Andrea Cacioppo

Curriculum vitae - January 29 2026

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.