Nicholas Mattos
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EDUCATION

Georgia Institute of Technology – Atlanta, GA Expected Graduation: May 2030
Doctor of Philosophy in Mechanical Engineering | Robotics and Control | Physical AI | Mechanics

Stevens Institute of Technology – Hoboken, NJ Graduation: May 2026
Master of Engineering in Mechanical Engineering | Concentration in Robotics and Control
Graduate Certificate in Robotics and Control | *Graduate Certificate in Medical Devices* | GPA: 4.0

Seton Hall University – South Orange, NJ Graduation: Dec 2024
Bachelor of Science in Physics | GPA: 3.87

EMPLOYMENT

Georgia Institute of Technology, *Graduate Research Assistant* – Atlanta, GA Aug 2026 – Present
Advisor: Professor Shuman Xia | Co-Advisor: Professor Yue Chen

- Develop a physical AI robotic cutting platform for soft-material interaction, integrating robot control, vision systems, sensing, and experimental validation.
- Validate system on an in-house da Vinci surgical robotic system for autonomous soft-tumor phantom manipulation.

EN-POWER GROUP, ***Mechanical Design Engineering Intern*** – New York, NY May 2024 – Present
Mechanical and energy engineering consulting firm serving commercial and residential buildings

- Conduct building area measurements for 100+ contracts totaling $500,000+ using AutoCAD, supporting energy efficiency compliance for NYC LL97/LL84 benchmarks.
- Collaborate on HVAC system design, load calculations, equipment sizing, and NYC DOB submittal review.

MICRO, ***Automation/Process Development Engineering Co-op*** – Somerset, NJ Jan 2026 – May 2026
Contract medical device manufacturer producing components, assemblies, and robotic systems in regulated environments

- Designed and implemented robotic automation solutions, including FANUC programming (TP/KAREL), sensor integration, PLC-based control logic, and EOAT/fixturing design.
- Developed and integrated PLC-based control systems using Allen-Bradley Studio 5000 Logix Designer and AutomationDirect platforms, enabling robot–PLC communication, I/O mapping, coordinated control, conditional actuation, HMI design for operator interaction, and MES integration across work centers.
- Led development of an AWS Quick Suite, an integrated AI tool for natural language querying of manufacturing data, while supporting process development and validation (IQ/OQ) in an FDA/ISO regulated GMP environment.
- Assisted in FAT/SAT for semi-automated crimping cell for high precision cryogenic surgical tools.

Stevens Institute of Technology, ***Graduate Research Assistant*** – Hoboken, NJ Sep 2025 – May 2026
Advisor: Professor Long Wang | Funded by the Department of Defense (DoD)

- Collaborate with Medtronic and Corvid Technologies and under contract with the Defense Health Agency.
- Develop a robotic end effector for combat casualty care based on design inputs provided by the *DoD*.
- Integrate hardware control, 3D-printed assemblies, and SolidWorks-based design to support prototype validation and future Food and Drug Administration (FDA) activities.

Stevens Institute of Technology, ***Graduate Teacher Assistant*** – Hoboken, NJ Jan 2025 – May 2026

- TA for Fluid Mechanics ME 342 (Spring 2025) and Engineering Analysis I ME 641 (Fall 2025 and Spring 2026).

PROJECTS

Autonomous Mobile Robot Sorting & Navigation

- Engineered a state-based control and navigation system for a differential-drive robot, enabling autonomous identification, sorting, and relocation of colored objects in simulation.

Kinematic Modeling & Simulation of a 5-DOF Robotic Manipulator

- Developed forward and inverse kinematic algorithms to model robotic motion, validate workspace constraints, and optimize end-effector trajectory planning.

Vision-Based Object Detection & Localization Pipeline for Autonomous Navigation Application

- Engineered a computer vision pipeline for object detection and spatial localization, processing visual data to accurately identify and map obstacles for autonomous navigation systems.

TECHNICAL SKILLS

Software/Programming: MATLAB, Simulink, Python, PLC Ladder Logic, HMI Design, Arduino, TP/KAREL (FANUC), ROS 2, C++
CAD/Design: SolidWorks, AutoCAD, Creo, Fusion 360, FEA, 3D Printing, GD&T
Languages: Spanish (Intermediate), Greek (Elementary)
Familiarities: ISO 9001, ISO 14001, ISO 13485, 21 CFR Part 820, GMP Documentation Practices, Design Control, IQ/OQ Validation
Additional Skills: Analysis (Minitab), Data Analysis (Excel), MES Integration
Awards: Dean's List (all semesters), Eagle Scout, FRHSD Award (Perfect SAT Math Score), Sigma Pi Sigma (Physics and Astronomy Honor Society)