

# Elliot Miller

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## EDUCATION

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### University of Michigan

*Bachelor of Computer Science*

Ann Arbor, MI

*Expected May 2027*

- Relevant Coursework: Data Structures and Algorithms, Computer Theory, Computer Organization, Web Systems, Operating Systems, Compilers, Game Development, Programming Languages

## EXPERIENCE

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### Backend Developer (Typescript)

*Wise Pelican*

May 2025 – August 2025

*Phoenix, AZ*

- Worked on an autonomous AI agent that provided marketing services to customers, reaching ~2000 contacts and generating ~150 custom marketing assets per day
- Wrote AWS Serverless Lambdas in Typescript, for purposes including image processing, SMS/MMS handling, and interfacing with human sales
- Migrated application from Azure to AWS ECS with a Codepipeline CI/CD setup, decreasing performance degradation during traffic spikes by 50% and removing 2 second AWS to Azure performance bottleneck in application
- Wrote a from-scratch fast JPEG metadata decoder, cutting off over 95% of runtime from the previous implementation

### Software Developer (JavaScript, Python)

*DemandEngine*

January 2025 – May 2025

*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

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### GameBoy Emulator (C++, OpenGL) [Github](#)

- Wrote simulators for all GameBoy hardware components, including a Z80 Sharp CPU, internal clock circuits, interrupts, and proprietary graphics/audio chips.
- 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

### 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

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**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