Xinran Liu

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Education

Reed College, **B.A. in Mathematics**, with **Computer Science Minor** May 2024
- Awards: Commendations for Academic Excellence 2021-2024 (Top 25%) *Portland, OR*
- Relevant Courses & Certificates: Data Science; Statistical Learning; Macro Economics; Micro Economics; Economics & Law; Algorithm & Data Structures; Machine Learning Specification Certificate.

Relevant Experiences

Independent Researcher | Year-long Thesis Project Sep 2023 – July 2024
Reed College Mathematics Department *Portland, OR*
- Conducted research on the harness of noisy quantum computers, focusing on the complexity of classical algorithm to simulate random quantum circuit sampling;
- Expanded the current literature on anti-concentration property of 1D quantum architecture to 2D by designing and simulating quantum circuit models using Python;
- Assisted in Quantum Computation course, providing feedback on student homework and papers in topics under quantum oracle algorithms and quantum error-correction.

IPO Department Intern | in the Big Data Platform sector Jun – Aug 2023
China International Capital Corporation *Beijing, China*
- Identified and articulated client's unique selling points by conducting competitive benchmarking analysis, compiling and analyzing 5,000 data points on financial and operational statistics of 12 publicly-listed companies in Excel;
- Assessed client's potential risk factor by presenting three comprehensive case studies on recent IPO rejections;
- Facilitated due diligence interviews with client senior executives, resolved ambiguous data and synthesized concise minutes.

Research Assistant | Econ Summer Research: Trade, Migration, and Inequality May – Nov 2022
Reed College Economics Department *Portland, OR*
- Extracted and preprocessed geospatial migration data from open sources in R, visualized the data into an interactive heatmap using R Shiny to demonstrate migration flow over time, enhanced data explainability and research narrative;
- Demonstrated correlations between migration and other variables by wrangling 15k datapoint statistics, adapted the correlations into key parameters of the economic model to improve model accuracy;
- Conducted comprehensive literature review in economic journals AEJ/AER, and produced data reports that investigate the application range and relevance of the used data sources.

Relevant Projects

Machine Learning Application | Loan Default Prediction July 2024
- Trained and deployed random forest model in Python to predict loan defaults, fined-tuned the model with Grid-search;
- Identified important features using SHAP and adapted different combinations of features to enhance model accuracy and efficiency.

Web Development Hackathon | Two-player Poker Game Jan 2024
- Implemented an online two-player Poker game in JavaScript, CSS, and HTML after self-teaching Node.js;
- Built personal webpage with versatile layouts and DOM manipulations by writing and personalizing codes from scratch.

Kaggle Competition | Advanced Regression Technique in House Price Sep 2023 – Dec 2023
- Evaluated the data structure and applicability of different predictive models on a 1040 x 80 house pricing dataset by conducting exploratory data analysis (EDA) and appropriate data transformations using R;
- Trained forward / backward regression, Lasso regression, and decision tree models R and predict the housing price. Produced technical report on the performances of selected models under different evaluation metrics.

Relevant Skills

- **Programming**: [Fluent] in R, Python (TensorFlow, Keras, Pandas, Scikit-learn), Git; [Beginner] in C, C++, JavaScript.
- **Languages**: [Native] in Chinese; [Fluent] in English; [Beginner] in Japanese.

Other Interests: Analog & Digital photography, Snowboarding, Bouldering, Biking, Red Cross First Aid Certified