

# Gabriele Bortolai

PH.D. STUDENT

Genoa, Italy

✉ [gabriele.bortolai@edu.unige.it](mailto:gabriele.bortolai@edu.unige.it) | 🏠 [sites.google.com/view/gabriele-bortolai/biography](https://sites.google.com/view/gabriele-bortolai/biography) | 📷 [GabrieleBortolai](#)

## About Me

My name is Gabriele Bortolai, and I am a Ph.D. student in Computer Science with a background in theoretical physics.

My research project is hosted at the University of Genoa in the Machine Learning Genova Center (**MaLGa**) and is funded by the Air Force Office of Scientific Research (**AFOSR**).

My project focuses on human authentication through gait analysis.

My master's thesis applied Optimal Transport (OT) within the realm of High Energy Physics (HEP). The primary objective of my research was to tackle OT problems using a novel approach known as Neural Embedding.

At this [link](#), there is a copy of my thesis.

My research fields of interest are:

- Human Motion Analysis;
- Machine Learning,
- Optimal Transport,
- Fairness.

## Doctoral Research

### University of Genoa

PH.D. IN COMPUTER SCIENCE

- **Field of study:** Human motion analysis

Genoa, Italy

01/03/2024 - ongoing

## Education

### University of Genoa

MASTER'S DEGREE IN THEORETICAL PHYSICS

- **Field of study:** Machine Learning, Optimal Transport, and High Energy Physics
- **Thesis:** A study on neural network embedding of jets with transformer-based models.
- **Final Grade:** 106/110

Genoa, Italy

2023

### University of Genoa

BACHELOR'S DEGREE IN PHYSICIS

**Final grade:**86/110

Genoa, Italy

2020

### Istituto Omnicomprensivo Primo Levi

SCIENTIFIC LYCEUM

Genoa, Italy

2016

## Work Experiences

### Ministero dell'Istruzione e del Merito

HIGH SCHOOL PROFESSOR

- **Name of school:** Istituto di Istruzione Superiore Gastaldi-Abba
- **Field of work:** Electronics class.
- **Classes:** Fifth, third, and first grade.

Genoa, Italy

02/12/2020 - 30/06/2021

## Ministero dell'Istruzione e del Merito

HIGH SCHOOL PROFESSOR

- **Name of school:** Istituto Omnicomprensivo Vallescrivina
- **Field of work:** Electronics class.
- **Classes:** Fifth grade.

Genoa, Italy

28/10/2021 - 05/07/2022

## Ministero dell'Istruzione e del Merito

HIGH SCHOOL PROFESSOR

- **Name of school:** Istituto Tecnico Professionale di Chiavari
- **Field of work:** Math class.
- **Classes:** Fifth, fourth, third, and first grade.

Chiavari, Italy

07/11/2023 - 12/12/2023

## Courses

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### University of Genoa

INTRODUCTION TO DISCRETE DIFFERENTIAL GEOMETRY

Genoa, Italy

### University of Genoa

ACCELERATED PARALLEL SYSTEMS: THE GPU AND FPGA CASES

Genoa, Italy

## Schools

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### University of Genoa

DEEP LEARNING AND COMPUTER VISION SCHOOL (DLCV)

Genoa, Italy

05/06/2023 - 09/06/2023

### University of Genoa

TOPICS IN MODERN MACHINE LEARNING

Genoa, Italy

19/06/2023 - 23/06/2023

### University of Genoa

DEEP LEARNING AND COMPUTER VISION SCHOOL (DLCV)

Genoa, Italy

10/06/2024 - 14/06/2024

### University of Udine

CRASH COURSE IN GEOMETRIC COMPUTER VISION

Genoa, Italy

24/06/2024 - 28/06/2024

## Conferences

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EUROPEAN CONFERENCE IN COMPUTER VISION

Milan, Italy

28/09/2024 - 04/10/2024

## Digital skills

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RICONTROLLARE **Python**: It is the main programming language of my PhD project and, I acquired experience with this language during my Master's thesis. Moreover, the libraries that I have professional experience are:

- PyTorch,
- Scikit-learn,
- PyWavelets,
- POT,
- Matplotlib,
- CVPX,

- Qiskit.

**C++:** It was the primal programming language of my Bachelor's and Master's degree in physics. During both degrees, I used C++ for simulations, especially Monte Carlo simulation.

**ROOT(CERN):** It is a framework developed by the CERN, and I used it for data analysis and processing data during the bachelor courses;

**Matlab:** I acquired experience with this language during a master course (The Math of Machine Learning), and sometimes I also use Matlab for my PhD project.;

**Mathematica:** I used this programming language during my Bachelor's degree and Master's degree as a computational solver for calculus;

**LaTeX:** It is my main language for writing documents.

## Language skills

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**Mother language:** Italian;

English overall B2;

French overall A1.