Junsen Huang

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Education

University of Michigan **Expected 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, Firebase

Languages: C++, C, Python, Java, JavaScript, SQL, Assembly, HTML, CSS, Visual Basics, Shell

Experience

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

Software Engineering Intern *Ann Arbor, MI*

- Optimized Staffing Software at Walter Reuther Hospital in an Agile environment, revolutionizing staffing for over 100+ staff by replacing manual scheduling with software. Doubled the software's speed and performed code cleanup
- Conducted multiple on-site visits to Walter Reuther Hospital to tutor and monitor software usage among medical staff. Iteratively improved the software based on user feedback to enhance functionalities
- Managed version control using Git, conducting extensive code reviews and produced comprehensive technical documentation, including over 20 detailed flowcharts and design documents
- Revamped Michigan Medicine's Internal Medicine data system, fixing key operational issues and adding user interfaces for efficient resident management. Utilized SQL queries to streamline scheduling, billing, and training processes

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