

# MAURICIO PEREIRA

## Robotics at MIT

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

### RELEVANT EXPERIENCE

#### 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., writing "FIU" with 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.
- Coordinated with engineers from Applied Scientific Instrumentation, integrating their expertise into the automation process.

#### Development of Head-Controlled Turret

Undergraduate Researcher

Miami Dade College – School of Science

May – July 2022

- Designed and built a turret controlled via head movements, with applications in search and rescue, research, and law enforcement.
- Developed a multi-platform control system using Raspberry Pi, Python, Node.js, and WebSocket, with smartphone-based remote access.
- Provided technical guidance on designing the head-tracking system and selecting internet communication protocols.