Christian Mariano

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Summary — Master's student in Computer Science and Engineering, specializing in AI, human-drone interaction, and deep learning. Strong interdisciplinary background (Computer Science + Management Engineering). Experienced in autonomous systems, computer vision, and full-stack development, with hands-on projects integrating LLMs, robotics, and real-time systems.

Technical Skills

Languages (ordered by proficiency): Python, C, Java, SQL, Dart

Tools and Frameworks: Git, TensorFlow, Keras, Nuxt.js, Flutter, Firebase, Apache Spark, Apache Kafka, Akka, Node-RED

Experience

Drone Gymnasium – Digital Futures Living Lab (NesLab, KTH, Bitcraze) [Website] **Stockholm, Sweden**
Staff Member – Technical Contributor *September 2025*

- Served as part of the staff team presenting the DroneWO project (see Projects section) to students during workshops organized by NesLab (Polytechnic University of Milan) and KTH in collaboration with Bitcraze.
- Supported participants by adapting and extending DroneWO features in real time, based on feedback from students and researchers.
- Collaborated within an interdisciplinary team, fostering creativity at the intersection of robotics, interaction design, and AI-driven drone systems.

MEGA SERVICES SPA **Milan, Italy**
Internship and Freelance Collaboration *March 2023 – September 2023*

- Analyzed website traffic data using Google Analytics to study user interaction with the website, enabling informed modifications aimed at improving user retention and overall user experience.

Polytechnic University of Milan **Milan, Italy**
Peer-to-Peer C Coding Tutor *September 2022 – Present*

- Supported students in mastering C programming and algorithmic thinking.

Education

Polytechnic University of Milan **Milan, Italy**
Master of Science in Computer Science and Engineering *September 2023 – Present*
Grade average: 28.80/30

- **Thesis:** Natural Language Interfaces for Human-Drone Interaction using Large Language Models. Conducted at *NesLab*, under the supervision of Prof. Luca Mottola.

Polytechnic University of Milan **Milan, Italy**
Bachelor of Science in Management Engineering *September 2020 – July 2023*
Graduated with high distinction (110/110)

Projects

TypeFly-A^2 – LLM-Based Natural Language Drone Assistant (Python, LLM) [In Development] **March 2025 – Present**

- Successor to TypeFly (GitHub); developing an autonomous drone system that integrates computer vision, LLMs, and internal environment representations to explore and interpret unknown environments in order to complete user-specified tasks.
- Implemented natural language human–drone interaction via an LLM-based planner that translates user instructions into executable task plans for autonomous drone operation.

DroneWO – Human-Drone Interaction through Gestures (Python, Crazyflie) [GitHub] **March 2025 – Present**

- Collaborated with a lab colleague to refactor the existing codebase, improving modularity and reusability across different drones.
- Extended the system by adding new features for gesture and object-based drone control and customization.

DriveOrDrunk – Mobile Application (Flutter, Firebase, Azure, Render) [GitHub] [Website] **December 2024 – July 2025**

- Developed a cross-platform mobile app to promote road safety by connecting sober drivers with partygoers needing safe rides home.

- Integrated Google Maps, Ticketmaster, and Azure Face API for ID and facial verification, along with OCR document processing.
- Designed the architecture using Flutter with Firebase backend and Flask microservices on Render.

Mars Exploration - Image Segmentation (Python, TensorFlow, Keras) [GitHub] **December 2024**

- Applied deep learning techniques to segment images of the Martian surface, identifying different terrain types.
- Implemented and fine-tuned U-Net and DeepLabV3 models using TensorFlow/Keras.

Blood Cell Classification - Deep Learning (Python, TensorFlow, Keras) [GitHub] **November 2024**

- Developed a deep learning model to classify blood cell images into eight different types using ConvNeXtbase.
- Processed a dataset of 13,000 images and fine-tuned a pre-trained model to achieve high classification accuracy.

Data Structure and Algorithm Project (C) **June 2024 – September 2024**

- Applied algorithmic and data structure knowledge to minimize space and time complexity in data retrieval from a confectionery warehouse.

Codex Naturalis, Board Game Implementation (Java)[GitHub] **March 2024 – July 2024**

- Designed and developed a board game using Java and the MVC design pattern, ensuring a modular architecture.
- Implemented client-server architecture to facilitate multiplayer functionality through RMI and socket technologies.

NoWomanAlone Website (Vue, Nuxt)[GitHub] **March 2024 – July 2024**

- Developed the website using Nuxt to provide support for women who are victims of violence.
- Integrated an AI-powered chatbot using the OpenAI API to enhance user interaction and support.

“Lean Startup: The art of entrepreneurship” - Polytechnic University of Milan **April 2021 – May 2021**

- Attended a course on Lean methodology in the startup world, working closely with startup professionals.
- Created a pitch for introducing a startup to potential investors, fostering teamwork and analytical skills.
- Collaborated with WeRoad employees, gaining insight into startup operations and organization.