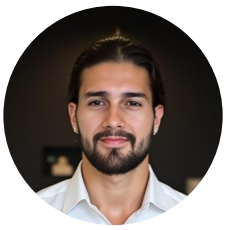
# JOHNATHAN GABRIEL CASELLES NUÑEZ



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

Paris, France | linkedin.com/in/jcaselles | jotace17.github.io/Portfolio/
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## Skills

**Soft:** Teamwork, Spatial Intelligence, Project management, Creativity, Problem-solving, Decision-making, Adaptability, communication.

**Programming:** C++, Python, Arduino, Assembly (ASM), Gcode, PLC Ladder | OOP, ROS2.

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

**Development:** Rapid prototyping, microcontrollers, data adquisition, sensor/actuator integration, computer vision, 3D printing, embedded systems, PCB design, mechatronic design.

## 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 neural networks (CNNs, RNNs) using **OpenCV** and **TensorFlow** for object detection, classification, and size estimation.
- 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