

Nicholas Mattos

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EDUCATION

Stevens Institute of Technology – Hoboken, NJ

Expected 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: December 2024

Bachelor of Science in Physics | GPA: 3.87

EMPLOYMENT

MICRO, *Automation/Process Development Engineering Co-op* – Somerset, NJ

Jan 2026 – Present

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.

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 submittal review.

Stevens Institute of Technology, *Graduate Research Assistant* – Hoboken, NJ

Sep 2025 – Present

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 – Present

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

PROJECTS

Mechanical Design of a Pneumatic Transport Carrier

Fall 2025

- Designed and structurally validated a high-velocity pneumatic transport carrier using CAD and FEA, ensuring mechanical integrity under dynamic pressure loading and achieving safe operation at high transport velocities

Kinematic Modeling & Simulation of a 5-DOF Robotic Manipulator

Fall 2025

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

Research in Supersonic/Hypersonic Aerodynamics | *Advisor: Professor Nicholas Parziale*

Spring 2025

- Supported Mach 6 shock tunnel experiments analyzing boundary-layer physics, turbulence, and shock interactions using advanced laser diagnostics.

Design of a Water-Cooled Cold Plate for a Multi-Chip Module (MCM)

Fall 2024

- Conducted numerical and analytical heat transfer analysis using MATLAB and SolidWorks to enhance cooling efficiency by optimizing water channel dimensions and flow rates.

Research in Compliant Mechanisms | *Advisor: Professor Weining Wang*

Fall 2023 – Spring 2024

- Designed and modeled a compliant mechanism leveraging material deformation to achieve self-actuating motion without traditional joints

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)