Junsen Huang

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Education

University of Michigan **Expected December 2024**

B.S. Computer Science | 3.78/4.0 | University Honors *Ann Arbor, MI*

Relevant Coursework: Network Systems, Operating Systems, Web Systems, Database Systems, User Interface Development, Computer Organization, Computer Security, Data Structures and Algorithms, CS Theory

Skills

Software and Frameworks: AWS, Unix, Docker, Cypress, React, Flask, Node, Git, Wireshark, Firebase, MongoDB
Languages: C++, C, Python, Java, MATLAB, JavaScript, SQL, Assembly, HTML/CSS, Bash, VB

Experience

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

Software Engineering Intern *Ann Arbor, MI*

- Optimized Staffing Software at Walter Reuther Hospital with a multidisciplinary team, revolutionizing staffing by replacing manual scheduling with software; improved speed by over 200% 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 detailed flowcharts and design documents
- Revamped Michigan Medicine's Internal Medicine database system, fixing key operational issues and adding user interfaces for efficient resident management; utilized SQL queries to streamline scheduling, billing, and training processes

University of Michigan College of Engineering **January 2024 - Current**

Instructional Aide - Upper/Grad Level CSE Course *Ann Arbor, MI*

- Facilitated learning in EECS 493 - User Interface Development as a Teaching Assistant; conducted office hours and responded to student emails, providing timely and effective academic support
- Hosted weekly discussion sessions for approximately 50 students, preparing and delivering materials that reinforced key concepts from the course, including JavaScript, Vue, Web Systems, and UI Design/Research

Selected Projects

Linux-based OS | *Operating System with Network File System* **Stack: C++, C, BSD Socket, Python**

- Developed a custom thread library featuring process control, context switching, mutual exclusion, and memory management, optimized for concurrency on a single processor; implemented a Python script for automated testing
- Implemented a pager for virtual memory management, supporting swap/file-backed virtual pages for mapping or storage
- Implemented a network file system supporting multithreaded CRUD operations and ownership control, and utilized BSD socket programming to establish robust client-server TCP communication protocols with connection error handling
- Implemented a TCP load balancer that assigns each incoming task to the least busy server

EaseReduce | *Google's MapReduce replica* **Stack: Python**

- 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 TCP and UDP networking, enhancing processing and performance of MapReduce jobs

iPerfer | *Network Performance Measurement Tool* **Stack: C++, Python**

- Engineered iPerfer, a custom network performance measurement tool using C/C++, featuring meticulous TCP socket programming to facilitate precise bandwidth and latency measurements in networked environments
- Utilized Mininet to simulate realistic network topologies, enabling detailed performance analysis by orchestrating various scenarios including different network topologies and conditions, ensuring comprehensive assessment of network behavior