# Luca Cazzola

*AI student focused on closing the gap between simulation and reality through perception, learning, and intelligent systems.*

📍 Italy ✉ luca.cazzola.2001@gmail.com 📞 +39 350 032 36 41 in Luca Cazzola ⌂ LuCazzola 🔗 Portfolio

## Experience

**University of Trento - Research assistant** | Trento - Italy | Oct 2025 - Ongoing

- Conducting research on fine-grained human motion synthesis for personalized, individual-aware generation in digital twin applications.
- Goal: To publish findings and contribute to advancements in human-centric computer graphics, digital twins, and virtual avatars.

**CESI Lineact - Research assistant** | Nice - Côte d'Azur - France | Apr 2025 - Oct 2025

- Engineered a novel deep learning framework using generative models to synthesize realistic human motion from limited data, achieving state-of-the-art results in augmenting datasets for Human Activity Recognition.
- Authored a first-author research paper on this work, currently being prepared for submission to an international peer-reviewed AI conference.

## Awards

**Industrial AI Challenge - 1st Place** | Trento - Italy | Sep 2024 - Dec 2024

- Leader of a 7-person team that won a competition sponsored by *AWS*, tackling industrial challenges from real companies and recognized as an exceptional initiative in Italy.
- Implementation of a multi-stage optimization pipeline for industrial scheduling, including integer constraint programming and genetic search.
- Competed with *Terna* in this year's edition, with past editions featuring other industry giants like *Pirelli* and *Melinda*.

## Projects

**Robotic manipulator** | Feb 2023 - Jul 2023

- Built a pick-and-place system for a UR5 arm combining 6D object perception, pose estimation, and robotic motion control.
- Built a pipeline inside Blender to automatically generate and annotate synthetic data, enabling YOLO training with strong real-world transfer, achieving over 90% accuracy.
- Designed a custom pose estimation pipeline by interpolating point clouds, enabling precise object handling.

**Low-Resources Few-Shot learning with VLMs** | Nov 2024 - Dec 2024

- Adapted vision-language models (VLMs) for few-shot classification in low-resource settings, including challenging domains such as satellite imagery.
- Conducted extensive failure-case analysis to assess the limitations and potential of selected adaptation techniques.

More projects and further details available in my Portfolio and GitHub

## Education

**Master's degree - Artificial Intelligence Systems**

- University of Trento, Italy | Sep 2023 - Present

**Bachelor's degree - Computer Science**

- University of Trento, Italy | Sep 2020 - Jul 2023

## Skills

**AI & Computer Science**

- Machine learning
- Deep learning
- Computer vision
- Algorithms & Data structures

**Programming languages**

- Python
- C, C++

**Frameworks**

- PyTorch
- OpenCV
- ROS
- CUDA
- Google OR-Tools

**Tools & Software**

- Git
- Blender
- LaTeX

**Spoken languages**

- Italian (native)
- English (professional)

## Interests

- Digital Twin
- Augmented Reality
- Virtual Reality
- Simulation
- Virtual environments
- Synthetic data generation

*Nice - Côte d'Azur - France, June 2025.*