

Hugo Sevilla Martínez

Robotics Engineer

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Robotics Engineering graduate with a solid mathematical foundation, analytical mindset, and a passion for disruptive technology. Specialized in Computer Vision, Applied AI, and Autonomous Systems Control (UAVs and robotic manipulators). Hands-on experience in industrial robot simulation, human pose estimation, deep re-identification (Re-ID), and closed-loop reactive flight control. Innovative and proactive problem solver with high capacity for autonomous learning, ready to deliver strong technical impact in engineering teams and technology startups.

Education

Universidad Politécnica de Madrid (UPM)

Master's Degree in Automation and Robotics

Madrid, Spain

2026 – Present

- **Status:** Enrolled / Incoming Student (Academic Year 2026–2027).
- **Focus:** Advanced control systems, artificial perception, autonomous mobile robotics, and automation.

University of Alicante

Bachelor's Degree in Robotics Engineering

Alicante, Spain

2022 – 2026

- **Bachelor's Thesis (TFG):** *Autonomous Person Detection and Tracking using Drones* (July 2026).
- **Specialization:** Computer vision & AI perception, robot kinematics/dynamics, and autonomous system architecture.

Professional Experience

IT INFOTEC ROBOTICS, S.L.

Robotics Simulation Intern (150h)

Elche, Spain

Feb 2026 – Mar 2026

- Designed, programmed, and validated industrial robot cell simulations using FANUC ROBOGUIDE for diverse real-world client applications.
- Engineered multi-robot synchronization for complex kinematics, successfully programming simultaneous re-grip maneuvers for sheet metal shearing.
- Developed robotic welding programs utilizing external rotational axes to ensure strict horizontal execution for both continuous and segmented processes.
- Calculated and validated payload capacities and inertia constraints for the safe manipulation of large-scale structures (e.g., 6-meter beams with a 270 kg payload limit).

Technical Skills

- **Programming Languages:** Python (Advanced), C/C++ (Intermediate-Advanced), MATLAB, C#.
- **Robotics & Simulation:** ROS/ROS2, Unity 3D, Gazebo, Simulink, FANUC ROBOGUIDE.
- **Artificial Intelligence & Vision:** Computer Vision (OpenCV), YOLOv8 (Pose/Detection), BoT-SORT, Deep Re-ID (OSNet), PyTorch, TensorFlow, SVM.
- **Tools & Systems:** Git/GitHub, Linux (Ubuntu), LaTeX, Agile Methodologies (Scrum).

Featured Projects

Academic Thesis

Python, YOLOv8, BoT-SORT, OSNet, PID, DJI Tello

Autonomous Drone Person Tracking (Bachelor's Thesis)

2026

- Engineered an end-to-end real-time autonomous tracking system for monocular UAVs utilizing an off-board edge architecture over Wi-Fi UDP.
- Implemented a robust perception pipeline coupling **YOLOv8-Pose** and **BoT-SORT** with a deep re-identification model (**OSNet Re-ID**) to maintain target identity across occlusions and crossing scenarios.
- Formulated a hybrid monocular depth estimation technique based on anatomical biometric proportions (facial/shoulders with virtual nose fallback) combined with signal noise smoothing.
- Deployed 3 decoupled real-time **PID controllers** for 3D flight stability alongside an interactive **skeletal gesture recognition interface** eliminating physical flight controllers.

Academic Project

ROS 2, Nav2, MVSIM, Python

Autonomous Forklift: Warehouse Logistics Automation

2026

- Designed and implemented a complete autonomous forklift system for warehouse logistics simulation.
- Developed a **Graph-Based Navigation** system using topological maps and BFS for predictable path planning.
- Created a custom **Lift Controller** to simulate realistic pallet manipulation and physics interactions.
- Built a Mission Control GUI to manage navigation goals and loading/unloading tasks.

Academic Project

Unity, ROS, C#, VR

VR Teleoperation and Planning for Kinova MICO2 Robot

2025

- Developed an immersive **Virtual Reality** interface for the control and monitoring of a Kinova MICO2 manipulator (6 DoF).
- Implemented a **trajectory planning** system within the virtual environment, allowing the user to define waypoints intuitively.
- Established real-time synchronization between the digital twin and the physical robot for safe movement validation.
- Integrated the controller via middleware (ROS/Unity Bridge) to ensure kinematic precision.

Academic Project

Python, OpenCV, CNNs/SVM

MathSolver: Equation Solver with Computer Vision

2024

- End-to-end development of an application capable of scanning handwritten equations via camera in real time.
- Implemented **Computer Vision** algorithms for image preprocessing and mathematical character segmentation.
- Trained hybrid models combining **CNN** and **SVM** to optimize inference speed and accuracy on limited datasets.
- Integrated a symbolic computation engine to solve equations and display step-by-step solutions.

Languages

Spanish: Native

English: C1 - Advanced

Full professional proficiency.

Valencian: C1 - Advanced

Official Certificate.

Other Competencies & Interests

- **Entrepreneurship & Startups:** Strong passion for startup ecosystems, conceiving and prototyping scalable tech solutions for real-world and industrial challenges.
- **Interpersonal Skills:** Technical team leadership, clear communication, and high adaptability in open-ended engineering problems.
- **Core Interests:** Autonomous UAVs, robotic perception, digital twins, 3D printing, and industrial automation.