

JOAO PEDRO MEDINA ERSE

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2027 Full-Time Position | **No Future Sponsorship Needed**

EDUCATION

University of South Florida

Tampa, Florida

B.S. Computer Engineering, GPA: **3.51/4.00**

Expected Graduation: May 2027

Latin American and Caribbean Scholarship

SKILLS

- **Robotics & Autonomy:** ROS 2, Autoware, drive-by-wire integration (Dataspeed DBW1/DBW2), vehicle interface design, CAN bus / DBC, sensor integration and calibration, EKF state estimation, SIL simulation
- **Software:** MATLAB (industry experience), Python, C/C++, Git/GitHub, CI/CD, Claude Code / AI-assisted tools, Foxglove, Linux
- **Vehicle & Systems:** Verification and Validation (V&V), AV/ADAS test campaigns, data acquisition (MoTeC, ATLAS), vehicle dynamics modeling, control systems analysis
- **Languages:** Portuguese (Native); English (Fluent); German (Fluent); Spanish (Advanced)

PROFESSIONAL EXPERIENCE

RANCS Research Lab – Autonomous Vehicles

Tampa, Florida

Research Engineer

April 2026 – Present

- Built the Python/ROS 2 vehicle interface layer that lets Autoware drive a Ford Mustang Mach-E through its drive-by-wire system and carried it through a firmware generation change with **no modifications to the autonomy stack**.
 - Passed **27/27 end-to-end interface tests**, achieving steering angle **error below 0.1°** during on-vehicle testing.
- Increased braking authority **over 5x, from 1.5 to 8.0 m/s²**, by replacing the drive-by-wire kit's comfort-limited speed controller with direct autonomy control of throttle and braking.
- Root-caused **two on-vehicle failures** blocking autonomous operation: a conflicting CAN brake command overriding commanded deceleration, and a heading inversion due to the lidar vendor's error in documentation.
- Built ROS 2 log analysis tools to automatically assess vehicle runs, measuring **2.5 cm median lane error, zero lane departures**, and steering response within the system's **100 ms** timeout limit.

Atlassian Williams Racing – Formula 1 Team

Grove, United Kingdom

Systems Engineer, Industrial Placement

August 2024 – August 2025

- Delivered uninterrupted telemetry across **19 Formula 1 races and 6 test events** from Mission Control, live-debugging MATLAB, ATLAS, and .NET processing errors so engineers kept continuous data for in-session decisions.
- Cut mid-session data processing failures **90%** by building, deploying, and owning a real-time MATLAB monitoring application used across 25 Formula 1 events.
- Cut post-session analysis time **40%** by rebuilding a legacy sensor calibration system into versioned, regression-tested modules with CI/CD, and improving measurement accuracy feeding vehicle models.
- Built and deployed a linear regression model estimating ride height from other onboard sensors during ride height laser dropouts, validated against ground truth by injecting simulated dropouts into known good data.

USF Formula SAE – Bulls Racing

Tampa, Florida

Vehicle Dynamics Lead 2025 / Data & Electrical Engineer

September 2022 – August 2026

- Led the on-track testing and tire validation behind the team's **best-ever design score (21/25)** at FSAE Michigan, defending setup decisions to industry judges with measured data rather than carryover choices.
- Planned and **led 10+ instrumented on-track test sessions** on MoTeC DAQ system, correlating measured vehicle response against modeled targets and driving setup changes that improved on-track behavior.
- Built MATLAB tire models from industry tire test data and validated them against measured on-track response, then documented the process so incoming engineers could repeat it each season.
- Authored embedded C++ functions and Python/MATLAB analysis tools to correct sensor data within a multi-developer GitHub workflow, reducing analysis errors and stabilizing system behavior.