Aleira N. Sánchez

Email: ans222@cornell.edu | Portfolio: https://aleirasanchez.github.io/portfolio/#home

OBJECTIVE: M.Eng. candidate in Mechanical Engineering with specialization in robotics and autonomous systems, experienced in Python, C++, ROS, real-time computation, and embedded systems programming. Looking for a full-time job to start in January 2026.

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, R, Git, software debugging, unit testing, version control
Algorithms & Data: PID control, Kalman filtering, trajectory planning, localization, 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.