Carson Swoveland

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Technical Projects

- ➔ Performant *Minecraft*-esque game written in **Python** using an **OpenGL** backend
  - Includes **networked multiplayer** and infinite procedurally generated gameplay
- ➔ Built a **custom computer** as a replica NES out of a 6502 and 74xx series parts
  - Also designed an operating system from scratch for an in-circuit graphics emulator
- ➔ Optimizing compiler backend in **Rust** targeting Minecraft command language
- ➔ Designed hardware for serial communication and firmware for an autonomous vehicle
- ➔ **Custom CPU Design**, 3-stage pipelined 3-operand RISC architecture
- ➔ Wrote software for and designed control circuit of an award-winning RF-sensing glove

Work Experience

- ➔ **Deephaven Data Science Intern** **(Summer 2022)**
  - Developed a new client API in **Go** for a streaming data processing server
  - Independently wrote technical promotional material for the client
  - Gave a presentation on design techniques used while writing the client
- ➔ **Carnegie Mellon Distributed Mixed-Reality Runtime Researcher** **(Fall 2022)**
  - Ported traditional applications to the **WebAssembly**-based runtime
- ➔ **US Air Force Academy Electrical and Computer Engineering Intern** **(Summer 2018)**
  - Added battery voltage monitor to an existing robot control PCB
  - Programmed a robot to navigate a maze using ultrasonic sensors

Education

Carnegie Mellon University - Electrical and Computer Engineering **(4.0 GPA, 2020 - Present)**

Logic Design and Verification, Intro to Embedded Systems, Microelectronic Circuits, Signals and Systems, Electronic Devices and Analog Circuits, Intermediate German II

Courses Completed by Summer 2023:

Compiler Design, Intro to Computer Architecture, MITRE Embedded CTF Competition

Awards

- ➔ Carnegie Mellon Fall 2021 Dean's List (4.0 GPA)
- ➔ Colorado Boettcher Finalist (top 100 scholars in state of Colorado)
- ➔ National Merit Scholar
- ➔ FIRST Robotics Team 4068 Excellence in Engineering (twice)

Relevant Skills

- ➔ **Programming Languages:** C, C++, Python, Rust, Go, ARM Assembly
- ➔ **Software Tools:** Windows, Linux (Ubuntu), Git, Autodesk Inventor, KiCAD, Google Suite
- ➔ **Hardware:** Analog and digital design and debugging, computer architecture