Edward Silva

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Education

Colorado School of Mines Expected May 2026
BS Electrical Engineering , Minor in Computer Science

Skills

Programming Languages: C++, Python, MATLAB, Java, Verilog, RISC-V Assembly, Bash
Hardware: Arduino, Raspberry Pi, Digital Circuits, Embedded Systems, Microcontrollers, Circuit Design
Software: VS Code, Git/GitHub, Linux, Simulink, SSH, LaTeX

Experience

Software Engineering Intern, Kratos Defense – Colorado Springs, CO June - August 2025

- Achieved 1.6x execution speedup by optimizing legacy DSP algorithms in C++ through code refactoring and performance analysis, reducing computational overhead for real-time signal processing applications.
- Improved system throughput by developing and implementing SIMD-optimized mathematical algorithms using vectorized operations for parallel data processing.
- Researched and demonstrated an improved approach to coding a FIR filter, presenting positive findings and performance gains to the team for adoption in future projects.
- Reduced debugging time and improved system maintainability for development teams by designing and deploying a comprehensive logging framework with configurable severity levels and error tracking.

Projects

Autonomous Path Following Robot, Arduino, Raspberry Pi, Python, C++ August 2025 - Present

- Developing the computer vision system for a semester-long robotics project, working within a four-person team split between vision and controls
- Created a real time object detection program in Python using OpenCV that identifies target shapes from live video streams with bounding boxes and masks, surpassing the original single image requirement
- Building a communication interface between the Raspberry Pi and Arduino to exchange control and sensor data, enabling integration of perception with motion control
- Supporting integration with a PID control system to achieve path following and autonomous navigation

Crane Gantry Controller, MATLAB, Simulink August - October 2025

- Modeled and linearized a nonlinear gantry crane system in MATLAB and Simulink using small-angle approximations, deriving the transfer function and validating results against experimental data
- Identified and tuned the crane's cable length parameter to accurately match empirical position and velocity data
- Designed and implemented a discrete-time feedback controller that met overshoot, settling time, and velocity constraints while maximizing gain and phase margins
- Analyzed closed-loop system performance and stability margins through time-domain and frequency-domain plots to confirm robust controller behavior for both linear and nonlinear models

Extracurriculars

Astronomy Club, IEEE, ACM, Hiking