Brandon Yuan

804-292-5774 | shw3ht@virginia.edu | LinkedIn | GitHub | Portfolio

Education

University of Virginia Charlottesville, VA

Bachelor of Science in Computer Science, ***3.74 GPA*** *Aug. 2022 – May 2026*

Technical Skills

Python, Java, JavaScript, C/C++, HTML, CSS, SQL, NodeJS, React, LLVM, Pytorch, TensorFlow, OpenMP, Assembly, JUnit, Mockito, Catch2

Relevant Coursework

Artificial Intelligence, Machine Learning, Software Engineering, Software Development Essentials, Compilers, Data Structures and Algorithms 2, Computer Systems and Organization 2, Discrete Mathematics and Theory 2, Intro to Cybersecurity, Linear Algebra, Probability, Multi-Variable Calculus, Statistics

Experience

Teaching Assistant for Computer Systems and Organization 2 August 2024 - Present

University of Virginia *Charlottesville, VA*

- Supported over 400 students by hosting office hours, offering one-on-one assistance, and clarifying advanced concepts during lab sessions.
- Assisted the professor with grading assignments and exams to ensure timely and consistent feedback.
- Taught complex topics such as page tables, multi-threading, parallel processing, networking, and caching to students.

Projects

California Housing Clustering | *Pandas, Scikit-learn, Seaborn, Matplotlib, NumPy* February 2025

- Developed a data pipeline to preprocess California housing data to handle missing values, scale numerical features, and encode categorical features.
- Implemented K-Means clustering from scratch with Minkowski distance metrics to analyze housing market segmentation.
- Reduced SSE from 175,000 to 75,000 by optimizing k-values (k=2 to k=10), improving clustering accuracy for housing market segmentation.

SipC Compiler | *C++, ANTLR, TIPC, Cmake, Catch2, LLVM* August 2024 - December 2024

- Developed a compiler supporting features like boolean types, arrays, for loops, and various operators.
- Achieved 99% code coverage by designing comprehensive tests with Catch2.
- Implemented code generation using LLVM bitcode, enabling advanced optimizations and efficient execution.
- Delivered optimizations that reduced code size by up to 90% and improved runtime performance by 400%.

Course Reviews Application | *Java, SQLite, CSS, JavaFX, FXML* April - May 2024

- Led a team of three to create a full-stack course reviews application.
- Implemented SQL to query a SQLite database for user authentication to ensure a personalized user experience.
- Leveraged SQLite to efficiently manage and retrieve data.

Snake Game AI | *Python, Pygame, Pytorch, Matplotlib, IPython* March 2024

- Implemented a version of the snake game using the Pygame library.
- Developed a reinforcement learning model using Pytorch to train an agent to play the snake game.
- Used Matplotlib and IPython to dynamically graph the agent's performance and score over iterations.

Extracurricular

Cultural Student Association Family Head August 2023 - Present

- Created a strong community of over 300 students to promote culture and inclusivity.
- Organized fundraisers that raised over $2K dollars.
- Worked with other clubs, including the Chinese Student Association to host joint events.