MAURICIO PEREIRA
Robotics at MIT

Email: mauricioapereiras@gmail.com
Phone: (954) 534-0176
Portfolio: mauriciopereira.com
LinkedIn: linkedin.com/in/mauricio-pereira-/

EDUCATION

Massachusetts Institute of Technology – December 2026

Bachelor of Science in Mechanical Engineering, Concentration in Control, Instrumentation, and Robotics

Relevant Coursework:
- Robotic Manipulation
- Introduction to Robotics
- Dynamics & Controls
- Design & Manufacturing
- Mechanics & Materials
- Fundamentals of Programming
- Numerical Computation for Mechanical Engineers
- Differential Equations

Miami Dade College – July 2023

Associate of Arts, Mechanical Engineering

SKILLS

- Electromechanical Design
- Mechanical Fabrication
- Robot Kinematics & Dynamics
- ROS and Drake
- Python and C++
- MATLAB
- SolidWorks
- Machine Learning
- Analytical and Critical Thinking
- System Troubleshooting
- Meticulous attention to detail
- Spanish
- Outstanding communication skills
- Microsoft Office Suite

RELEVANT EXPERIENCE

Robot Design & Manufacturing – MIT Mechanical Engineering Competition
Massachusetts Institute of Technology – Department of Mechanical Engineering
January 2025 – Present

- Designed and built a competitive robot for MIT's 2.007 Mechanical Engineering competition.
- Applied **structured design methodologies** (Decision Matrix, Pugh Chart) to define requirements and select optimal strategy.
- Conducted **Mechanical Enginnering calculations** involving torque, power, battery capacity, weight distribution, kinematics, and timing constraints.
- Developed CAD models in **SolidWorks**, simulated and analyzed performance using **MATLAB**, and programmed robot control systems in **C++** for both autonomous and remote operation via **custom mobile app**.
- Fabricated components using **machine shop tools** including milling machine, lathe, waterjet, laser cutter, and 3D printer.
- Integrated electrical and embedded systems, selecting and programming microcontrollers (ESP32), sensors (IMU, encoders), motors, and power systems.

Optimization of Computer Vision Dataset Creation
Undergraduate Researcher
Massachusetts Institute of Technology – Signal Kinetics Lab
June – August 2024

- Developed a dataset using the YCB dataset (50 objects) to support **computer vision models** for robotic Non-Line of Sight (NLOS) perception.
- Developed a novel synchronization method between a **Universal Robot arm** and mmWave radar, with potential to reduce capture time by **66%** (from 3 hours to 1 hour per object).
- Automated radar measurement collection using **MATLAB, Python, and Lua**, improving consistency and reducing potential manual errors.

Automation of Maskless Lithography System
Research Intern
Florida International University – Pozdin Lab
May 2022 – January 2023

- Built **a MATLAB-based control interface for microscope stage movement**, reducing fabrication time from **2 weeks to 3 hours** for precise microstructure creation (e.g., creating the letters "FIU" within tenths of micrometers).
- Translated complex project requirements from interdisciplinary fields (e.g. microfluidics) into actionable software specifications.
- **Measured and integrated hardware-specific parameters** (e.g., microscope stage speed/precision, light beam size/intensity) into **control software** for optimized performance.
- **Initiated and led technical discussions with engineers** at Applied Scientific Instrumentation to incorporate their expertise in complex biological experiment automation into the development of our automation process.