Yingzhen Wang

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EDUCATION

Master of Science in Biostatistics | GPA: 3.9/4.0 Aug 2024-May 2026
University of Michigan School of Public Health Ann Arbor, MI
Master of Applied Statistics in Statistical Science | GPA: 3.9/4.0 Aug 2020-Aug 2022
Colorado State University Fort Collins, CO
Bachelor of Science in Statistics | GPA: 2.9/4.0 Sep 2016-Jun 2020
Yanbian University Yanbian, China

HEALTH DATA ANALYSIS AND RESEARCH EXPERIENCE

Research on Pneumonia Patient Condition Classification Using Diffusion Models and CLIP Nov 2024-Dec 2024
School of Public Health, University of Michigan Ann Arbor, MI

- Deployed the stable Diffusion model and utilized Low-Rank Adaptation of Large Language Models (LoRA) to fine-tune the model to make it generate customized chest X-ray images based on a dataset of 5,856 radiographs.
- Utilized the fine-tuned contrastive language-image pre-training (CLIP) model to achieve modest improvements in training accuracy, and the training accuracy improved from 48.94% to 50.51%.
- Collaborated with fellow analysts to process and analyze the graphical data with effective communication

Research on Predictive Algorithms for Cardiovascular Disease May 2023-Jul 2023
Summer Research Seminar, Supervisor: R. Todd Ogden, Columbia University Remote

- Utilized Principal Component Analysis (PCA) to identify relevant predictors and reduce dimensionality in a dataset with more than 4000 observations and 10 plus variables, implemented backward stepwise elimination to refine model features and prevent overfitting
- Developed Machine Learning methods such as random forest and logistic regression models to assess CHD risk factors and aid in early detection
- Evaluated model performance based on confusion matrix and AUC-ROC curve values and finally validated that the random forest model outperformed other models in categorizing high-dimensional data

Familial Influences on Radiation Effects in Mice May 2022-Aug 2022
NASA Human Research Program, Weil Lab, Colorado State University Fort Collins, CO

- Designed and fitted a generalized linear mixed model for the analysis of the relationship among Modified Merriam-Focht classification and radiation groups using a dataset consisting of more than 5000 observations
- Detected the difference in radiation effects between γ-rays and HZE nuclei using emmeans function in R Studio
- Achieved regression analysis for the odds of being vision impaired caused by γ-rays and HZE nuclei using R Studio

INTERNSHIP

Research Assistant May 2025-July 2025
Department of Computational Medicine & Bioinformatics at University of Michigan Ann Arbor, MI

- Conducted spatial transcriptomics analysis on normal vs. Alzheimer's mouse brains using SPADE, identifying over 13,000 spatially variable genes with high sensitivity to local expression heterogeneity
- Performed clustering and domain detection with the BASS package and integrated Seurat-based differential expression analysis to compare spatial domain-specific vs. localized gene expression
- Built reproducible workflows on Great Lakes HPC with R&Python environments, executing Slurm jobs for the 3000*30000 expression matrix through VS Code

Research Assistant May 2025-Present
Department of Biostatistics at University of Michigan Ann Arbor, MI

- Developed and validated a Multivariate Bayesian Shrinkage Prior (Mt-MBSP) model supporting mixed-type outcomes (continuous, binary, count) with Gibbs sampling
- Conducted extensive simulation studies comparing Bayesian CRD, Bayesian CRD with imputation, and OLS, evaluating predictive accuracy and convergence via Gelman-Rubin diagnostics

PUBLICATIONS

- **Y. Wang**, "Research of Lifestyle Effects on Cardiovascular Disease," *the 2023 4th International Symposium on Artificial Intelligence for Medical Sciences (ISAIMS 2023)*
- Z. Zhang, **Y. Wang**, and W. Sun, "Application of Nonlinear Programming to Heat Conduction Model," *International Journal of Engineering and Management Research*, vol. 8, no. 5, pp. 169-172, 2018, doi: doi.org/10.31033/ijemr.8.5.06

SKILLS

- Software: R Studio, Python, C++, SAS, Git, Shinyapps, Linux, MATLAB