DAVID ROMERO YÁNEZ
MECHATRONICS ENGINEER

Villa Club Estelar, Guayas, Ecuador | daroyane@espol.edu.ec | Linkedin: David Romero Yánez

Mechatronics Engineer with focus on robotics, computer vision and applied data science. Experience in mobile robot control projects, ROS simulations and image processing for navigation systems. Interested in applied research integrating artificial intelligence and perception technologies in collaborative robotics.

WORK EXPERIENCE

Liris S.A | Samborondón, Guayas, Ecuador   Feb 2025 - Present
Development Engineer in training

- Customization and improvement of internal processes using X++ on Dynamics AX 2009.
- Development of web and mobile applications using Node.js, Ionic and Angular.
- Design and management of relational databases (MySQL) to optimize the functionality of internal systems.

Universitat Politècnica de Catalunya (UPC) | Barcelona, Spain   Feb 2024 - May 2024
Programming Assistant

- Integration of simulation with experimental environment for autonomous navigation, obstacle detection and avoidance.
- TIAGo++ robot arm control and pick and place testing with YCB Benchmarks objects.
- Modular task development using Behavior Trees in ROS2 with nodes in Python and C++.

EDUCATION

Escuela Superior Politécnica del Litoral (ESPOL)   Feb 2020 - Feb 2025

Mechatronics Engineering

- Training with focus on robotics, computer vision and simulation in ROS and Gazebo.
- Participation in interdisciplinary projects integrating mechanical design, programming and automation.

FEATURED PROJECTS

Degree project   Sep 2024 - Feb 2025
Robot optimization for swarm robotics and development of its experimental environment

- I optimized a mobile robot for swarm robotics, redesigned its mechanical structure and electronic system achieving a more compact, modular and scalable design.
- I developed an experimental environment with computer vision for trajectory tracking, using ArUco markers and an Intel camera in a controlled environment.
- **Technologies:** ROS, Rviz, Python, C++, Fusion 360, EasyEDA, ArUco, Intel RealSense.

Personal Project   Jul 2024 - Sep 2024

Mobile application for personal expense management

- I designed and developed a mobile app to record and visualize monthly expenses in a customized way, with intuitive interface and offline functionality.
- Implemented CRUD operations using Java and SQLite, managing data persistence in the app.
- **Technologies:** Android Studio, Java, SQLite.

Academic project   Sep 2023 - Feb 2024

Design and implementation of EMG-controlled infant hand prosthesis

- I designed and developed a bionic hand prosthesis, controlled by EMG signals, focused on being light, functional and low cost.
- I made the mechanical design in 3D and the integration of electronic components, laying the groundwork for future improvements in control and response.
- **Technologies:** Arduino, EMG signals, 3D printing, Fusion 360, C++.

TECHNICAL SKILLS

- **Programming languages:** Python, C++, Java, X++, JavaScript
- **Web and mobile development:** HTML, CSS, Angular, Ionic, Android Studio, REST APIs
- **Databases:** MySQL, SQL Server, SQLite, relational modeling, SQL queries
- **Robotics and computer vision:** ROS (Noetic, Humble), Gazebo, Rviz, OpenCV, ArUco, Intel Cameras
- **Embedded systems:** Programming microcontrollers (Arduino, ESP32) and small board computers (Raspberry Pi Zero 2W)
- **Mechanical design and CAD:** Fusion 360, SolidWorks, prototyping and 3D printing
- **Machine Learning and Data Science:** Numpy, Pandas, Matplotlib, PyTorch
- **Version control and tools:** Git, GitHub, GitLab, VS Code
- **Enterprise systems:** ERP Customization with Microsoft Dynamics AX 2009 (X++)

SOFT SKILLS

Adaptability and proactivity in changing environments – Collaborative multidisciplinary work – Analytical thinking and clear technical communication – Autonomy and constant learning

COURSES AND CERTIFICATIONS

- Google: Artificial Intelligence and Productivity – Google
- Mentoring and Novice Induction Program – Espol
- Relational Database – freeCodeCamp
- Academic Writing – Espol

ADDITIONAL DATA

- Member of the Phycom club in ESPOL.
- Intermediate-advanced English level (B2).
- Passionate about tennis and physical activity.
- Member and part of the board of Interact Machala Moderno (2019).

REFERENCES

Escuela Superior Politécnica del Litoral (ESPOL)

PhD. Christian Tutiven

- E-mail: cjtutive@espol.edu.ec

Universidad Politécnica de Cataluña (UPC)

PhD. Jan Rosell

- E-mail: jan.rosell@upc.edu