Andres Pulido

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Education

University of Florida, Gainesville FL
MS in Mechanical Engineering. 3.64 / 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 and Optimal Controls | Intro to RL | Applied ML | Optimization | Formal Methods
Skills: Python, Linux, GitHub, ROS, Gazebo, C++, TensorFlow, PyTorch, SKLearn, MATLAB, Jira, SolidWorks
Languages: Spanish (native), English (fluent)

Internship Experience

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 for target tracking even under occlusions and which uses a neural network to approximate the dynamics of the target robot
- Reduced target uncertainty better than baselines by designing a novel information-driven guidance method
- Designed Markov chain-like road network and programmed a PID control on a TurtleBot 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 to get full coverage of a lake in Python
- Designed a real-time sparse 3D point cloud generation algorithm using side-scan sonar images
- Supervised five undergrads on coverage path planning, sensor integration, and semantic segmentation projects

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 five and nine students in the 2023, 2022, and 2019 RoboSub competitions in CA and MD
- Currently writing an unscented Kalman filter to do state estimation for the next-generation submarine
- Implemented a Concurrent Learning-based adaptive controller for the boat that learns systems 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
- Supervised projects such as a water cooling system, manufacturing pressure vessels, designing torpedo shooters

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