Lorenzo Cardoni

Ancona (Available for transfer) cardonilorenzo31@gmail.com +39 3402655536 Lorenzo Cardoni Lorenzo-Cardoni

Technical Skills

- **Programming Languages:** Python, C/C++, MATLAB, SQL
- **Libraries and Frameworks:** Pandas, NumPy, scikit-learn, SciPy, Matplotlib, YOLO, TensorFlow, OpenCV, Simulink
- **Tools & Other Technologies:** Arduino, Raspberry, STM32 Devices, Git, Latex

Education

Master's Degree in Computer and Automation Engineering - Università Politecnica Delle Marche — Oct. 2022 – Feb. 2025

- **Degree Grade:** 110/110 cum Laude
- **Thesis Title:** Hardware-In-The-Loop approach for fault simulation and validation of diagnostic modules in UAV
- **Thesis Advisor:** Prof. Alessandro Freddi

Bachelor's Degree in Computer and Automation Engineering - Università Politecnica Delle Marche — Sept. 2019 – Dec. 2022

- **Degree Grade:** 103/110
- **Thesis Title**: Study and Development of linear controllers for Attitude Control of Mini-Drones
- **Thesis Advisor:** Prof. Gianluca Ippoliti

Experience

Junior Data Engineer, Lega del Filo d'Oro — Ancona, Italy — April 2025 – Oct. 2025

- Designing robust ETL pipelines using *Python* and *SQL*, ensuring accurate and efficient data flow to support business intelligence and reporting workflows.
- Integrating an *LLM* with various business data sources to dynamically generate BI visualizations.

Laboratory Technician, Università Politecnica Delle Marche — Ancona, Italy — Jan. 2024 – March 2024

- Design and development of an embedded prototype for detecting and estimating the position of underwater objects, validated through real-world testing.
- I led the project coordination with the client using the *AGILE methodology* and successfully achieved *Technology Readiness Level* 7 (TRL 7).

Scientific Publications

Benchmark Analysis of YOLOv8 for Edge AI Video-Surveillance Applications — Oct. 2024

Daniele Berardini; Lucia Migliorelli; ***Lorenzo Cardoni***; Christian Parente; Alessandro Rongoni; Daniele Sergiacomi; Adriano Mancini

DOI: 10.1109/MESA61532.2024.10704889

University Projects

Development of a toolbox for Fault Injection and Implementation of a Machine Learning Model for Fault Detection in a PX4 HTL for an Unmanned Aerial Vehicles (UAV) — Nov. 2024 – Jan. 2025

- Developing a *machine learning–based* fault diagnosis system for UAVs in *MATLAB & Simulink*, validated through *Hardware-in-the-Loop (HITL)* simulations on the Flight Controller.
- Integrating diagnostic modules into simulation environments and real-time embedded platforms for performance assessment.

Implementing a Convolutional Neural Network (CNN) on an STM32 board — March 2024 – May 2024

- Training a *CNN* for *image recognition using TensorFlow*, implementing it on an *STM32F429I-DISCO board* for real-time inference.
- Validating the CNN's performance on the STM32 board.

Study of feature super-resolution techniques for Edge AI Video-Surveillance Applications — July 2023 – Sept. 2023

- Conducting a benchmark study of super-resolution techniques in *Python* to improve small object detection performance of *YOLOv5 model* on edge devices.
- Developing a flexible framework enabling integration of generative models for feature enhancement during *object detection* inference.

Challenges

Hackathon UNIVPM 2023 & 2024 Mar. 2023 & Mar. 2024

- 2023: Developing a website for managing large tourist events.
- 2024: Training a deep learning model for recognizing waste using camera input.

Bosch Future Mobility Challenge Nov. 2022 - March 2023

- Participating in the Bosch Future Mobility Challenge, developing AI algorithms for the autonomous driving of a 1:10 scale vehicle, focusing on *object detection* with a *YOLOv5 model*.

Languages

- Italian, Native Speaker
- English, B2 (Fluent)

I authorize the processing of personal data present in the CV according to the Regulation of the European Parliament 679/2016.

Ancona, November 17, 2025

Lorenzo Cardoni