

# Andres Pulido

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## Education

### University of Florida, Gainesville FL

Ph.D. in Mechanical Engineering. 3.55 / 4 G.P.A

August 2021 - May 2026

MS in Mechanical Engineering. 3.55 / 4 G.P.A

August 2021 - December 2023

Bachelor of Science in Mechanical Engineering. 3.53 / 4 G.P.A

August 2018 - May 2021

## Relevant Coursework and Skills

Autonomous Robots | Nonlinear Controls | Optimal Controls | Intro to RL | Applied ML | Dynamics | Formal Methods

**Skills:** Python, Linux, MATLAB, GitHub, ROS, Gazebo, C++, TensorFlow, PyTorch, SKLearn, Jira, SolidWorks

## Internship Experience

### Autonomous Vehicle Lab, UF REEF - Robotics Software Engineering Intern

May 2022 - August 2022

- Implemented a particle filter to estimate the state of a robot target tracked by a quadcopter
- Creating new information-driven trajectory generation for target tracking in occluded environments using ROS
- Designed Markov chain-like road network and programmed a PID control on a TurtleBot to follow the network

### Aurora Innovation - Systems Engineering Intern

May 2021 - August 2021

- Wrote a Python tool to perform a time interval safety analysis on excessive longitudinal acceleration fault scenarios of a self-driving car. The tool will help to design safety mechanisms robust to safety violations
- Derived one dynamic and three static 2D models of a self-driving truck in Python with different parameters which served as the groundwork to do a safety analysis and impose motion planning limits to prevent rollover

### Cummins Inc - Product Validation Engineering Co-Op

August 2020 - December 2020

- Wrote a User Interface using MATLAB App Designer to safely and quickly execute lift bracket testing
- Designed a tool to determine the optimal engine temperature in vibration testing by analyzing field data
- Performed statistical analysis of testing costs over two years using MATLAB to better estimate future tests

## Research Experience

### Active Perception and Robot Intelligence Lab, UF - Graduate Researcher

August 2021 - Present

- Created a 6DOF Gazebo simulation for sonar bathymetry of drone and boat system in C++ and python
- Designed and implemented a sparse 3D point cloud generation algorithm from side-scan sonar image
- Implemented Automatic Object Detention (ATR) using the YOLOv4 neural network on side-scan sonar images

### Machine Intelligence Lab, UF - Research Assistant

Team Lead and Software Team member in the autonomous boat and submarine tea

August 2018 - Present

- Led a team of five and nine students in the 2022 and 2019 RoboSub competitions in CA and MD
- Wrote a Concurrent Learning-based adaptive controller for the boat that learns systems parameters over time
- Conducted research and implemented system identification techniques to estimate inertia and drag parameters in the dynamic model of the submarine by performing input-output regression of pool experiments

### School of Science, Miami Dade College (MDC) - Undergraduate Research Assistant

January - August 2018

- Derived the forward and inverse kinematics of a 3DoF robotic planar manipulator to draw geometrical shapes
- Implemented a PID controller in LabVIEW to achieve a desired angular speed and position with DC motors

## Volunteering

- Venezuelan Student Association (VENSA) Fall 2018 - Present
- Society of Hispanic Professional Engineers (SHPE) Fall 2018 - Present

## Awards and Skills

- **International Scholar Laureate:** Selected in Summer 2018 by the MDC Honor Society to travel to three cities in mainland China to attend engineering workshops from Pratt & Whitney, Lenovo, and BOE employees
- Languages: **Spanish (native), English (fluent)**
- **UF HWCoe Dean's Research Award:** covers tuition and provides a stipend for four years to do research