

# UMBERTO DI LAUDO

Data Scientist | PhD in AI & Data Science

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Umberto Di Laudo

udilaudo

Website

Trieste, Italy

## ABOUT ME

PhD in AI & Data Science with a background in theoretical physics. Experienced in developing deep learning models for computer vision tasks (image classification, semantic segmentation) and solving PDEs with Physics-Informed Neural Networks. Designed and trained deep learning models on SLURM-based HPC clusters, working with large-scale geospatial datasets and implementing reproducible training pipelines. Personally interested in LLMs and RAG pipelines, with hands-on experience building document Q&A systems for personal use.

## TECHNICAL SKILLS

- Languages & Frameworks:** Python (PyTorch, scikit-learn, pandas, numpy, Flask, Streamlit), C++, SQL, Bash
- ML/AI:** Deep Learning, Computer Vision, Graph Neural Networks, Physics-Informed Neural Networks (PINNs), RAG
- Tools:** Git, HPC (SLURM), Linux, Docker, Jupyter

## PROFESSIONAL EXPERIENCE

### PhD Researcher in AI & Data Science

University of Trieste, Italy

Nov 2022 – Jan 2026

Trieste, Italy

- Developed ML/DL models for automated marine seabed mapping using GIS data, applying image classification and semantic segmentation on multibeam bathymetric datasets.
- Built Physics-Informed Neural Networks (PINNs) and Neural ODEs to solve PDEs in a latent space via an autoencoder architecture.
- Investigated the expressive power of message-passing GNNs beyond the Weisfeiler-Leman theorem as visiting researcher at Adolfo Ibáñez University (Chile, Sep–Dec 2025).
- Technologies: Python, PyTorch, scikit-learn, Rasterio, Git, HPC.

### Data Analyst

DecHit S.p.A., Italy

Mar – Jun 2022

Milano (remote)

- Analyzed structured business data using SQL.
- Collaborated remotely with technical and business stakeholders.

## EDUCATION

- PhD in Data Science & Artificial Intelligence** Nov 2022 – Jan 2026  
University of Trieste, Italy
- Master's Degree in Theoretical Physics** Sep 2019 – Feb 2022  
Alma Mater Studiorum – University of Bologna, Italy  
Grade: 110/110 (avg 29.58/30)
- Bachelor's Degree in Physics** Sep 2016 – Sep 2019  
Alma Mater Studiorum – University of Bologna, Italy  
Grade: 110/110 (avg 28.02/30)

## PUBLICATIONS & CONFERENCES

- U. Di Laudo, et al., *Machine Learning for Automated Seabed Mapping*, in *Ital-IA 2024 – Thematic Workshops, CEUR Workshop Proceedings*, vol. 3762, 2024. URL: <https://hdl.handle.net/11368/3118040>
- U. Di Laudo, S. Ceramicola, L. Manzoni, *Artificial Intelligence and Machine Learning for the Automated Classification of the Seabed*, International Geological Congress 2024 - Oral presentation, 25–31 Aug 2024, Busan, Republic of Korea

## LANGUAGES

- Italian:** Native
- English:** Professional working proficiency