Wayne He

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Education

University of Michigan – Ann Arbor Aug 2022 – May 2026
B.S.E. in Computer Science; GPA: 4.000/4.000 *Ann Arbor, MI*

- **Relevant Coursework:** Operating Systems, Computer Organization, Compiler Construction, Quantum Computing, Web Systems, Intro to Computer Security, Data Structures & Algorithms, Foundations of Computer Science

Experience

Univeristy of Michigan College of Engineering Dec 2024 – Present
Instructional Aide (EECS 479: Quantum Computing) *Ann Arbor, MI*

- Taught Quantum Computing to 100 students, covering computer architecture fundamentals, quantum gates/algorithms, and Steane/Shor error correcting codes.
- Developed new online resource for visualizing qubit states/gates. Assisted students with using NumPy and Qiskit for projects in office hours, online forums, and lab sections.

Tour.video (YC S21) Dec 2022 – Aug 2023
Full Stack Engineering Intern *Remote*

- Led development on custom dashboard to analyze traffic of over 200k visitors monthly using React and Supabase.
- Launched a real-time calling, messaging, and notification feature leading to 2 new enterprise customers and over 2000 downstream users. Developed generic components reused in later development.

Projects

Bloch M | *Vue, Three.js, Quantum Computing, 3D, Figma, Frontend Development* May 2024

- Used Vue and Three.js to create an interactive 3D visualization of a qubit on the web using the Bloch Sphere.
- Built parameterizable animations to create intuitive depictions of unitary gates in the quantum space.

tet.rs | *React, Rust, WebAssembly, JavaScript, Game Development* Jan 2024

- Used Rust WASM + JavaScript's Events/Canvas API to create a modern stacker game on the web.
- Optimized data structure usage over WebAssembly barrier to minimize serialization overhead.

Multithreaded Network File Server | *C++, POSIX Sockets, Boost Library, Python, Makefile* Dec 2024

- Used Boost threads and upgradeable reader-writer locks to optimize concurrency. Implemented on-demand per-block shadowing for crash consistency.
- Developed multithreaded testing framework using Python to troubleshoot concurrency issues and force certain interleavings to occur. Utilized environment variables and preprocessor macros to conditionally freeze threads.

Thread Library | *C++, Linux, Thread Management, gdb* Oct 2024

- Implemented kernel-level C++ thread library, managing multiple CPUs, interrupts, and enforcing FIFO scheduling.
- Created mutexes and conditional variables using Unix `context_t` objects, spin-locks, and interrupt disabling.

Awards

SpartaHack X Winner | *Next.js, Flask, MongoDB, Gemini, Git, Figma* Feb 2025

- **Best Productivity Hack**: Built an AI-powered GitHub repository browser to reduce friction for new contributors.

BigRed//Hacks 2024 Winner | *Web Extension, Flask, Google Cloud Platform, Sreamlit, Cartesia* Oct 2024

- **Best Use of Pinata**: Used Pinata's key-value store to cache long AI pipelines in a natural-language equation reader.

MHacks 2024 Winner | *Next.js, Flask, Heroku, Gemini, MongoDB, Full-Stack* Sep 2024

- **Best Generative UI**: Linked multiple Gemini models together to dynamically create components in a web dev trainer.

Technologies

Languages: Rust, Python, JavaScript, C++, C, HTML/CSS, LaTeX, MATLAB, SystemVerilog
Technologies: Next.js/React, Vue, WebAssembly, Flask, Heroku, Supabase, MongoDB, Google Cloud Platform
Tools: `git`, `nvim`, `gdb`, `make`, VSCode, JetBrains Suite, Linux, Docker, BeautifulSoup
Interests: Founder of Michigan Tetris, President of Michigan Magic, Learner of East Asian languages, Hackathons