Albert Shi Zhu

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Education

Rice University **Houston, TX**
B.S. in Computer Science, Mathematics; Minor in Data Science; 3.96/4.0 GPA May 2026
– **Coursework** († graduate-level): Machine Learning†; Tools and Models for Data Science†; Optimization for ML†; Advanced Algorithms; Concurrent Program Design; Compilers; Computer Systems; Probability and Statistics; Stochastic Models; Object-Oriented Programming.

Experience

Enuit LLC **Houston, TX**
Quantitative Developer Intern May 2024–Aug 2024
– Developed and optimized an internal tool for generating commodity shipment networks based on a **mixed integer programming** model, improving performance by over **400%** across multiple design iterations. Performed data preprocessing and cleaning with **Pandas**.
– Built **RESTful APIs** for querying shipment parcel data from Microsoft SQL Server database as part of **ASP.NET** operation scheduling microservice.
– Incorporated client feedback to improve Asian option valuation tool, lowering option price and delta error margins to **below 0.0001**.

RiceApps **Houston, TX**
Software Engineer Intern May 2023–Aug 2023
– Built a full-stack marketplace web app as part of a 9-person agile team. Personally constructed landing/home pages in **React** based on Figma wireframes; implemented UI elements and site routing functionality with **Material UI** and **React Router** libraries.

Jane Street Capital **New York, NY**
First-Year Trading and Technology Program Participant Mar 2023
– One of 94 invitees to freshman education program; learned about finance concepts like **fair value estimation** and **market making**.
– Developed automated trading bot for Electronic Trading Competition, ultimately achieving the **highest PnL of the field** across 60+ simulated market rounds with a high-risk, high-reward strategy.

OptimaLab **Houston, TX**
Undergraduate Researcher May 2023–Present
– Conducted research in **machine learning optimization** investigating distributed methods of solving large-scale linear regression problems.
– Formulated novel algorithms based on random feature subsampling; experiments varying hyperparameters and step-size schemes achieved a mean-squared error **below 0.001**. Reviewed prior literature on federated learning and proximal gradient methods.

Rice University **Houston, TX**
Teaching Assistant Jan 2024–Present
– Held twice-a-week office hours and graded for classes with over 300 students (**linear algebra, intro and advanced algorithms, statistics**).
– Worked with professors to refine problem sets, enhance lesson plans, and optimize teaching strategies based on student feedback.

Projects

Concurrent Web Proxy — *C* Apr 2024
– Designed and implemented a high-performance multithreaded web proxy for tracking HTTP/1.0 and HTTP/1.1 GET requests.
– Utilized **producer-consumer** model to implement efficient concurrency capable of simultaneously handling **over 100** client HTTP requests. Thread synchronization was achieved using POSIX mutex and condition variables.

Deep Learning Novel Classifier — *TensorFlow, NumPy, AWS* Apr 2024
– Implemented deep learning architectures (CNN, RNN with and without time warping, MLP) from scratch and benchmarked their performances on classifying lines of text from three novels. RNN with time warping achieved highest test accuracy of **91%**.

Australian Court Case Classifier — *Apache Spark, NumPy, AWS* Apr 2024
– Developed a **ridge-regularized logistic regression model** from scratch to classify text documents as Australian court cases or not, achieving an F1 score of **0.985** on a test set of **170,000** Wikipedia articles. Wrangled document datasets and implemented gradient descent algorithm using Apache Spark, allowing for efficient, parallelized training computations via Amazon's EMR platform.

RUPD Incident Visualizer — *Django, JavaScript, Bootstrap, Beautiful Soup, Pandas* Sep 2022
– Worked with a team to create a web app for visualizing crime statistics around Rice campus, featuring an interactive heatmap, infographics, and 15+ filters for incident type and time range. Scraped and cleaned data from Rice University Police Department website; integrated **Google Maps API** with frontend to generate heatmap and filters.

Skills

Languages: Python, Java, C, C++, SQL, HTML/CSS, JavaScript/TypeScript, Go, C#, Bash/Unix Shell Scripting
Technologies: Git, Pandas, NumPy, Scikit-Learn, TensorFlow, Linux, Apache Spark, Apache Hadoop, React, Microsoft SQL Server, .NET framework, AWS (EC2, EMR, S3), JUnit, Docker, RabbitMQ
Expertise and Interests: Full Stack Development (Frontend and Backend), Algorithms, Data Science, Machine Learning, Deep Learning
Hobbies: Table Tennis, Running, Crossword Puzzles, Card Games, Board Games, Film/Music Criticism

Awards

Rice Datathon, Best Visualization Award Feb 2023
3x AIME Qualifier Mar 2019, 2021, 2022
Hewlett-Packard CodeWars Competition, 3rd Place, Advanced Division Mar 2020