Benjamin Scholar

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Background: I am a self-motivated Computer Engineering graduate with a long-time passion for all things technology and programming, including experience and experimentation with hardware design, embedded software, and real-time applications.

Education:

Bachelor of Science in Engineering, Computer Engineering, Fall 2019 – Summer 2023
Case Western Reserve University, Cleveland, Ohio

- GPA: 3.8/4.0, Magna Cum Laude
- Secondary Major in Computer Science

Relevant Coursework: Data Structures, Algorithms, Operating Systems, Compiler Design, Computer Architecture, Digital System Design, Embedded Systems, VLSI/CAD, FPGAs, Modern Robot Programming, Computer Networking

Experience:

Undergraduate Teaching Assistant – Case Western Reserve University, January 2023–June 2023

- Taught undergraduate students concepts including hardware design principals, hardware description, validation, and simulation
- Supported students in the lab portion of the course and graded submissions

Data Science Intern - Abbrea Capital, June 2020–September 2020

- Utilized machine learning techniques to analyze patterns in positions held by hedge funds
- Became familiar with PyTorch, TensorFlow, OpenAI gym, XGBoost, and related tooling
- Gained experience with project management and data analysis

Counselor/Site Director - Monkey Business Camp, Summers 2016-2023

- Ran summer camp groups consisting of 20+ kids ranging from 5 to 10 years old
- Played a large role in coordinating camp activities, organizing staff, and handling parent communication
- Helped younger staff members and youth leaders (11-16 years old) develop organizational and leadership skills

Skills:

- ***Primary Programming Languages:*** Rust, C/C++, Python, Java/Kotlin
- ***Hardware Description/Verification:*** Verilog, SystemVerilog, VHDL, QuestaSim, Quartus, Mentor ASIC Development Kit, SYNOPSYS/VCS
- ***Operating Systems:*** Linux (Fedora, Debian, Ubuntu, Arch), Microsoft Windows (10 and 11), Apple OSX
- ***Tools:*** Git, Bash, Various build systems (Gradle, Bazel, CMake, etc.), Unit Testing (GTest, Junit), Debugging (GDB, etc.), Docker

Projects:

Robotic Mining Challenge Software/Firmware, Fall 2019–Spring 2022

- Developed code for Case Western Reserve's 2020 entry into the NASA Robotic Mining Challenge using Python and C++
- Furthered my understanding of inter-process communication software architecture and the Robot Operating System (ROS)
- Assisted in development of the autonomous capabilities of the robot, including the obstacle avoidance and localization systems

Fall Capstone – Autonomous Tennis Ball Collection Robot, Fall 2022

- Developed firmware and software to control a robot capable of autonomously collecting loose tennis balls from a tennis court
- Robot was able to collect tennis balls and return them to a collection area successfully within the simulator
- Large emphasis on project management

Hardware Design Projects, Spring 2021–Spring 2023

- Implemented a wide range of designs including a conditional-sum adder and various multipliers/dividers as well as more complex designs including various CPU caches, a synchronous serial port, and a simple RISC-V processor
- Reinforced ability to design and implement complex hardware using Verilog, SystemVerilog, and VHDL
- Gained elementary experience with synthesis tools and deployment to FPGAs

Misc. Projects

- Verilog parser and zero-delay circuit simulator in C++

Leadership:

Hardware Sub-Team Lead, CWRUBotix, Fall 2021–Spring 2022

- Led a team of 5+ undergraduate students, managed finances/logistics, coordinated between the other sub-teams
- Designed and manufactured the electronic control system for the 2022 Robot
- Gained experience with PCB design, embedded systems programming, and project management

Activities:

NASA Robotic Mining Challenge, Case Western Reserve University, Fall 2019 – Spring 2022
FIRST Robotics Competition (FRC Team 5499), Berkeley High School, Fall 2017 - Spring 2019