Micah Weston

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Education

Northeastern University   Boston, MA | May 2024
Candidate for Master of Science in Computer Science   GPA: 4.00
- Courses: Advanced Algorithms, Algorithms, Programming Languages, Operating System Implementation, Computer Systems, Foundations of Software Engineering

Northeastern University   Boston, MA | May 2023
Bachelor of Science in Computer Engineering and Computer Science   GPA: 4.00
- Honors: Shillman Award for Engineering Excellence, University Honors Program, Dean's List (all semesters)
- Activities: NU Computer Architecture Research Lab, Competitive Programming, IEEE Eta Kappa Nu, Tau Beta Pi
- Courses: Compilers, High Performance Computing, Computer Architecture, Digital Design, Embedded Design, Logic and Computation, Networks, OOD, Discrete Structures, GPU Programming Basics with CUDA

Professional Experience

MediaTek | *Compiler Engineer*   Woburn, MA | May 2023 – Current
- Driving RFC and upstream effort to emit PGO analysis into final LLVM binary object for evaluation and testing
- Creating new metrics to evaluate and improve compiler PGO accuracy
- Developing and debugging compiler code in both C++ and C using multiple unique IR
- Investigated and developed fixes for inaccuracies in PGO accuracy within the compiler

AMD | *GPU Compiler Engineer*   Boxborough, MA | June 2022 – April 2023
- Developed C++ code for GPU shader compiler used within multiple production graphics drivers
- Implemented optimizations in the compiler to take advantage of future hardware features
- Worked directly with multiple ASIC ISAs and different compiler IRs
- Determined causes of IR compilation failures at instruction, CFG, call graph, and compiler driver level
- Created unique algorithms to transform and canonicalize IR for optimizations and lowering
- Traced validation failures between code compilation and hardware emulation

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
- Validated hardware and software for integrated systems devices through simulated and physical tests

Skills

- **Programming:** C++, Rust, C, LLVM IR, Haskell, OCaml, Go, CUDA, Bash, Python, Verilog
- **Tools:** Git, GDB, CMake, Cargo, NeoVim, Bash Shell, Jenkins, Jira, Confluence, GitHub, GitLab, Bitbucket
- **Technical:** Linux, Windows, LLVM, Boost, ARM Cortex-M, RTIC

Project Experience

LLVM Compiler Infrastructure | *Open-Source Contributor*   Remote | Dec 2021 – Present
- Gave conference talk on PGO accuracy metrics developed during MediaTek internship
- Implemented bug fix for Clang diagnostic which flags the unsafe usage enum conversions
- Contributed patches to optimize machine instructions with 24-bit immediate operands in the AArch64 back end

EECE Capstone Design | *Undergrad Project*   Boston, MA | Jan 2023 – April 2023
- Placed second place in a field of 20 teams during the final competition
- Developed configurable power-line communication firmware in embedded Rust for custom PCB

NU Computer Architecture Research Lab | *GPU Research Assistant*   Boston, MA | Oct 2019 – July 2022
- Integrated support for V3 and V4 AMD GPU code object format to load kernel code into the multi-GPU simulator
- Wrote emulation code for instructions in GCN3, RDNA, and CDNA architectures
- Researched Translation Lookaside Buffer (TLB) design to increase hit rate through memory address coalescing

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
- Placed second as the only undergrad student in the class competition judged for program accuracy and speed