MARINNA HEICHBERGER

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EDUCATION

Rochester Institute of Technology, Rochester, NY
Bachelor of Science in Electrical Engineering, expected May 2026
Masters of Science in Electrical Engineering, expected December 2026
GPA: 3.55/4.0

SKILLS

Hardware Description & Simulation: Verilog, VHDL, Quartus Prime, ModelSim, LTSpice, Simulink
Programming and Scripting: C, C++, MATLAB, Assembly, Python, NumPy, scikit-learn, UART, SPI, I2C
Digital Design & Concepts: FSMs, pipelining, RTL, testbench development, MOSFETS, OP-AMPS, Fourier transforms
Hardware: Oscilloscope, Multimeter, Altera FPGA, Logic Analyzer, Microcontrollers, Network Analyzer, Breadboard

PROJECTS/LABS

RISC Design

- Designed a 3-bus, 8-bit Von Neumann RISC processor from top-down architecture to structural RTL Verilog implementation, including datapath, control unit, ALU, register file, and memory interface.
- Implemented 12+ instructions including arithmetic, logic, shift/rotate, load/store, and stack operations; verified functionality via comprehensive ModelSim testbenches with waveform analysis.
- Optimized instruction sequencing, achieving 129-instruction multiplication in 477 cycles; utilized ~499 logic elements and 159 registers on FPGA synthesis.

Embedded Oscilloscope on MSP430

- Configured TimerA to trigger ADC reads at precise intervals (10 ms/5 ms); optimized register setup to avoid capacitance interference
- Implemented dual-scale data mapping (linear via shifts; logarithmic via LUT-driven MSB detection)
- Output UART at 9600 bps and employed dual lookup tables and software delays for LED multiplexing; used SMCLK dividers and up-mode timing for 0.5 s display refresh to output display

Digital Systems 1

- Designed a Bit Serial Adder Subtractor Finite State Machine that has the ability to perform back to back addition and subtraction operations, with 2, five bit operands;designed with Quartus and tested on Altera FPGA board.

EMPLOYMENT EXPERIENCE

Symbotic LLC – Boston, Massachusetts **May 2025- August 2025**
Industrial Controls Engineer

- Designed and implemented modular ladder logic using Studio 5000 to automate conveyor control, based on encoder and photoeye feedback; logic accounted for encoder rollover using modulus operation array indexing, and conditional logic.
- Integrated JSON and CSV configuration files into an Ignition HMI system, demonstrating hands on experience with industrial data flow and software-hardware interfacing

Bridgestone Americas - Nashville, Tennessee **June 2024 – December 2024**
Electrical Engineering Intern

- Modified and debugged PLC logic in RSLogix 5 to implement real time fault detection systems for automated tire handling, improving system uptime and protecting product integrity
- Programmed conveyor control using VFD 525 drives and photoeye sensors to enable autonomous tire spacing, detection and movement
- Interpreted electrical schematics to analyze signal flow and ensure accurate sensor-actuator integration
- Applied embedded control principals, structured logic development and sensor-actuator interfacing experience

LEADERSHIP/INVOLVEMENT

Rochester Institute of Technology – Rochester, New York **August 2023 - Present**
Resident Assistant

- Served as a live-in mentor and community leader for a residence hall of 20–40 students.
- Resolved conflicts, communicated effectively with diverse groups, and upheld university policies.

Varsity Track and Field

- Practiced, traveled, and competed at least 20 hours per week in the D3 Liberty League Conference while balancing a full-time academic course load