Edward Silva

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Profile

Graduating senior at Colorado School of Mines with hands-on experience in software development, control systems, and signal processing. Seeking opportunities focused on software development of Signal Processing applications, Control Systems, and or Embedded Systems.

Education

Colorado School of Mines
MS Electrical Engineering – Controls and Signal Processing — Expected May 2027
BS Electrical Engineering, Minor in Computer Science — Expected May 2026
Relevant Coursework: Signals and Systems I/II, Embedded Systems, Modern Control Design, Software Engineering

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