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Carlos Raúl Valladares Troncos

*Robotics Engineer specializing in **C++**, **Python**, and **Linux Embedded Systems**. Experienced in Aerial Robotics, **MAVLink** integration, and configuring **ArduPilot** flight stacks for robust autonomous navigation.*

Education

2021 – 2026 **Bachelor's Degree in Robotics Engineering**, *Universidad de Santiago de Compostela*, Spain
Status: Degree Completed (Thesis Defense: Feb 2026).
Focus: Autonomous Navigation, Control Theory, and Embedded Systems.

Technical Skills

Aerial Systems **ArduPilot**, PX4, **MAVLink**, PyMAVLink, MAVSDK, SITL/HITL.
Core Robotics **ROS 2 (Humble/Jazzy)**, Nav2 Stack, MoveIt, TF2.
Programming **C++** (Real-Time Control), **Python**, Bash, MATLAB.
Systems & IT **Linux (Ubuntu/Embedded)**, Docker, Git, CI/CD, Networking.

Professional Experience

Feb – Jun 2025 **R&D Research Engineer (Intern)**, *Universidad de Santiago de Compostela*, Spain
- Developed bio-signal processing pipelines for real-time robotic control.
- Implemented data acquisition systems using **EMG** and **IMU** sensors.
- Optimized Python/MATLAB algorithms for motion analysis and filtering.

April 2025 **Technical IT Support**, *Fnatic Ltd (LEC Roadtrip)*, Madrid
- Deployed network infrastructure and hardware for a major international event.
- Provided technical troubleshooting in a high-pressure, English-speaking environment.

Key Engineering Projects

Aerial **Flight Stack Integration & Simulation**, *ArduPilot / MAVLink*
- Configured **ArduPilot SITL** environments deployed within Linux Docker containers.
- Managed telemetry routing via **MAVProxy** across multiple UDP streams to avoid port conflicts.
- Developed control scripts using **PyMAVLink** and **MAVSDK** for parameter configuration, mode switching, and automated mission execution.
- Integrated Visual Odometry and 3D trajectory planning algorithms into the navigation loop.

Open Source **Contributor to Navigation2 (Nav2) Stack**, *ROS 2 / C++*
- Contributing to the industry-standard navigation stack for ROS 2.
- Optimizing **C++ Lifecycle Managers** to improve node management and memory efficiency.
- Collaborating with global maintainers via GitHub Pull Requests, CI/CD, and Code Reviews.

Hardware **6-DOF Robotic Manipulator Design**, *Mechatronics*
- End-to-end design (CAD), 3D printing, and assembly of a 6-axis robotic arm.
- Implemented Inverse Kinematics solvers and real-time **PID Control** for joint actuation.
- Integrated low-level drivers, microcontrollers, and communication buses.

Languages

Languages **Spanish:** Native ▪ **English:** B2 - Professional Working Proficiency