Elliot Miller

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EDUCATION

University of Michigan — Ann Arbor, MI
Bachelor of Computer Science — *Expected May 2027*
- Relevant Coursework: Data Structures and Algorithms, Computer Theory, Computer Organization, Web Systems, Operating Systems, Compilers, Linear Algebra, Calculus, Discrete Math, Game Development, Programming Language Theory

EXPERIENCE

Backend developer (Typescript) — May 2025 – August 2025
Wise Pelican — *Phoenix, AZ*
- Was an integral part of 3 person team that created and shipped **Power Concierge**, an autonomous AI agent that provided marketing services to Wise Pelican subscribers, reaching ∼2000 contacts and generating ∼150 custom marketing assets per day.
- Wrote AWS Serverless Lambdas in Typescript for many purposes, including image processing, SMS/MMS handling, and interfacing with human sales.
- Migrated applications from Azure to AWS ECS with a full Codepipeline CI/CD setup, decreasing performance degradation during traffic spikes by 50% and removing 2 second AWS to Azure performance bottleneck in application.
- Wrote complex, low-level internal tools including a from-scratch fast JPEG metadata decoder, cutting off over 95% of runtime from the previous implementation.

Software developer (JavaScript, Python) — January 2025 – May 2025
DemandEngine — *Ann Arbor, MI*
- Developed the entire backend using Django and designed and managed the PostgreSQL database.
- Wrote comprehensive OpenAPI documentation for all API endpoints.
- Optimized React.js codebase, reducing UI element latency on landing page by 75%.

PROJECTS

Gameboy Emulator (C++, OpenGL) in development Github
- Wrote an accurate and feature-complete Gameboy CPU simulator down to matching clock speed and emulating many quirks and even hardware bugs.
- Consistently rendered 300 frames per second using OpenGL on an M1 Macbook with integrated graphics.

Wordle Bot (Python) Github
- Wrote an algorithm using a mix of heuristics including frequency of words/characters in the English language, scoring words and sorting them by likelihood.
- Achieves an average guess count of 3.36 over the last 2 years of words, compared to the human average of 3.97.

Multithreading Library (C++)
- Created an efficient implementation of Mutexes and CVs similar to that of the C++ STL.

MapReduce Implementation (Python)
- Created an efficient recreation of the MapReduce algorithm using a distributed systems setup.
- Hand wrote the TCP and UDP communication protocols between the Manager and Worker servers.
- Worked in a healthy team environment using pair programming and conflict resolution skills.

Snake Compiler (Rust, x86)
- Wrote an x86 emitting, optimizing compiler for a Python/OCaml hybrid language called Snake.

TECHNICAL SKILLS

Languages: Python, JavaScript, TypeScript, C++, CSS, HTML, SQL, ARM, Rust, x86_64
Libraries/Frameworks: React, Node.js, Flask, SQLite, PostgreSQL, Django, OpenGL
Developer Tools: Git, AWS, AWS Lambdas, Docker, MacOS, Linux
Interests: Compilers, Web Systems, Processor Design, Software Engineering, Programming Language Design, Networking, Operating Systems, Game Design, Game Engines, Hardware Emulation