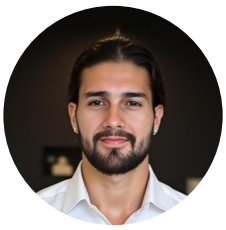
JOHNATHAN GABRIEL CASELLES NUÑEZ



M.Sc. in robotics and mechatronics engineering | R&D

Paris, France | linkedin.com/in/jcaselles | jotace17.github.io/Portfolio/
Johnathan.caselles@eu4m.eu | +33 7 51 34 43 38

Skills

Industrial robots: FANUC, Universal Robots, Stäubli, Epson.

Programming languages: C++, Python, Arduino, Assembly (ASM), Gcode, PLC Ladder.

Technologies: Git, linux, SolidWorks, Cura Ultimaker, Matlab, TensorFlow, Proteus, EasyEDA, EtherCAT, CANopen, LiDAR, OpenCV.

Development: Rapid prototyping, microcontrollers, data adquisition, sensor/actuator integration, computer vision, 3D printing.

Work Experience

Mechatronic Engineer Intern [02/2025 - 08/2025]
at Wandercraft (Paris, France)

- Developed an automated, modular test bench using **C++** with **EtherCAT** communication for in-house validation of embedded software behavior on medical exoskeleton components, enabling sub-10-minute validation cycles with instant pass/fail reporting.
- Implemented ~4,000 automated checks across four core test scenarios to evaluate embedded system performance, supported by a custom web dashboard for real-time monitoring, dynamic scenario generation, and scalable deployment across components.

Mechatronic Engineer Junior [12/2022 - 03/2023]
at Relianz Mining Solutions (Barranquilla, Colombia)

- Programmed **FANUC industrial robots** to customize and optimize metal spray coating tasks, reducing processing times and improving performance by up to 35% while ensuring strict compliance with quality standards.
- Designed, developed, and deployed mounting devices and cavity protection parts using **SolidWorks** that simplified metal spray coating processes, reducing preparation time by up to 43%, while preventing coating contamination in non-target areas.
- Reduced rework rates of new and non-frequent components from 60% to 5% by standardizing metal spray coating procedures and producing precise, up-to-date technical documentation to maintain process consistency and accuracy.

Junior Researcher - GIIM group [03/2020 - 07/2023]
at Universidad Autónoma del caribe (Barranquilla, Colombia)

- Led design and prototyping of robotic, biomedical, and IoT systems using **Arduino, ESP32, Raspberry Pi, C++,** and **SolidWorks**, delivering multiple functional prototypes with practical, real-world applications.
- Characterized and integrated diverse sensors and actuators, implementing communication protocols (**I2C, SPI, UART, MQTT**) to ensure real-time, lag-free operation supported by robust calibration and noise filtering.
- Developed and deployed custom neural networks (CNNs, RNNs) using **OpenCV** and **TensorFlow** for object detection, classification, and size estimation in robotics projects.
- Secured 6 projects under intellectual property, officially endorsed by the Research and Transfer Department (DIT) of Universidad Autónoma del Caribe and recognized by the Colombian Ministry of Science, Technology, and Innovation (Minciencias).

Latest Projects

- **Motion capture and gesture recognition of a pen for high-precision manipulation and Real-time control of a 6DOF universal robot UR5e (Stylet3D)** *At Supmicrotech ENSMM*
  Software leader, in charge of gesture recognition and motion capture of a tracking pen, using the Intel RealSense camera. Supporting scaled movements that allow high-precision manipulation tasks in micro and normal scales.
- **Autonomous anthropomorphic Robot capable of playing TicTacToe (Robo3T)** *At Universidad de Oviedo*
  Software and mechanical design leader of a 3DOF anthropomorphic robot with built-in artificial vision and 3 difficulty levels capable of physically and autonomously play tic-tac-toe against a user.
- **Final degree project - Indoor and outdoor air quality measurement device for the detection and monitoring of air pollutants with hazardous health effects (Q-Air*)** *At Universidad Autónoma del caribe*
  Designed, assembled, and programmed a portable 6x6x8cm cloud-based IoT device for monitoring of 6 types of air pollutants (CO, CO_2, NO_2, O_3, $PM_{2.5}$, PM_{10}), atmospheric variables such as temperature and humidity and live location. *(read paper)*
- **Set of tele-manipulated 6DOF robotic arms for handling biological agents in pharmaceutical and scientific applications (ROCCO*)** *At Universidad Autónoma del caribe*
  Project leader, in charge of designing and programming a set of human-scale robotic arms able to replicate user's movements in real time by means of gyroscopes and accelerometers located in their arms.

Education

M.Sc. in Mechatronics and Robotics EU4M - Universidad de Oviedo and Supmicrotech ENSMM [2023 - 2025]

B.Sc. in Mechatronic Engineering - Universidad Autónoma del Caribe [2019 - 2023]

Language Skills

Spanish: Native **English:** C1 **French:** B2 **Portuguese:** A2