Dario **Melle**

Ph.D Candidate in Theoretical Physics · Machine Learning and AI Specialist

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Education

University of Salento   *Lecce, Italy*

Ph.D in Theoretical Physics   *Feb 2023 - Feb 2026 (Ongoing)*

- 11 peer-reviewed publications in leading journals; full list available on **InspireHEP**
- Presented research at international conferences: 2 talks and 1 poster.
- Mentored a fellow PhD student, introducing them to the group's research and methods.

                                                                                             Lecce, Italy

Post Graduate Master's Degree in Applied Artificial Intelligence - Python, PyTorch, NoSQL, scikit-learn   *Jan 2025 - Jan 2026 (Ongoing)*

- Focused on machine learning, deep learning, data analysis, and big data.

ISUFI (University Institute of Interdisciplinary Education)   *Lecce, Italy*

Postgraduate Master's Degree - Final Grade: 70/70 with honors   *Oct 2018 - May 2023*

- Honors program for top students, offering interdisciplinary exams, language training, and a merit-based scholarship including accommodation.

University of Salento   *Lecce, Italy*

M.S. in Theoretical Physics - Final Grade: 110/110 with honors   *Apr 2021 - Sep 2022*

- Recipient of a competitive merit-based scholarship covering tuition, accommodation, and a monthly stipend, successfully renewed for the entire M.S. program.

                                                                                             Lecce, Italy

B.S. in Physics - Final Grade: 110/110 with honors   *Oct 2017 - Feb 2021*

- Awarded a merit-based scholarship (granted to the top 1% of students) providing full tuition coverage, accommodation, and a monthly stipend for the entire B.S. program.

Work Experience

GraphAware   *Lecce, Italy*

AI Engineer Intern - PyTorch, Transformers, Neo4j   *Sep 2025 – Dec 2025 (Ongoing)*

- Fine-tuning LLMs using cloud computing resources to convert graph database queries into html human-readable reports.
- Applied PyTorch and transformer-based architectures to improve query interpretation accuracy and usability.
- Collaborating with a cross-functional team to integrate AI solutions into existing data management pipelines.

Federico II University of Naples, Department of Agricultural Sciences   *Naples, Italy*

Professional Consultant (Freelance Contract) - Python, Hardware   *May 2025 – Jul 2025*

- Designed and accomplished a measurement system to monitor CO_2 and O_2 production in biological systems, enabling real-time assessment of environmental changes.
- Optimized system architecture, reducing costs by 30% while maintaining accuracy and reliability of data acquisition.
- Developed the Python pipeline for sensor integration, real-time data processing, and visualization in a custom desktop app, supporting input from 13 sensors and improving research workflow efficiency and usability.

Personal Project

H2Algae – Monitoring System for Hydrogen Production from Microalgae - Team Project   *PoC*

Python, Hardware

- Designed and optimized grow and sensor chambers, integrating hardware with Python-based data acquisition.
- Won the Makerspace Call, participated in entrepreneurial programs PDAI 2023 and Call for Startups 2023 and presented at Startup Day 2023.

Skills

Languages	Python, C/C++, SQL, LaTeX
ML/AI	PyTorch, Hugging Face, scikit-learn
Data & Graph	Neo4j, Redis, ClickHouse, Pandas, Dask
Software	Git, Docker, Mathematica
Foundations	Algorithms, data structures, numerical methods; unit testing basics
Languages (human)	Italian (native), English (C1), French (B1)