



Marco Alulema Paredes

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About myself

Mechatronics Engineer and Graduate of the EU4M Erasmus Mundus Joint Master in Mechatronic Engineering. Specialized in automation, robotics, and risk management, with a global perspective gained through academic excellence in Spain, Egypt, and Germany. Committed to driving technological innovation.

Education & Training

Master's Thesis in Mechatronics and Micromechatronics 04/2025 – 09/2025

Karlsruher Institut für Technologie | Karlsruhe, Germany

Conducted at Institut für Produktentwicklung (IPEK): Developed AI-driven regression models in MATLAB to validate sensor performance and enhance structural reliability.

Thesis: Characterization, Calibration, and Performance Analysis of Sensor-integrating Bolts

Erasmus Mundus Joint Master Degree in Mechatronic Engineering (EU4M JMD) 09/2023 – 09/2025

HKA, Karlsruhe University of Applied Sciences | City: Karlsruhe | Country: Germany

Nile University | City: Giza | Country: Egypt

Universidad de Oviedo | City: Gijón | Country: Spain

PLC Programming Advanced Level 11/2024 – 12/2024

FACT Centre, FESTO | Giza, Egypt

Diploma in Procurement and Supply Chain Management 06/2023 – 09/2023

Universidad de las Américas, UDLA | Quito, Ecuador

Master's Degree in Risk Management, Specialization: Occupational Risk Prevention 04/2022 – 04/2023

Pontificia Universidad Católica del Ecuador | Quito, Ecuador

Lead Auditor ISO 9001 2015 03/2021 – 04/2021

International Dynamic Advisors, INTEDYA | Spain

Mechatronics Engineer 09/2012 – 04/2019

Universidad UTE | Quito, Ecuador

SolidWorks Associate – Mechanical Design Certificate 10/2013 – 01/2014

SolidWorks

Publications

Mechatronic equipment for the study and analysis of microstructures of steels and ferrous castings

2019

Language Skills

- **Spanish:** Mother tongue
- **English**
 - Listening: C1
 - Reading: C1
 - Spoken production: C1
 - Spoken interaction: C1
 - Writing: C1
- **German**
 - Listening: A2
 - Reading: A2
 - Spoken production: A2
 - Spoken interaction: A2
 - Writing: A2

Skills

- Programming Languages:
- C / C# / C++
 - Arduino
 - PLC Programing (LAD – FBD)
 - MATLAB
 - Python Languaje
- Design:
- AutoCad 2D –3D
 - Ansys
 - SolidWorks
 - FluidSim
 - Abaqus
 - Proteus
- Calculation software:
- Matlab
 - Simulink
 - Simscape
 - LabView

Developed a portable mechatronic device to analyze carbon microstructures in 24 steel and cast iron materials using image overlay. Features a touch-screen interface and supports intuitive study of material properties. Novelty confirmed through WIPO and EPO patent searches.

SENADI-2019-43416

<http://gaceta.propiedadintelectual.gob.ec:8180/Gacetitas/653/#p=691>

■ Projects

Driver Drowsiness Detection System Using Facial Recognition with Alert Activation and Vehicle Stopping Mechanism 10/2024 – 12/2024

Developed a prototype real-time driver drowsiness detection system combining embedded systems and signal processing. The project utilized camera-based monitoring to analyze facial cues (e.g., eye closure, head position, yawning) and trigger multi-modal alerts (auditory, visual, haptic) to mitigate fatigue-related accident risks and enhance road safety.

Development of a 3-DOF Anthropomorphic Robot 01/2024 – 06/2024

Conducted at the University of Oviedo, Spain, as part of the EU4M Master's program, this project focused on creating a 3-degrees-of-freedom (DOF) anthropomorphic robot with an emphasis on artificial vision, trajectory calculation in MATLAB, and communications

Trajectory Control and Path Planning of a 4-Axis Robot: Design and Simulation 03/2024 – 05/2024

This project focused on calculating precise trajectories for a 4-axis robot using forward and inverse kinematics, enabling efficient path control within the workspace for automation purposes.

Automation Systems for UVC Activation 06/2020 – 08/2020

Designed automated systems with presence sensors and timers to safely activate and deactivate UVC technology in personnel-free environments, optimizing disinfection cycles and ensuring safety.

Commissioning of a High-Speed Copper Cable Extruder 02/2017 – 05/2017

Managed the commissioning of a high-speed copper cable extruder with adjustable diameter, integrating automatic cable storage and winding systems, resulting in improved production speed, precision, and reduced manual handling.

■ Work experience

Head of Integrated Management Systems: Health, Safety, Quality, and Environment (HSEQ) 07/2019 – 08/2023

Unnomotors S.A. | Quito, Ecuador

Led the management of Quality, Safety, and Environmental systems, ensuring regulatory compliance and operational process improvement. Coordinated risk management and participated in workflow optimization

Research engineer 05/2020 – 12/2020

BioSicurezza EC | Quito, Ecuador

Specialized in designing and developing UVC-based disinfection solutions. Designed wireless robots with cameras for remote sanitation and developed automation systems with remote and automated control features for safe UVC activation.

Team Leader, Management and planning of industrial processes 07/2017 – 07/2019

Metaltronic S.A. | Quito, Ecuador

Optimized production processes through data analysis and efficient planning, ensuring alignment with specifications. Contributed to operational efficiency improvements and process standardization.