

Justo D. Valverde Torres

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EDUCATION

Rey Juan Carlos University (URJC)

Madrid, Spain

B.S. in Robotics Software Engineering

Sept 2023 - Present

- **Concentrations:** Robotics Software development, Autonomous Systems, Perception, Control & Embedded Systems.
- **GPA(to date):** 7.35/10.00(Spanish grading scale)
- **Related Coursework:**Software Architecture for Robots, Sensor & Actuators, Digital Electronics, Control Engineering, Software Design, Data Structures & Algorithms, Mobile Robotics, Artificial Intelligence & Machine Learning, Embedded & Real Time Systems.

Instituto Superior Técnico (University of Lisbon)

Lisbon, Portugal

Erasmus Exchange Student - Courses from Master Degree in Electrical and Computer Engineering

Sept 2025 - Jan 2026

EXPERIENCE

RoboTech URJC

Madrid, Spain

Scara Project Lead

Jan 2025 – Present

- Lead a student team developing a 4-DOF SCARA robotic arm.
- Implemented forward and inverse kinematics to achieve precise joint and end-effector control.
- Combining precise control, computer vision and decision algorithms, a demo was developed in Arduino in which the SCARA was able to play Connect-3. [Demo](#).
- Currently migrating the software stack to ROS2 + MoveIt and designing a suitable end-effector in order to scale the project to an autonomous chess-playing robot.

RoboTech URJC

Madrid, Spain

Association Treasurer

Jun 2025 – Present

- Managed budget and purchasing decisions for the association's projects.
- Supported new project teams by advising on component selection related to cost/performance trade-offs.

Tecnico Solar Boat

Lisbon, Portugal

Autonomous Systems Dept. - Mapping Responsible

Aug 2025 - Present

- Responsible for the mapping implementation within a ROS2 autonomous navigation stack for the SP01 vessel, aiming to prepare it for the Njord Challenge.
- Built an initial OccupancyGrid mapping pipeline using LIDAR point clouds as the input.
- Currently designing a new GridMap-based, costmap-style mapping pipeline, using GridMap layered architecture to combine multiple 2D map representations into a single map composed of the sum of the following layers:
 - OccupancyGrid based dynamic layer using log-odds and Bayesian updates.
 - Inflation layer inspired by ROS costmaps for safety margins around obstacles.
 - Obstacle layer that uses buoy positions received from an AI perception node(camera + LIDAR fusion), to constrain the navigable space into a corridor between left and right buoys, tailored for the Njord Challenge requirements.

Latest test: [LINK](#).

PROJECTS

ROS2 Quadruped Robot (12 DOF Servo-Actuated)

Mar 2025 – Present

- Built a quadruped robot from scratch, covering electronics, 3D design and printing and ROS2 control architecture.
- Identified hardware limitations in the first design iteration, including an off-centered center of mass and servo backlash/free-play, causing actuation uncertainty and errors in path following.
- Currently developing a reactive control pipeline to address the mentioned issue and drafting a paper based on this work.
- [Demo](#)

Teleoperated Semi-Autonomous RC Car

Nov 2024– Jan 2025

- Built a remote control car as a hands-on entry project to learn electronics, 3D design and 3D printing fundamentals.

ACTIVITIES

OpenRed Hackathon

Feb 2025

- Developed a desktop application that, when a Radiacode-102 device is connected, gamma radiation measurements are read and in addition to location estimated from IP triangulation are then uploaded to the OpenRed database.

Qubic x Vottun Web3 Hackathon

Mar 2025

- Built a web app designed to make crypto transfers more accessible, by enabling users to send cryptocurrency by scanning a QR code and entering an amount through a simplified wallet connected interface that made use of smart contracts.

URJC Hackathon 2025(Mapfre Challenge)

Jul 2025

- Developed a complementary mental-health care mobile app concept for Mapfre clients.

I enjoy participating in hackathons because they push me to find solutions fast, develop my team working and leading skills and give me the opportunity to improve my ability of pitching/presenting technical ideas under pressure.

SKILLS

Programming: C++, C, Python, Java | ROS 2(Nav2, tf2, GridMap, ros2_control...)

Tools: Git, Foxglove, Rviz, Fusion360, Linux