XUANFEI REN

Email: matchbox@mail.ustc.edu.cn

EDUCATION

University of Science and Technology of China, Anhui, China

B.S in Mathematics 2020-2024(expected)

- Overall GPA: 3.84/4.3 Rank: 9st/83 (Among all students majoring in probability and statistics)
- Major GPA: 3.95/4.3
- Core Courses:
  Mathematical Analysis (92), Analytic Geometry (87), Computer Programming (87),
  Data Structures and Databases (93), Linear Algebra (93), Modern Algebra (95),
  Differential Equations (100), Real Analysis (98), Complex Analysis (95), Probability theory (87).

HONORS

- **Huawei Scholarship (top 5%)**- an award to evaluate students' academic performance 2022
- Outstanding Student Scholarship, Silver award (top 15%) 2021
- Outstanding Freshman Scholarship, Bronze award 2020

RESEARCH INTERESTS

Statistics; Machine Learning; stochastic optimization.

UNDERGRADUATE EXPERIENCE

Recursive Partitioning and Applications

Advisors: Prof. Bo Zhang (Department of Finance and Statistics, USTC) Sept. 2022-Present

- Conducted literature reviews on methods of recursive partitioning.
- Gave presentations on a seminar about Tree-based recursive partitioning method. *(Download Report1-3 ,Report4)*

Optimal Production Planning and Water Saving Decision under Sticky Prices

Advisors: **Dr. Lijun Bo** (Department of Mathematical Sciences, USTC) May 2022-Present

- Conducted literature reviews on more than ten academic literatures related to stochastic optimization methods and the Hamilton-Jacobi-Bellman equation.
- Specified the Algorithm for a stochastic differential oligopoly game for optimal production planning and water savings, inspired by researches on nonstochastic differential game problems.
- Conducted numerical simulation verification after the completion of the model construction.

Model Selection in Linear Regression Based on Coefficient of Determination*(Download PDF)*

Advisors: **Prof. Bo Zhang** (Department of Finance and Statistics, USTC) Jul. 2022

- Proposed an independent variable selection method in linear regression models. Calculated the proportion of the variance of the explained variable affected by the independent variable to the variance of the explained variable. Then selected the variables which influence the variance of the explained variable most.
- Applied an estimation method of the proportion of explained variance that does not strictly rely on the normality assumption and does not assume the sparsity of covariates, inspired by the estimating equation approach to the estimation and inference on the explained variation in the high-dimensional linear model.
- Verified the effectiveness of the algorithm by conducting simulations on synthetic dataset.

COURSE PROJECTS

Logistic Regression Methods in Machine Learning

Advisors: **Prof. Defu Lian** (Department of Data Science, USTC)

- Studied Logistic regression methods in machine learning.
- Wrote a project concerning Loan Data Set Classification from scratch. Estimate the generalization error by the cross-validation method and screened out the effective independent variables by the backward regression method.

Correlation Analysis

Advisors: **Prof. Yaning Yang** (Department of Finance and Statistics, USTC)

- Learned the statistical knowledge of correlation in regression analysis.
- Used R packages corrplot and dataset alr4 to calculate and visualize correlation coefficient, conducted correlation and partial correlation test, and specified Monte Carlo method to generate a random analog number to view the asymptotic property of the sample distribution.

ACTIVITIES & HOBBIES

- Member of the Student Running Association 2020-Present
- Assisted in holding campus marathon and many other campus sports activities as the Minister. 2021-2022
- Went to Dabie mountain area for social practice and scientific investigation concerning local nature and society. 2021
- Volunteered in the campus singing contest K Star. 2021
- I love hiking. Completed a 100-kilometer New Year's hike in 28 and a half hours. 2021

SKILLS

Programming: C, Python, R, LaTeX.
English: TOEFL: 108 (R: 29; L: 29; S: 22; W: 28).