



# Andrea Cacioppo

Curriculum vitae - December 15 2025

✉ [andrea.cacioppo@uniroma1.it](mailto:andrea.cacioppo@uniroma1.it)

LinkedIn

I am a physicist with 6+ years of experience in machine learning research and development. Currently finishing my PhD in physics, I am working on quantum computing, machine learning and their intersection. I am also consulting companies, developing custom models or optimizing existing ones.

## Education

---

### Nov 2022 - April 2026 (expected)

**PhD in Physics**, Sapienza University of Rome, Italy

Topics: physics-inspired algorithms, quantum computing, machine learning and quantum machine learning

Group: [Fisica AI&QC group](#)

Supervisors: [Stefano Giagu](#), [Fabio Sciarrino](#)

### Nov 2020 - Nov 2021 (interrupted)

**PhD in Computer Engineering**, Technical University of Munich, Germany

Topics: classical-quantum compound channels and algorithms for the automatic generation of quantum graph states

Group: [Theoretical quantum system design group](#)

Supervisors: [Janis Nötzel](#), [Jonathan Finley](#)

## **Oct 2016 - May 2020**

**M.Sc. in Physics**, Sapienza University of Rome, Italy

Thesis: "Deep learning for the parameter estimation of tight-binding Hamiltonians"

Supervisors: [Stefano Giagu](#), [Stefan Bauer](#)

Grade: 109/110

## **Sept 2013 - Oct 2016**

**B.Sc. in Physics**, Sapienza University of Rome, Italy

Thesis: "Hidden Markov model"

Supervisor: [Luciano Pietronero](#)

Grade: 110/110 with honors

## **Work experience**

---

### **Jan 2022 - July 2025**

**Machine Learning Consulting**, Individual clients, Italy

Topics: training NNs to solve PDEs in finance - implementation of diffusion models - training NNs on incomplete datasets - invoice reconciliation using an online LLM

### **Nov 2024 - Mar. 2025**

**Machine Learning Consulting**, [Grid +](#), Rome, Italy

Topic: Automatic analysis of legal documents and anomaly detection

### **Sep 2023 - Nov 2023**

**Machine Learning Consulting**, [Hypercube SA](#), Lugano, Switzerland

Topic: application of Machine Learning techniques to the detection of time series anomalies

### **Dec 2022 - Aug 2023**

**Machine Learning Consulting**, [Primis Group SRL](#), Milan, Italy

Tasks: determine best Machine Learning solutions tailored to LiDAR and satellite data, design of an anomaly detection algorithm for LiDAR data (contract of Rete Ferroviaria Italiana SPA)

### Sep 2019 - Oct 2020

**Research Internship**, Max Planck Institute for Intelligent Systems, Tübingen, Germany

Topics: Deep learning for estimating tight-binding Hamiltonians, quantum machine learning models and their connection with kernel methods

## Teaching

---

### Sep 2025 - Jan 2026

**Exercise sessions and lectures**, Sapienza University of Rome, Italy

Task: assisting students of the "Foundations of Programming with Laboratory (Mathematical Sciences for Artificial Intelligence)" course during exercise sessions and in class.

### Jan 2022 - Nov 2024

**Tutoring**, Individual clients, Italy

Topics: mathematics, physics and computer science for university students

### Nov 2020 - Nov 2021

**Tutoring**, Technical University of Munich, Germany

Task: assisting students of the "Quantum networking" class

### Students supervised

- Lorenzo Colantonio — "Quantum Diffusion generative models on variational quantum circuits" (Roma, 2023).
- Federico Scarpati — "Physics informed Graph Neural Networks for Graph Coloring Problems" (Roma, 2024).

## Awards and grants

---

**Nov 2023 - Nov 2024**

**Research grant**, Sapienza University of Rome, Italy

"Development of quantum machine learning algorithms" - 1000 €

**Oct 2016**

**Excellence program for honor students**, Sapienza University of Rome, Italy

## Talks

---

**Oct 2024**

**Quantum Computing** @ INFN, Padova, Italy, Talk

"Quantum diffusion models for quantum data learning"

**Oct 2024**

**38° cycle PhD seminar**, Rome, Italy, Talk

"Quantum machine learning and physics-informed deep learning algorithms"

**Apr 2024**

**EuCAIFCon2024**, Amsterdam, Netherlands, Flash Talk

"Quantum diffusion models"

**Nov 2023**

**QAIXIAQ2023 Workshop**, Rome, Italy, Talk

"Quantum diffusion models using parameterized quantum circuits for data denoising"

**July 2021**

**ISIT, 2021 IEEE International Symposium on Information Theory**, Talk

"Compound channel capacities under energy constraints and application"

## Languages

---

- Italian - native

- English - fluent
- German - beginner

## Software

---

- Python, PyTorch - advanced
- TensorFlow, GitHub, Linux, LaTeX, PennyLane - good
- C, HTML - basic

## Publications

---

- Andrea Cacioppo, Lorenzo Colantonio, Simone Bordoni, and Stefano Giagu.  
**Hybrid and hardware-oriented approaches for quantum diffusion models.** In 2025 International Joint Conference on Neural Networks (IJCNN), 2025.
- Lorenzo Colantonio, Andrea Cacioppo, Federico Scarpati, and Stefano Giagu.  
**Efficient graph coloring with neural networks: A physics-inspired approach for large graphs.** arXiv preprint arXiv:2408.01503, 2024.
- Andrea Cacioppo, Lorenzo Colantonio, Simone Bordoni, and Stefano Giagu.  
**Quantum Diffusion Models.** arXiv preprint arXiv:2311.15444, 2023.
- Andrea Cacioppo, Janis Nötzel, and Matteo Rosati. **Compound Channel Capacities under Energy Constraints and Application.** In 2021 IEEE International Symposium on Information Theory (ISIT), pages 640–645. IEEE, 2021.
- Andrea Cacioppo. **Deep learning for the parameter estimation of tight-binding Hamiltonians.** Master's thesis, Sapienza Università di Roma, Italy, 2020.