# Wayne He

me@waning.dev | waning.dev | linkedin.com/in/wayne-he- | github.com/Ecpii

## 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 over 80 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 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 and messaging feature leading to 2 new enterprise customers, connecting over 2000 downstream users.
- Designed a customizable notification system to dynamically react to user behavior. Created reusable components to simplify future development.

## Projects

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

**Cascade** | *Next.js/React, Flask, Artificial Intelligence, Full-Stack, Heroku, MongoDB* Sep 2024

- Created an HTML/CSS training tool that prompted users to recreate components generated by a Google Breadboard workflow that combined two Gemini models. **Won best Generative UI at MHacks 17**.
- Developed **multi-threaded backend** using Flask and MongoDB to generate/store images from code snippets and used a **custom-trained Siamese neural network** to compare them.

**Respoke** | *Chrome Extension, Flask, LaTeX, Google Cloud Platform, Streamlit, Pinata, Cartesia* Oct 2024

- Built a web extension to read equations in natural language using a fine-tuned LLM, lowering barriers in education.
- Cached expensive AI pipelines using Pinata's key-value store, allowing for 5x speedups. **Won best use of Pinata at BigRed//Hacks 2024.**

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

- Built a concurrent file server using custom filesystem to support multiple users and nested files/folders.
- 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.

## 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
**Interests:** Founder of Michigan Tetris, President of Michigan Magic, Learner of East Asian languages