HAO QI

+86 132-9338-1610 | email: hq15@rice.edu
6100 Main St, Houston, TX, USA (77005)
Personal Website: www.linkedin.com/in/hao-qi-rice333

EDUCATION

Rice University Houston, TX, USA
Master of Statistics 08/2024 – 12/2025

- **GPA:** 3.94/4.0
- **Selected Core Courses:** R for Data Science (A+), Regression and Linear Models (A), Probability (A-), Statistical Inference (A), Advanced Statistical Methods (A)

University of North Carolina Wilmington (UNCW) Wilmington, NC, USA
Bachelor of Science; Majoring in Mathematics & Minoring in Statistics 08/2023 – 05/2024

- **GPA:** 3.93/4.0 (Dean's List)
- **Selected Core Courses:** Regression & Correlation (A), Biostatistical Analysis (A), Vector Calculus (A) Abstract Algebra (A), Seminar in Mathematics (A)

Chongqing University of Arts and Sciences (CUAS) Chongqing, China
Bachelor of Science; Majoring in Mathematics and Applied Mathematics 09/2020 – 06/2024

- **GPA:** 91.39/100 (Rank top 1)
- **Selected Core Courses:** Applied Multivariate Statistical Analysis (A), Numerical Methods (A), Machine Learning (A), Discrete Mathematics (A), Probability Theory and Mathematical Statistics (A)

RESEARCH INTERESTS

- Applications of Machine Learning to Medical Data, Biostatistics, Time Series Analysis

PUBLICATIONS

- Miles TJ, Guinn MT, Tan X, **Qi H**, Orozco-Sevilla V, Moon MR, Coselli JS, Rosengart TK, Li M, Chatterjee S, Ghanta RK, Tissue perfusion pressure: A novel hemodynamic measure to assess risk of acute kidney injury after cardiac surgery, The Journal of Thoracic and Cardiovascular Surgery (2025), doi: https://doi.org/10.1016/j.jtcvs.2025.07.009
- **Hao Qi**, and Y.S. Wang, "Prediction and Analysis of Stock Logarithmic Returns Based on ARMA-GARCH Model", License: CC BY-NC 4.0, In book: Proceedings of CECNet 2022, DOI: 10.3233/FAIA220575
- **Hao Qi**. "Research on Forecasting for Different Types of Small Sample Time Series Data", 2022/The 6th International Conferences on Data Science and Business Analytics (ICDSBA 2022). IEEE

RESEARCH EXPERIENCE

A Novel Hemodynamic Measure to Assess Risk of Acute Kidney Injury After Cardiac Surgery, BCM
Supervised by Dr Meng Li (Rice University) and MD Travis Miles (Baylor College of Medicine) 02/2025 – Present

- Developed the random forest model and logistic regression model to predict AKI after cardiac surgery using EHR data from 1,160 patients
- Implemented statistical analysis on mean arterial pressure (MAP), tissue perfusion pressure (TPP), mean perfusion pressure (MPP), and diastolic perfusion pressure (DPP)
- Performed feature selection using random forest to identify top predictors and compared five logistic regression models with and without TPP variables
- Showed that adding mean TPP significantly improves model interpretability
- The final model achieved AUC of 0.74 with TPP remaining statistically significant over MAP

Modeling Glioblastoma Patient Outcomes: A Comparison of Three Statistical Methods, UNCW
Supervised by Professor Daniel Guo and Assistant Professor Viral Panchal 09/2023 – 12/2023

- Survival analysis of patients was performed using the TCGA-GBM dataset of the National Cancer Institute
- Modeling and analysis of the survival of 596 patients using Logistic regression, Cox proportional hazard model and accelerated failure time model (AFT)
- Age, level of functional impairment (KPS) and radiotherapy dose were significant features
- In the Cox model, severe impairment HR=4.823 ($p<0.001$), and combined radiotherapy and chemotherapy significantly prolonged survival time in the AFT-Weibull model ($p=0.04$)

Quantitative Study of the Effect of Green GDP (GGDP) on Environmental and Resource Protection—Statistical Measurement based on the Contribution of Chongqing's Green Economic Development, CUAS
Supervised by Professor Jibo Wu and Associate Professor Lingli Zhang 02/2023 – 05/2023

