Leo Mouta

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EDUCATION

Master of Science in Robotic Systems Development
Carnegie Mellon University • Pittsburgh, PA • 2025 • 4.25/4.00

Master of Science in Aerospace Engineering
ISAE-SUPAERO • Toulouse, France • 2022 • 4.04/4.00
- Specialized in autonomous systems

Bachelor of Science in Aerospace Engineering
Minor in Engineering Physics • Aeronautics Institute of Technology (ITA) • Sao Jose dos Campos, Brazil • 2022

EXPERIENCE

Systems Engineering Intern - Software Developer
National Robotics Engineering Center (NREC) **May 2024 - Present, Pittsburgh, PA**
- Integrated a ROS Nav2 autonomy stack into a new NREC mobile robot, combining LIDAR and camera data to enable autonomous, unsupervised navigation.
- Co-led the 2024 summer cohort into building a new robotic system showcasing existing NREC capabilities, serving as a model for NREC's future projects.
- Developed ROS 2 training and workshop for NREC staff to familiarize future teams with ROS, Python, C++ and Gazebo development and standards.

Technical Assistant
JPMorgan Chase & Co. AI Maker Space **September 2023 - January 2025, Pittsburgh, PA**
- Inaugurated and maintained the infrastructure for the space's drone cage. Developed ROS/Python programs for the autonomous flight of Crazyflie drone swarms, which worked in conjunction with the cage's MoCap systems.
- Wrote the Maker Space's guide on RealSense cameras for new students, with showcase demos including visual odometry and visual SLAM.
- Developed motion planning demo programs using ROS, Python and C++ for the space's Kinova arms, so as to execute tasks such as object picking, obstacle avoidance, and vision-based tracking using depth data.
- Implemented neural-based computer-vision programs, such as 3D pose tracking, monocular depth estimation and 3D segmentation, to showcase the capabilities of the space's VPUs.

Research Intern
Laboratory for Analysis and Architecture of Systems (LAAS-CNRS) **April 2022 - September 2022, Toulouse, France**
- Developed and tested innovative contact-based RRT planning algorithms tailored for swarms of drones transporting slung loads, achieving a 73% success rate across various scenarios.
- Wrote embedded computer vision software to integrate cameras into a new research drone that relied exclusively on visual-inertial odometry and visual SLAM for navigation.

PROJECTS

Embedded Security Competition
MITRE Corporation • January 2025 - Present
- Selected to be part of the 3-times victorious Carnegie Mellon team participating in the 2025 embedded capture the flag (eCTF) competition organized by the MITRE Corporation, which involves over 150 schools worldwide designing and exploiting an embedded system.

Embedded Systems Capstone Project - RTOS
Carnegie Mellon University • August 2024 - December 2024
- Developed a Real-Time Operating System (RTOS) from scratch—including features such as drivers for peripherals, interrupt calls, and scheduling—using C and Arm Assembly, achieving over 16 times the speed of the benchmark code.

Automated Chemical Cleaning
Koppers Inc. • mrsdprojects.ri.cmu.edu/2024teama/ • September 2023 - December 2024
- Designed and built a robot designed to clean chemical waste within Koppers' factories, resulting in increased production output and higher levels of worker safety.

Drone Flight Mechanics
Dassault Aviation/ISAE-SUPAERO • August 2021 - March 2022
- Devised metrics to assess the flight dynamics of multirotor UAVs under various sensor loads, with the intent of integrating these metrics into Dassault Aviation's automated aircraft maintenance processes.

SKILLS

Robotics: Embedded Systems, Autonomy Stacks, Controls, Mobile Platforms, Planning, Perception

Programming: Python, C/C++, ROS 1/2, Arm Assembly, Matlab

Other Skills: Linux, Systems Engineering, Project Management, Machine Learning, Computer Vision