Andres Pulido

andrespulidos@gmail.com | (754)-802-9636 | Website/Portfolio: andrespulido8.github.io
LinkedIn: linkedin.com/in/andres-a-pulido | Github: github.com/andrespulido8

Education

University of Florida, Gainesville FL

Ph.D. in Mechanical Engineering.   **August 2021 - December 2025**

MS in Mechanical Engineering.   August 2021 - December 2023

Relevant Coursework and Skills

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

Skills: Python, Linux, Git, ROS, Gazebo, C++, TensorFlow, PyTorch, SKLearn, MATLAB, SolidWorks

Languages: Spanish (native), English (fluent)

Internship Experience

Aurora Innovation - Software Safety Engineering Intern   May - August 2024
- Working on safety of a motion planning subsystem for a self-driving truck
- Writing a Python tool for coverage analysis of AV behaviors based on internal planning model metrics

Autonomous Vehicle Lab, UF REEF - Robotics Software Engineering Intern   May - August 2022 **&** 2023
- Implemented a particle filter on a quadcopter that estimated the state of a mobile robot even under occlusions
- Learned the dynamics of a robot using a deep neural network and raw position measurements for target tracking
- Reduced tracking uncertainty better than baselines by designing a novel information-driven guidance method
- Designed a Markov chain-like road network and programmed a PID control on a robot to follow the network

Aurora Innovation - Systems Engineering Intern   May - August 2021
- Formulated and wrote a Python tool to perform a time-interval safety analysis on excessive longitudinal acceleration fault scenarios of a self-driving car, which helps to understand constraints on safety mechanisms
- Derived one dynamic and three static 2D rollover models of a self-driving truck in Python which served as the groundwork for the safety team to impose motion planning limits that prevent rollover in different conditions

Cummins Inc - Product Validation Engineering Co-Op   August - December 2020
- Wrote a user interface (UI) using MATLAB App Designer that allows for safer and quicker lift bracket testing
- Analyzed field data to create a tool that finds the most realistic engine temperature in vibration testing
- Optimized testing cost projections by applying in MATLAB statistical techniques to two years of testing costs

Research Experience

Active Perception and Robot Intelligence Lab, UF - Graduate Researcher   August 2021 - Present
- Created a 6DoF Gazebo simulation for sonar bathymetry of a tethered drone and boat system in C++
- Implemented to the sim a Kinodynamic RRT that generates trajectories for a boat tethered to a drone in Python
- Achieved centimeter accuracy positioning for a bathymetry boat by fusing GPS and IMU with a Kalman Filter
- Designed a real-time sparse 3D point cloud generation algorithm using side-scan sonar images
- Trained and implemented YOLO to perform side-scan sonar image Automatic Object Detention (ATR)
- Supervised the development of a complete coverage path planning algorithm for non-convex water bodies
- Mentored six undergrad students on projects such as rudder control, sensor integration, semantic segmentation

Machine Intelligence Lab, UF - Research Assistant

Team Lead and Software Team Member in the autonomous boat and submarine teams   August 2018 - Present
- Led a team of students in the 2023, 2022, and 2019 RoboSub competitions in CA and MD
- Implemented a Concurrent Learning-based adaptive controller for the boat that learns system parameters
- Gained a better understanding of the dynamics model of the submarine by performing system identification techniques to estimate inertia and drag parameters with data collected on pool experiments
- Documented an optimization-based thruster mapping ROS node for stable control of the autonomous submarine