

Aaron Marlin

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Education

Georgia Institute of Technology

Bachelor of Science in Computer Engineering **GPA:** 3.81

Atlanta, GA

Aug 2023 – Dec 2026

Georgia Institute of Technology

MS in ECE

Atlanta, GA

Jan 2027 – Dec 2027

Technical Skills

Programming Languages: SystemVerilog, Python, C, C++, Bash, Tcl, CUDA, RISC-V Assembly, MIPS Assembly

Hardware: RISC-V Architecture, Layout, Digital Design, Design Verification, Computer Architecture, GPU Architecture, FPGA

Software: Git, Linux, Cadence Virtuoso, Synopsys VCS, QuestaSim, Vivado, CUDA, OpenMP, OpenMPI, LabVIEW

Embedded Systems: ESP32, Arduino, Raspberry Pi, FreeRTOS, WiFi, BLE, SPI, UART, I2C, RISC-V, MIPS

Experience

Incoming Design Verification Intern

IBM

May 2026 – Aug 2026

Austin, TX

Digital Design Engineer

SiliconJackets — Georgia Institute of Technology

Jan 2024 – Jan 2025

Atlanta, GA

- Collaborated with design team to develop a custom, pipelined RISC-V processor implemented onto club's first SoC
- Implemented 32-bit Dadda Multiplier module in Verilog to accelerate ~13% compared to previous multiplier
- Coordinated integration of digital design and design verification to fully verify 4 modules before our RTL Freeze

Design Verification Engineer

SiliconJackets — Georgia Institute of Technology

Jan 2025 – Present

Atlanta, GA

- Leading the establishment of an FPGA, validation environment for software testing and emulation of SoC
- Incorporated SystemVerilog constraint randomization in 6 module-level testbenches for 100% functional coverage
- Arranged Python scripts to generate large sequences of test vectors used during module-level simulation

Software Engineering R&D Intern

Sandia National Laboratories

May 2024 – Aug 2024

Albuquerque, NM

- Enhanced GPU performance visibility in distributed systems by creating a lightweight C++/ROCm API that provides developers with over 100 critical hardware metrics
- Streamlined connection between the sampling API and Grafana to efficiently visualize metrics on 20 clusters

High Performance Computing R&D Intern

Sandia National Laboratories

Sep 2024 – Present

Remote

- Scaled a GPU performance analysis tool for the U.S.'s first exascale supercomputers (Frontier, El Capitan), boosting computational efficiency for over 1000 researchers utilizing cutting-edge GPU/APU hardware
- Worked with HPC Tools team to integrate the Lightweight Distributed Metric Service API for low overhead monitoring
- Developed documentation for researchers using the ROCm software stack to develop custom profiling tools

Digital Twin Research Assistant

Georgia Institute of Technology

Aug 2024 – Apr 2025

Atlanta, GA

- Classified structures embedded in LiDAR scans with CNN semantic segmentation to characterize objects efficiently
- Simulated WiFi propagation via raytracing in Python using NVIDIA Sionna API to recreate indoor wireless environments
- Published findings between LiDAR scan fidelity and relative accuracy of simulations to IEEE ORSS 2025

FPGA Design Verification

Configurable Computing and Embedded Systems VIP

August 2024 – April 2025

Atlanta, GA

- Developed testbench in SystemVerilog to verify one-way communication on PYNQ-Z1 FPGA SPI bus
- Collaborated with FPGA Design members to create seamless hardware interactions for users

Projects

TamaGITchi C++, ESP-32, FreeRTOS, Embedded System Design	Oct 2025 – Nov 2025
<ul style="list-style-type: none">Developed task keeping handheld device with ESP-32C6 and C++ to gamify productivity for usersUtilized BLE to upload custom tasks from phone to device to remind users of important tasks to completeConfigured memory mapped I/O for SPI communication to LCD and I2S for audio output	
Accelerated Rubik's Solver Python, PyTorch, C++, Verilog	Jul 2025 – Present
<ul style="list-style-type: none">Implemented edge and color detection to segment each face and assign positions with color using OpenCVDeveloped Python script to algorithmically predict moves to solve Rubik's Cube based on segmented facesIntegrating a CNN acceleration module and camera module onto an FPGA to improve computation speed	
Rhythm Master C, ESP-32, Embedded System Design	Jan 2025 – May 2025
<ul style="list-style-type: none">Controlled 8 peripherals and implemented game logic for reading and interpreting user inputs using CDesigned compact and organized PCB, routing and integrating power and control for all components of the robotDebugged faulty GPIO and ADC on ESP-32 using Oscilloscope and Signal Generator to address and iterate designs	
LoRa for Automated, Efficient Vertical Farming C++, Arduino	August 2022 – April 2023
<ul style="list-style-type: none">Reduced initial investment for vertical farms by 15% using LoRa and low-power microcontrollersCut power consumption by 25% compared to current vertical farming solutionsHosted a lecture series for cohort of 20 students across multiple teams on programming and building with ArduinoLed team of 10 students to develop a prototype that placed second in the state for Engineering Design	

Course Work

Advanced Digital Design & VLSI: CMOS Design, Cadence Virtuoso, Adder and Multiplier Topology, Timing Analysis

Embedded Systems Design: UART, SPI, I2C, I2S, Bluetooth (BLE), WiFi, Real-Time Operating Systems (RTOS), microcontrollers

Computer Architecture: 5-Stage Pipelined Processor, Verilog, Memory Hierarchy, Cache Coherency, Virtual Memory, GPU Architecture

Advanced Programming Techniques: C++, SFML, OpenMP, OpenMPI, CUDA, OpenGL, Sockets, Multithreading

Digital Design Laboratory: VHDL, FPGA, Oscilloscope, Logic Analyzer, Quartus Prime