**Brody Little**

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**SKILLS & INTERESTS**

**Languages (Frameworks):** Python (Flask, Django, NumPy/Pandas), Rust, C/C++, Java, MATLAB, OCaml, Haskell, JS (React, Node), TypeScript, HTML/CSS (Bootstrap), SQL, Bash

**Software:** VSCode, MS Office, Autodesk Inventor, ANSYS, COMSOL, Git

**Operations:** Server Administration, Linux/BSD, Networking, Virtualization (KVM), Docker, Unikernels

**Interests:** Functional Programming, Simulation, Mathematics, Machine Learning

**PROJECTS [public at** [**https://www.github.com/bord-o**](https://www.github.com/bord-o)**]**

**LED Headlamp Digital Irradiance Testing & Design Tool:** Digital design tool built for Covestro Materials to simulate the thermal performance of LED headlamps exposed to sunlight magnified through a headlamp’s LED lens. This tool can predict the surface temperature of the heat sink based on the angle of the sun using ray tracing and heat transfer simulation. **(COMSOL Multiphysics, ANSYS Workbench, Autodesk Inventor, MATLAB)**

**Chip8 Emulator:** An implementation of the Chip8 virtual machine with graphics in OCaml. Aiming to minimize external dependencies, with a focus on functional code. **(OCaml)**

**LittleBox:** A Flask file sharing web application, implementing basic file sharing functionality similar to Imgur.com, with automatic cleanup of old files. **(Python Flask, PostgreSQL, Docker, Oracle)**

**Chess Game PGN Compression:** The design and implementation of an algorithm and encoding for compressing/decompressing PGN chess game databases, built to rival both the speed and compression ratio of the current compression scheme used by the popular chess website Lichess.com. Currently, achieving 89% space savings with a novel binary encoding. **(Rust, Python)**

**Chess:** A chess program implementing legal move generation, using only C’s standard library. **(C, GNU Make)**

**Finance:** A web app implementing an interactive virtual portfolio supporting buying and selling stock using the IEXcloud financial API. **(Python Flask, SQLite, HTML/CSS)**

**Muser:** A CLI program integrating the Spotify API with the GNOD Music Map website to provide music recommendations based on artists or tracks and download recommendations with YouTube. **(Python)**

**WORK EXPERIENCE**

**Mindhome Sept 2022 – Present**

*Full Stack Developer Intern Remote*

* Smart Home startup using AI to create a service home concept
* Spearheaded the migration of the entire ecommerce platform from shopify to Medusa.js
* Spearheaded organization of R&D codebases and forks using GitHub
* Learned and implemented headless ecommerce architecture using Medusa.js, Next.js, and Typescript
* Worked with AI R&D team on robotics automation using Python (ROS2, Gazebo)
* Used Kanban boards to implement and adhere to Agile development practices

**Nulle Technology Solutions LLC June 2021 – May 2022**

*Co-Owner, Technical Lead Hancock, MI*

* Personal/Corporate computer hardware repair, troubleshooting, and subcontracted IT
* Learned server administration, storage redundancy technology, and digital forensics/data recovery
* Installed and configured both network and customer facing hardware for small businesses

**Serra Toyota May 2018 – Sept 2018**

*Technician Traverse City, MI*

* Vehicle maintenance, hardware repairs, and troubleshooting
* Learned about modern ECU CAN bus technology and ECU diagnostics
* Carried out maintenance and basic repairs under high stress with rigorous time constraints

**EDUCATION**

**Michigan Technological University Sept 2018 – Dec 2022**

*B.S. Mechanical Engineering Houghton, MI*

* Networking/Computing Club, Chess Club

**OpenCourseware Dec 2020 – Present**

*Computer Science Online*

* Harvard CS50, Stanford Data Structures and Algorithms

**Kalamazoo Valley Community College Sept 2016 – May 2018**

*Mathematics Kalamazoo, MI*

* High School dual-enrollment