Junsen Huang

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Education

University of Michigan **December 2024**

B.S. Computer Science — 3.8/4.0 — University Honors *Ann Arbor, MI*

Relevant Coursework: Operating Systems, Web Systems, User Interface Development, Computer Organization, Computer Security, Data Structures and Algorithms, Computer Pragmatics, Linear Algebra, Discrete Math

Skills

Software and Frameworks: AWS, Unix, Docker, Cypress, React, Flask, Node, Git, Jekyll, Bootstrap
Languages: C++, C, Python, Java, JavaScript, SQL, Assembly, HTML, CSS, Shell

Experience

Center for Healthcare Engineering and Patient Safety **May 2023 - Present**

Software Engineering Intern *Ann Arbor, MI*

- Worked in an Agile environment on a Staffing Management Software project for Walter Reuther Hospital, optimized staffing functionalities of a 10,000+ line system, achieving a 50% performance increase in staffing tasks
- Collaborated with a team of six to deploy the Staffing Management Software to Walter Reuther Hospital, replacing manual staffing practices with an automated process and significantly reducing administrative burdens on physicians
- Managed version control using Git, conducting extensive code reviews and produced comprehensive technical documentation, including over 20 detailed flowcharts and design documents
- Built a data management system for the Internal Medicine department at Michigan Medicine; implemented multiple SQL queries for automating schedule checking, billing, and training scheduling processes to alleviate manual work

Projects

StoryLine - Multi-user Social Network Platform **January 2023**

- Developed an **CRUD** application that supports user features such as post/deletion, likes, comments, and login/logout
- Implemented server-side dynamic pages using Flask and created a client-side application consisting of a **Flask REST API** for back-end, **React** for front-end, Tailwind **CSS** for styling, and **MySQL** for database management
- Leveraged **shell scripting** to streamline testing, deployment, and database manipulation processes, resulting in increased efficiency and productivity
- Conducted end-to-end testing using **Cypress** and deployed the project on an **AWS EC2** instance, resulting in 90% user satisfaction rate.

InfoQuest - Scalable Search Engine **April 2023**

- Engineered and optimized a **Python MapReduce pipeline** compatible with the Hadoop Streaming Interface, dramatically reducing document processing time from over 6 hours to less than 1 minute for 200,000+ documents
- Leveraged text and link analysis, alongside log-based tf-idf scoring, to provide accurate and efficient search results using **information retrieval** principles
- Developed a **REST API** application and user-friendly interface with **React** and **CSS**, enabling JSON-formatted search results and client application integration

EaseReduce - Google's MapReduce replica **March 2023**

- Designed and Implemented a Python-based **MapReduce** framework inspired by Google's original paper, featuring **multi-process and multi-thread capabilities** to efficiently manage and execute user-submitted tasks
- Constructed a robust **Manager-Worker architecture** system, emphasizing fault tolerance, OS-provided concurrency, and networking, enhancing processing and performance of MapReduce jobs

NavDrone - Optimal Drone Navigation Software **June 2022**

- Developed a drone navigation software in **C++**, leveraging solutions like nearest neighbor and arbitrary insertion techniques to solve the Traveling Salesman Problem (TSP), ensuring quick, near-optimal routing
- Improved program runtime from 40 seconds to less than 5 seconds by experimenting with TSP heuristics, integrating backtracking, Branch and Bound methods, and Prim's algorithm for minimum spanning tree in a dense graph