YAOHUI GUO

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EDUCATION

Huazhong University of Science and Technology 'Project 985'   2021-Present
Major in the School of Mathematics and Statistics
Courses with Distinction: Numeric Approximation(100), Mathematical Statistics(93), Probability Theory(92), Stochastic Process(93), Operations research(95), Differential Geometry(100)
Overall Score: 88.3/100   Ranking: 16/111

STANDARD TESTS

TOEFL Score : 99   **GRE Score** : 318
Reading 27; Listening 25; Speaking 23; Writing 24   Verbal 151; Quantitative 167; Analytical Writing 3.5

EXPERIENCE

Biostatistics —— Isoform Quantification and Analysis   September 2023 - Now
Responsible for Building models and Programming for example validation

· Modeling maximum likelihood estimation of transcript expression ratios.
· Writing 1000+ lines of code in Python to solve the problem of matching read fragments to transcripts.
· Qualitative analysis of the complexity of the transcript space based on the condition number.
· Quantitative analysis of human gene expression was performed using software such as Stringtie, Cufflinks, and others.
· Classifying and analyzing the data, over 90% of the genes meet the model's expectations.

Summer Research —— Neural ODE in Nuclear Physics Equations   July - August 2024
Responsible for Building Neural Networks and Writing Code

· Participating in a six-week summer research in NC State University, communicating weekly with mentor.
· Deriving a proof of the adjoint method and mastering its application to Neural ODE.
· Using Python to solve a simple ODE equation via the adjoint method and Neural ODE.
· Adjusting loss weights to solve point reactor kinetic equation using Neural ODE.

Provincial University Innovation and Entrepreneurship Program   March - December 2023
Responsible for Building models and Writing Code

· Analyzing the impact of individual, family, and social factors on the reemployment of elderly individuals using a binary logit model, including conducting relevant endogeneity and robustness tests.
· Classifying elderly individuals into groups based on their physical and economic conditions using the K-means++ clustering algorithm to enhance the precision of subsequent recommendations.
· Collecting data on elderly reemployment through web scraping and performing statistical analysis on the gathered data.

American Collegiate Mathematical Modeling Contest   February 2023
Responsible for Data Processing and Writing papers

· Collecting data on light pollution and summarizing and processing the data.
· Reading more than 10 English papers on light pollution and got effective information out of it.
· Using entropy weighting and fuzzy evaluation to evaluate light pollution levels.
· Writing an academic paper of more than 25 pages.

Asia and Pacific Mathematical Contest in Modeling   November 2022

Responsible for Building models and Writing Code

· Using Python to identify images containing letters and filtering temperature data by comparing eigenvalues to create temperature-time images for analysis.
· Extracting eigenvalues from the images based on color and grayscale dimensions to create time series graphs.
· Analyzing the quantitative results to derive the change patterns of the crystallizer melt images during melting and crystallization.

National Student Mathematical Modeling Competition   September 2022

Responsible for Building models and Writing papers

· Pre-processing of data to remove 313 outliers.
· Using a chi-square test to analyze the relationship between weathering and grain, type, and color of glass.
· Using Spearman's correlation coefficient to analyze the relationship between elemental content in glass.
· Writing an academic paper of more than 30 pages.

HONORS & AWARDS

First prize at provincial level, National Student Mathematical Modeling Competition	September 2022
Honorable Mention, American Collegiate Mathematical Modeling Contest	May 2023
First Prize, Asia and Pacific Mathematical Contest in Modeling	January 2023
Second Prize, Huazhong Cup Mathematical Modeling Contest	May 2022
Scholarships for Academic Excellence	September 2024
Scholarships for Academic Excellence	September 2022
Self-Empowerment Scholarship	September 2022

SKILLS & INTERESTS

Computer Languages	Python, Matlab, R
Tools	Neural Network, Mathematical Modeling, Numerical Calculation
Interests	Biostatistics, Probability Theory and Stochastic Processes, Machine Learning