphs

ORGANIZATIONS

ASA
Student memebership September 2018 - Present
STATers **Iowa State University**
Member September 2018 - Present