Blake Smith

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EDUCATION

Ohio University, Russ College of Engineering | Athens, Ohio Expected Graduation: December 2025

Bachelor of Science in Computer Science

Major: Computer Science

GPA: 3.821

EXPERIENCE

Independent E-Commerce & Hardware Venture | Athens, Ohio Feb. 2022 – Aug. 2024

Founder & Lead Engineer

- Bootstrapped an electronics refurbishment operation to $100k+ lifetime revenue (~24% net margin), optimizing unit economics by negotiating direct wholesale procurement with Japanese vendors at 20% below market rate.
- Executed component-level PCB repairs and modifications, including trace repair, fuse replacement, and precision micro-soldering of RP2040 (Raspberry Pi Pico) microcontrollers for custom hardware functionality.
- Engineered a scalable workflow for firmware region-swapping and kernel-level localization, converting imported Japanese hardware for North American markets to maximize inventory utility.

PROJECTS

Machine Learning for Respiratory Health on Edge Devices

https://github.com/bsmith709/Respiratory-Edge-ML

- Developed and optimized CNN models in Python (TensorFlow, PyTorch) for classifying respiratory sounds, improving accuracy through architectural enhancements and a custom data augmentation pipeline.
- Engineered a complete embedded ML system on a Google Coral Dev Board, deploying a quantized model accelerated by the Edge TPU for real-time disease classification from microphone input.
- Prototyped on multiple microcontrollers (ESP32, Raspberry Pi Pico), implementing end-to-end inference pipelines and solving significant memory and hardware compatibility challenges.

AI Evolution Simulator

https://github.com/bsmith709/EvolutionSim

- Architected a 3D agent-based simulation in C++ to model emergent evolutionary behavior, featuring complex AI state machines and a genetic inheritance model for both physical and behavioral traits.
- Developed a comprehensive GUI using ImGui and ImPlot to control 40+ real-time simulation parameters and visualize evolutionary trends with dynamic data plots.
- Engineered all core systems, including deterministic world generation, a day/night cycle, and the main fixed-timestep simulation loop within a custom C++ game engine.

Personal Portfolio

https://github.com/bsmith709/portfolio-site

- Built a fully responsive personal portfolio from scratch using SvelteKit, TypeScript, and Tailwind CSS, following a mobile-first and component-driven design philosophy.
- Architected a complete design system with a custom Tailwind CSS theme and a library of reusable, type-safe Svelte components, all self-documented on a dedicated page to ensure scalability.
- Created a dynamic project page system that loads content from Markdown files and features advanced interactive components, including a "scrollspy" table of contents built with an IntersectionObserver.

HONORS AND AWARDS

Ohio University's President's List | Athens, Ohio May 2025

TECHNICAL SKILLS

Languages: C/C++, Python, TypeScript, CSS & HTML, Ocaml

Machine Learning & AI: PyTorch, TensorFlow, TFLite, Model Optimization, CNN Architecture, Data Augmentation, Genetic Algorithms, AI State Machines

Hardware & Embedded: Google Coral Edge TPU, ESP32, Raspberry Pi Pico, Micropython, Hardware Integration (I2C, SPI, UART)

Web & Application Dev: SvelteKit, Tailwind CSS, PyGame, Component-Based & Systemic Design, ImGui, ImPlot

Developer Tools: Git, GitHub, CMake, Makefile, Doxygen, Catch2, Valgrind, Cppcheck, Agile & Sprint-Based Planning