Yushan Gu

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Education Background

- **Iowa State University** Ames, IA ***Ph.D.*** ***Statistics*** Aug 2017 - Jan 2024
- **University of Utah** Salt Lake City, Utah ***B.S.*** ***Mathematics*** (Dean's List) Jan 2013 - Dec 2016

Work Experiences

Corteva Agriscience, Data Scientist II

July 2023 - Present

- **Provided statistical expertise** in the design, analysis, reporting, and interpretation of data related to the company's **seed** and **crop protection products**. Study and evaluate **drug residues in soil, toxicity for organisms, and environmental impact**
- Prepared relevant sections of **regulatory submissions, reports, and manuscripts**
- Collaborated with cross-functional teams to solve problems, perform statistical modeling/data analysis, and interpret complex datasets
- Developed customized tools, such as **R Shiny applications**, to generate specific results as needed
- **Effect:** Critical for the market approval and maintaining registration of the company's products with regulatory authorities
- **Main Skills:** Generalized Linear Mixed-effects model; Bayesian analysis; Does-response analysis
  - **Programming:** R; R shiny; SAS; Python

Bayer Crop Science, Data Scientist Co Op

Jan 2023 - Jun 2023

- **Predicted the flowering time** in male corn by statistical models. Developed algorithms to clean, analyze and visualize multivariate datasets
- **Effect:** Aid researchers and farmers in crossbreeding corn with greater precision. This model also predicts other critical periods like optimal harvest time, potentially reducing labor and storage costs, and can be adapted for other crops
- **Main Skills:** Mixed-effects model; Growing Degree Units (GDUs)
  - **Programming:** R, Python, SQL

Research Experiences

Research Assistant, *Iowa State University*

Jul 2019 - Jan 2024

- **Developed a novel method** that extends and combines the **Lasso** method and **MANOVA**, allowing simultaneous inference of multivariate coefficients in the **High-Dimensional** Linear Regression Model with either univariate or **correlated multivariate responses**.
- Used the proposed method to model and analyzed data from different sources:
  - **Agricultural Data** – Investigated the significance of the effect of certain phenotypes on the Ear, Cob, and Kernel of plants

A Predictive Model for Success Rate of Jejunal Feeding Tube Placement

Jan 2022 - May 2022

- **Predicted the success rate** of tube placement with patients' features by different statistical models. Built prediction model to forecast success rates based on features.
- **Main Skills:** Logistic Regression Model; Classification and Regression Trees (CART); AUC; ROC Curve

Statistical Analysis and Predictive Modeling of Student Academic Performance

Jul 2021 - Mar 2022

- Performed statistical analysis on student data
  - Track academic performance, use statistical models to classify students into distinct profiles, and identify optimal teaching strategies tailored to each group
  - Provided data-driven recommendations for students' future academic and career pathways
- **Main Skills:** Factor Analysis, Principal Component Analysis (PCA), K-Means Clustering, Classification Tree
  - **Programming:** R, SQL

Technical Strengths

- **Programming:** R, SQL, Java, Python, SAS **Other Skills:** RShiny, JavaScript, HTML, Git, SPSS, Excel VBA, Photoshop
- **Quantitative Skills:** Multivariate ANOVA (MANOVA), Generalized Linear Mixed-Effects Model, Survival Analysis, Machine Learning (Spectral Clustering, Random Forest, Neural Network. . .), Classification, Missing Data, Spacial Data, Bayesian Statistics, Data Modeling, Data Visualization

Selected Publication

- Qiu Y, **Gu Y**. 2024. F Statistics for High-Dimensional Inference of Linear Model. *Bernoulli*.
- Hung M, Smith WA, Voss MW, Franklin JD, **Gu Y**, Bounsanga J. 2019. Exploring student achievement gaps in school districts across the United States. *Education and Urban Society.*
- Hung M, Voss MW, Bounsanga J, **Gu Y**, Granger EK, Tashjian RZ. 2018. Psychometrics of the Patient-Reported Outcomes Measurement Information System Physical Function instrument administered by computerized adaptive testing and the disabilities of arm, shoulder and hand in the orthopedic elbow patient population. *Journal of shoulder and elbow surgery* 27 (3), 515-522.