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, Game Development, Programming Languages

EXPERIENCE

Backend Developer (Typescript) — May 2025 – August 2025
Wise Pelican — *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 average runtime from 10s to 2s by removing AWS to Azure performance bottleneck in application and increasing the concurrency of image data downloading, processing, and uploading
- Wrote a from-scratch fast JPEG metadata decoder, cutting off over 95% of runtime from the previous implementation by reducing data needed to process per JPEG from MegaBytes to a single KiloByte

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

PROJECTS

GameBoy Emulator (C++) Github
- Simulated all GameBoy hardware components, including a Z80 Sharp CPU, internal clock circuits, interrupts, and proprietary graphics/audio chips
- Achieved consistent a consistent 300 frames per second using a custom SDL-integrating renderer on an M1 Macbook with integrated graphics

Wordle Bot (Python) Github
- Created a Wordle 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
- Wrote communication protocols between the Manager and Worker servers

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

Lambda Vending Machine (TypeScript)
- Full stack webapp in TypeScript that allows non technical users to create callable endpoints in AWS using Anthropic's API
- Managed concurrent requests from users with a custom job queue

TECHNICAL SKILLS

Languages: Python, JavaScript, TypeScript, C++, CSS, HTML, SQL, ARM, Rust, x86_64
Libraries/Frameworks: React, Node.js, Flask, SQLite, PostgreSQL, Django, SDL, AWS CDK/SDK
Developer Tools: Git, AWS, AWS Lambdas, Docker, MacOS, Linux, NVim