

# CAMILLA BALZAROTTI

## CONTACTS

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🌐 Camilla Balzarotti

## SUMMARY STATEMENT

Second-year Master's student at Politecnico di Milano, Erasmus alumna at the University of Twente, and aspiring PhD researcher. With one foot in computer science and the other in bioengineering, I thrive at the intersection of AI, medicine, and human health - translating medicine into data and data back into medicine. My goal is simple yet bold: to design algorithms that not only process information but also actively help doctors saving lives.

## EDUCATION

### Master Degree in Bioengineering of Information | Biomedical Engineering

Politecnico of Milan, Milan (Italy)

2024 - Today

- GPA : 4.0 (29.27/30)
- Graduation date (expected): July/September 2026

### Erasmus Semester in Biomedical Engineering

University of Twente, Enschede (Netherlands)

February 2025 - July 2025

- Part of MSc in Bioengineering of Information, Politecnico di Milano
- Focus : AI and ML for Medical Image Analysis and Robotic Surgery

### Bachelor Degree in Computer Science and Engineering

Politecnico of Milan, Milan (Italy)

2021 - 2024

- GPA : 4.0
- Final grade: 110 *cum laude*
- Graduation date : July 18<sup>th</sup> 2024

### Scientific High School Diploma

Liceo Scientifico Statale "Donato Bramante", Magenta (Italy)

2016 - 2021

- Science-focused high school with advanced math and physics
- Final grade: 100 *cum laude*

## RESEARCH EXPERIENCE AND PROJECTS

### Deep Learning for Medical Image Analysis: Retinal Vessel Segmentation

University of Twente, 2025

- DRIVE + STARE dataset
- Ensemble of DL models for segmentation of retinal blood vessels from fundus images
- Generative models to synthesize additional image data

### Natural Language Processing: Visual Question Answering for Medical Images

Politecnico of Milan, 2025

- PubMedVision dataset
- Integration of medical imaging and NLP to build and evaluate models capable of answering questions about medical images

## AI and Image Guided Robotics: Project

University of Twente, 2025

- Faze 4 robotic arm
- Implementation of kinematics and object tracking
- Simulation of haptic feedback for different biological tissues

## AI and Image Guided Robotics: Research Proposal

University of Twente, 2025

- Robotic system for brain tumor biopsy, integrating AI-based tumor diagnosis, 3D brain modeling, trajectory planning, and AI-enhanced haptic feedback.

## Medical Images : Segmentation of brain lesions in MRI images

Politecnico of Milan, 2024

- Identify lesions in sagittal and axial planes and compute their area and volume
- Evaluate the robustness of segmentation under noisy conditions.

## Biomedical Signal Processing : EEG analysis in cognitive tasks

Politecnico of Milan, 2024

- Investigate brain activity changes between resting state and cognitive engagement during mental arithmetic tasks by computing PSD and MSC

## Software Engineering : Online Version of Codex Naturalis

Politecnico of Milan, 2024

- Online multiplayer version of the board game Codex Naturalis, implemented as a distributed Client-Server application using the MVC architecture.

For my **complete portfolio**, please visit: <https://github.com/camillaabalzarotti>

## HONORS AND AWARDS

- Winner of the “Girls@Polimi” Scholarship (2021-2024)
- Winner of the “Best Freshman Student Award” at Politecnico di Milano (2022)
- Full scholarship for the summer school TechCamp@Polimi in Robotics (2021)
- Candidate for the “Alfiere del Lavoro per la Repubblica Italiana” prize for academic merit (2021)
- Finalist in the Mathematical Olympics in Lombardy (2020)

## SKILLS

### Programming

- Python, MATLAB, C, C++, Java
- SQL
- Bash, Git

### Machine Learning & AI

- PyTorch, TensorFlow, MONAI
- Scikit-learn, Keras
- HuggingFace Transformers

### Other Tools

- Unity
- Office Suite, Jupyter, LaTeX
- Figma

## LANGUAGES

- Italian : Native
- English : C2 (IELTS C2 8.5/9)
- Spanish : Beginner
- French : Beginner

## TEACHING SERVICE

### Tutor of Mathematics and Physics

- For high school and university students

### **Orientation for High School Students**

- Support in the decision of the right high school path

## **EXTRACURRICULAR ACTIVITIES**

### **Co-Captain of the official Volleyball Team of Politecnico of Milan**

Politecnico of Milan, 2024

- Participating at WIUC Rome 2024

### **Scrutineer at Local and State Elections**

Milan, 2021-Today

### **Blood Donor - AVIS**

Milan, 2025