Zizhen Guo

Tel: 204-698-2091 | gzen30@outlook.com | github.com/gzzen

Education

The University of British Columbia — Vancouver, BC, Canada
Bachelor of Computer Science (Second Degree) — *Sep 2023 – Present*

The University of British Columbia — Vancouver, BC, Canada
Bachelor of Science, Combined Major in Mathematics and Economics — *Sep 2019 – May 2023*

Experience

Undergraduate Teaching Assistant (DSCI 310) — Vancouver, BC, Canada
Department of Statistic, The University of British Columbia — *Jan 2023 – Apr 2023*

- Course content: Version control, virtual environment, containerization (Docker), automated testing and continuous integration for data science application.
- Teaching role: Hold in-class tutorials and office hours. Monitor and respond to online discussion boards.
- Grading role: Assess and grade assignments, group projects, midterm and final exams.

Elementary Math Contest Grader — Vancouver, BC, Canada
Department of Mathematics, The University of British Columbia — *Apr 2022*

Foodbank Volunteer — Winnipeg, MB, Canada
Ness Baptist Church Foodbank — *Sep 2017 - Apr 2019*

Projects

Demographic structure in China and its implications to economic growth | *Applied Economics, R* Dec 2023

- Utilized a stepwise feature-selection algorithm with a time-lag option using R to derive an optimized model that relates population indicators to GDP/GDP per capita.
- Conducted an in-depth analysis exploring the interplay between demographic control strategies and economic policies in the context of China.

Predicting students' grades using multi-variable regression | *Data Analysis, Python* Apr 2022

- Implemented a data analysis pipeline using Docker and GNU Make, ensuring efficient workflow management.
- Implemented comprehensive automated testing suites and integrated continuous integration for seamless project development and deployment.

An algorithm to optimize course selection | *Linear Programming, Python* Dec 2021

- Effectively accomplished students' course scheduling based on past sessional average, course pre-requisites and degree requirements using Python and PULP.

Multiple linear regression in cryptocurrency pricing analysis | *Data Analysis, R* Nov 2021

- Compared and contrasted the effectiveness of different variable-selection algorithms on cryptocurrency-pricing prediction in R. The results showed LASSO regression yielded the smallest RMSE.

Technical Skills

Programming Languages: Java, Python, C, C++, Assembly, R, Racket, MATLAB, Bash Script
Software and Tools: Git, Github, LaTeX, Docker, GNU Make, Jupyter Lab, RStudio, IntelliJ IDEA, VS Code
Libraries: tidyverse, ggplot, pandas, NumPy, matplotlib, PULP

Coursework

Computer Science: Algorithm design and analysis, System and hardware, Software construction
Mathematics: Calculus, Number theory, Real analysis, Complex analysis, Linear algebra, Knot theory, Coding theory, Differential equation, Linear programming
Data Science: Probability, Regression, Predictive modelling, k-NN algorithm, Reproducible workflow
Applied Economics: Game theory, Microeconomics, Macroeconomics, International finance