Aleira N. Sánchez

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OBJECTIVE: M.Eng. candidate in Mechanical Engineering with specialization in robotics, autonomous systems, and software engineering, experienced in Python, C++, ROS, real-time computation, and embedded systems programming. Skilled in algorithm development, sensor fusion, and control systems for autonomous platforms.

EDUCATION

Cornell University, College of Engineering, Ithaca, NY
Master of Engineering, Mechanical Engineering, Robotics - ***Expected Dec. 2025***
Bachelor of Science, Mechanical Engineering - ***May 2025*** **|** ***Major GPA:*** **3.26**

Relevant Courses: Fast Robots, Mechatronics, Flight Dynamics, System Dynamics, Heat Transfer, Fluid Mechanics, Computer Aided Manufacturing, Metal Additive Manufacturing, Systems Engineering & Six Sigma

TECHNICAL SKILLS

Software Development: Python, C++, MATLAB, Arduino, Git, Linux, software debugging, unit testing, version control
Algorithms & Data: PID control, Kalman filtering, trajectory planning, localization, data structures, decision-making algorithms
Systems & Infrastructure: ROS, embedded systems, hardware/software integration, simulation environments, system architecture design
Sensors & Hardware: IMUs, time-of-flight sensors, DAQ systems, motor drivers, actuator design
Machine Vision & Sensor Fusion: Sensor fusion, obstacle detection and avoidance
Languages: Spanish (fluent), English (fluent), Portuguese (basic)

RELATED EXPERIENCE

Researcher – Laboratory for Computational Sensing and Robotics
Johns Hopkins University – Summer 2025

- Collaborated with Professor Louis Whitcomb and PhD researchers on control system development for a 6-DOF underwater vehicle.
- Migrated MATLAB-ROS integrated control code into a fully ROS-based node to improve functionality, maintainability, and system integration.
- Adapted and reformatted existing algorithms to ensure compatibility with ROS for trajectory-tracking control research.

Student Engineer – Fast Robots Course
Cornell University – Spring 2025

- Developed and optimized real-time control algorithms for high-speed robotic navigation and obstacle avoidance.
- Integrated IMU and time-of-flight sensor data to improve localization and motion planning.
- Programmed embedded systems in Python and C++ to execute precise motor control and autonomous tasks.

Undergraduate Researcher - Haptic Augmentation for Physical and Perceptual Interactions Lab
Cornell University – Summer 2024

- Conducted in-depth characterization of eccentric rotating mass and voice coil motors to determine the most effective configuration for movement compensation in human wrist application.
- Engineered a MATLAB-based application to automate and streamline data collection processes utilizing DAQ systems to capture subject responses via clicker input.
- Enhanced a pre-existing research project by refining the device's circuitry and improving overall efficacy.

CAMPUS INVOLVEMENT

Teaching Assistant - System Dynamics and Mechatronics
Cornell University – 2024–2025

- Guided students through laboratory exercises in **control theory, embedded systems, and system modeling**.
- Assisted with **debugging code, troubleshooting hardware**, and reinforcing engineering principles in recitations.