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# Micah Weston

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## Education

### **Northeastern University**

Boston, MA | Aug 2023

GPA: 4.00

*Candidate for Bachelor of Computer Engineering and Computer Science*

- Honors: University Honors Program, Dean's List (all semesters)  
Activities: NU Computer Architecture Research Lab, NU Baja SAE, NU Sound, Competitive Programming Club, IEEE Eta Kappa Nu  
Courses: High Performance Computing, Algorithms, Computer Architecture, Programming Languages, Object-Oriented Design, Computer Systems, Digital Design and Computer Organization, Embedded Design, Networks, Logic and Computation, Discrete Structures, GPU Programming Basics with CUDA
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## Professional Experience

### **MORSE Corp** | *C++ Software Engineer for Aerospace*

Cambridge, MA | July – Dec 2021

- Developed C++ software on ARM Cortex-M series processors for aerospace and integrated systems applications
- Acted as sole firmware engineer for project comprised of a diverse set of 16 engineers from different backgrounds
- Refactored satellite communication firmware to double message rate and increase reliability
- Integrated improved system drivers to reduce halts by 80 percent in time sensitive real-time devices
- Upgraded project repository to Dockerized environment for Jenkins continuous integration pipeline
- Wrote Python code for data analysis scripts and utility software to support embedded systems
- Aided multiple flight test events as main software support for the field crew
- Validated hardware and software for integrated systems devices through simulated and physical tests

### **Freelance** | *Embedded Software Engineer*

Las Vegas, NV | Apr – Aug 2020 & Dec – Jan 2021

- Generated C++ software for a digital color organ running from an ESP32 NodeMCU microcontroller
- Designed and implemented an automatic calibration system that balanced light amplitudes based on audio input
- Optimized algorithms for LED color assignment to reduce complexity and improve memory efficiency
- Migrated build process to PlatformIO while keeping backwards compatibility with Arduino IDE
- Generated dynamic color patterns from audio input processed by an FFT library to display through an LED display

### **Advanced Monitoring Systems** | *Embedded Systems Engineer*

Las Vegas, NV | July – Aug 2020

- Improved organization of legacy code base through version control systems and secure online storage
  - Validated hardware function and performance for embedded processors that controlled multiple sensors
  - Created documentation for hardware/software interfacing and the upload process for embedded software
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## Skills

**Programming:** C++, Go, C, Python, Haskell, CUDA, Java, Bash, Verilog

**Applications:** Git, Cmake, Bash Shell, Vim, JetBrains IDEs, GitHub, GitLab, Bitbucket, Docker, Jira, Jenkins

**Technical:** Linux, Mac, ESP32, ARM Cortex-M, SPI, I2C, Arduino, PlatformIO, Soldering, Atmel ICE

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## Project Experience

### **NU Computer Architecture Research Lab** | *GPU Research Assistant*

Boston, MA | Oct 2019 – Present

- Developing code for a multi-GPU simulator built with the Go programming language
- Integrated support for V3 and V4 AMD GPU code object format to load kernel code into the simulator
- Wrote emulation code for instructions in GCN3, RDNA, and CDNA architectures
- Research Translation Lookaside Buffer (TLB) design to increase hit rate through memory address coalescing
- Implemented the page migration process as an interface supported with unit tests
- Wrote Bash scripts to automate building, executing, and collecting data for hardware simulations

### **NU Motorsports Baja SAE** | *Embedded Software Developer*

Boston, MA | Oct 2019 – Nov 2021

- Implemented team coding style conformance and standardized project structures
- Revived and updated Dynamometer software for updated ESP32 development framework
- Set up online GitHub organization to help coalesce team software for DAQ system and other devices

### **GPU Programming Basics with CUDA** | *Final Project Competition, NUCAR Lab*

Boston, MA | Oct – Nov 2020

- Developed CUDA code for a Histogram Equalization image processing program ran with a Nvidia Kepler GPU
  - Increased kernel speed by 10% through use of Hillis-Steele Scan, shared memory, and fewer memory accesses
  - Improved program speed by 25% through reducing the memory footprint and coalescing the remaining allocations
  - Placed second as the only undergrad student in the class competition judged for program accuracy and speed
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