

# Mario Massimo

- ✉ mario.massimo2@unibo.it
- ☎ +39 3348969524
- 🌐 Website
- 🔗 ORCID
- 🐙 GitHub



## Education

- 2025-
  - **PhD in Physics - Curriculum Applied Physics** University of Bologna 🌐  
**Research Topic:** *Urban Digital Twin: mathematical models and deep learning algorithms for building a geometric and physical model of a city.*  
Supervisor: Prof. Armando Bazzani  
Co-Supervisor: Prof. Mirko Degli Esposti
- 10/2023-04/2024
  - **Erasmus+ Exchange Student at University of Heidelberg (Germany)** ✈️  
University of Heidelberg 🌐  
**Exams given:** Machine Learning and Physics, Generative Neural Networks, Quantum technology: phenomena, materials, devices (seminar)
- 2022 – 2025
  - **M.Sc. in Physics - Curriculum Applied Physics** University of Bologna (Italy).  
**Final Grade:** 110/110 Cum Laude.  
Thesis title: *AI for Remote Sensing Image and LiDAR Data Classification Within Bologna's Digital Twin Project*  
Supervisors: Prof. Mirko Degli Esposti (University of Bologna)
- 2018 – 2021
  - **B.Sc. in Physics** University of Bologna (Italy).  
**Final Grade:** 107/110.  
Thesis title: *Identificazione degli AGN nelle survey di Euclid tramite colori osservati*  
Supervisor: Prof. Francesca Pozzi  
Co-Supervisor: Dr. Laura Bisigello
- 2013 – 2018
  - **High school diploma** Liceo Scientifico "Francesco Severi", Salerno (Italy).  
**Final Grade:** 100/100.

## Experience

- Agentic AI
  - Developed autonomous **Agentic AI systems** leveraging LangGraph/LangChain framework, designing multi-agent workflows for complex problem-solving and end-to-end automated reasoning. Engineered a specialized Agentic AI system for Epidemiology, designed to autonomously query, analyze, and synthesize complex healthcare datasets.
- Deep Learning
  - Architected and trained **Deep Learning** model (ViT, GAN, LSTM, KAN, ...) for Computer Vision, NLP and Time-Series analysis tasks. Leveraged advanced Deep Learning architectures to process unstructured 3D data, implementing high-accuracy Point Cloud Classification pipelines.

## Skills

- Languages
  - Italian (native), English (fluent, B2).
- Programming Languages
  - Python, C++,  $\LaTeX$ .

## Skills (continued)

---

Additional soft skills    ● Effective communication, public speaking, flexibility, team work, hard-working.

## Scholarships and awards

---

### Scholarships

2023    ● **Erasmus+ Scholarship** for the duration of six months for studying abroad. Department of Physics and Astronomy, University of Bologna.

## Teaching Experience

---

2026    ● **Outreach Tutor**, University of Bologna. Scientific dissemination for primary school students within the “*INvisibili*” project, aimed at overcoming the gender gap in science.

## Attended Schools

---

07/2024    ● Physics for a Better Planet, Bologna

## Research Publications

---

1    (pre-print) M. Degli Esposti, A. Bazzani, C. Dellacasa, M. Falcioni, M. Massimo, and M. Pietropoli. **Urban Complexity through Vision Intelligence: Variance, Gradients, and Correlations across Six Italian Cities**. 2025. arXiv: 2511.09258 [physics.soc-ph]. 🔗 URL: <https://arxiv.org/abs/2511.09258>.

2    L. Bisigello, M. Massimo, et al. “**Euclid preparation-XLIX. Selecting active galactic nuclei using observed colours**”. In: *Astronomy & Astrophysics* 691.A1 (2024). 🔗 DOI: <https://doi.org/10.1051/0004-6361/202450446>.