- Collected data from Chongqing Bureau of Statistics and defined the relationship between GGDP and GDP
- Applied the TOPSIS comprehensive evaluation method to evaluate the contribution of GGDP in Chongqing, such as the forest cover, water consumption in industry and family, natural gas consumption, and other indicator of great importance, confirmed each indicator's effect to GGDP
- Applied linear regression model, GM(1,1) and ARIMA to predict Chongqing's GGDP from 2022 to 2026
- Achieved the mean absolute error of 1.987% of the gray prediction model

Prediction and Analysis of Stock Logarithmic Returns Based on ARMA-GARCH Model, CUAS
Supervised by Professor Jibo Wu 09/2022 – 11/2022

- Investigated daily log-returns of APPLE, American Airlines, and Advanced Micro Devices (AMD) to model serial correlation and volatility in equity markets
- Verified data stationarity using ADF tests and heteroskedasticity via ARCH tests
- Built ARMA(p,q)-GARCH(i,j) models and selected models using AIC, BIC, and HQIC

Higher Education Evaluation in China via AHP-TOPSIS, CUAS
Supervised by Associate Professor Lingli Zhang 05/2022 – 06/2022

- Developed a multi-criteria evaluation model to assess 30 universities in the Yangtze River Delta based on academic and research indicators
- Applied Analytic Hierarchy Process (AHP) to assign weights to six key metrics and ensured consistency
- Integrated TOPSIS to rank institutions based on their proximity to the ideal solution
- Demonstrated rigorous application of decision analysis methods to higher education policy evaluation

Research on Forecasting for Different Types of Small Sample Time Series Data, CUAS
Supervised by Associate Professor Hailun Lin 03/2022 – 08/2022

- Investigated three classes of small-sample time series—private car ownership, population, and unemployment rate—to assess model suitability across domains
- Evaluated each model based on indicators, such as SSR, MSE, and R-Square, and defined the appropriate one for each type of small sample time series data
- Identified optimal models, polynomial regression for private car ownership, ARIMA for urban unemployment rate, and a combination of gray prediction and polynomial regression for population analysis

WORK EXPERIENCE

Baylor College of Medicine (BCM) Houston, TX, USA
Research Assistant (with Dr Meng Li at Rice and Travis Miles at BCM) 09/2024 – Present

- Build a machine learning model to predict acute kidney injury after cardiac surgery based on hemodynamics, basic patient information, and patient medical data
- Implement rolling window feature extraction technology to enhance time modeling
- Evaluate XGBoost, random forest, and logistic regression models using ROC-AUC curves
- Optimize model parameters and identify key predictive features in multiple time windows

XueXiQiangGuo Learning Platform LLC Beijing, China
Intern of Technical Safety Department 07/2022 – 08/2022

- Completed a cyber security accountability specification
- Participated in network security drills
- Assisted in organizing relevant network security conferences

TEACHING ASSISTANT

- Rice University: Linear Regression
- Chongqing University of Arts and Sciences: Numerical Methods, Differential Equations, Probability Theory and Mathematical Statistics, Analytic Geometry

AWARDS AND HONORS

- National Scholarship (Top 1%) 2022
- Chongqing Outstanding College Graduate Student (Top 2%) 2024
- Chongqing Merit Student (Top 3%) 2023
- Chongqing University of Arts and Sciences Top 10 Students Scholarship (Top 1%) 2023
- Comprehensive Merit Scholarship (Six times) 2021-2023
- Academic Research Scholarship 2023

CONTESTS

- 2nd Prize in the National Statistical Modeling Contest for College Students Chongqing Division 2023
- 3rd Prize in the 8th Dimension Cup Mathematical Modeling Contest 2023
- 2nd Prize in the China University Big Data Contest 2022
- 3rd Prize in Asia &Pacific Mathematical Contest in Modeling 2022&2023
- 3rd Prize in the Chongqing Division of iCAN Innovation 2022
- 2nd Prize in Chinese Mathematics Contest Chongqing Division (Twice) 2021&2022

ACTIVITIES

- Student Media Center Officer, School of Mathematics and Artificial Intelligence, CUAS 09/2023-06/2021

SKILLS

- Programming Software: Python, R, MATLAB, SAS
- Office Tools: Word, Excel, PowerPoint, LaTeX
- Languages: Mandarin (native), English (senior)