RICCARDO CORTE

Master Student — Physics of Data

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https://github.com/riccorte https://riccorte.github.io

SKILLS

Programming & Tools

Python (advanced) C++ R MySQL Dask Spark Excel (advanced) VBA LaTeX Jupyter GitHub

Computational Environment

Linux (Ubuntu, Debian) Bash SSH clusters Docker Git

Machine Learning & AI

Neural Nets (FFNN, CNN, RNN) Transformers RBMs LLMs (GPT-2)

Frameworks & Libraries

PyTorch TensorFlow Keras scikit-learn NumPy Pandas Matplotlib Seaborn

Data Analysis & Modeling

Multidimensional Analysis Statistical Modeling Bayesian Inference Time Series

Math & Physics

Linear Algebra Probability & Statistics Optimization Stochastic Processes Information Theory Modeling & Simulation

Leadership

International collaboration Student Association President

PROFILE

If I had to describe myself in one word, it would be *grit*. I'm a Physics graduate and MSc student with a strong logical mindset, applying advanced theory through programming and scientific problem solving. I build clear strategies from the start and follow them with determination. I enjoy hard problems that require both rigor and creativity, supported by resilience and adaptability. My goal is to exceed expectations and contribute effectively in both technical and collaborative contexts.

EDUCATION

Master's Degree in Physics of Data

Università degli Studi di Padova

09/2024 – Present Padova, Italy

- Projects in advanced ML; contributed to an international collaboration exploring cutting-edge technologies, including **Large Language Models (LLMs)**.
- Selected works: energy landscape analysis of RBMs; study of embedding transformations in transformer architectures to probe internal LLM representations.

Bachelor's Degree in Physics — **97/110**

Università degli Studi di Trieste

09/2021 – 09/2024 Trieste, Italy

- Founded and presided over a student association; Erasmus exchange at **Universidad de Granada (UGR)**; elected to Physics Dept. student council.
- **Thesis:** analysis of optical aberrations in compound lens systems via paraxial ray matrix method and Python **ray tracing**; compared analytical and numerical models.

ACADEMIC CONTRIBUTIONS

Undergraduate Research Internship

Precision Engineering & Time Synchronization

06/2023 – 11/2023 Trieste, Italy

- Contributed to a study on 1930s Pesariis clockmaking; results published as a book chapter: *"Sincronizzazione del tempo e ingegneria di precisione: l'orologeria pesarina negli anni Trenta."*

LANGUAGES

English — C1 (CAE)

Spanish — B2 (EU test)

German — Elementary

French — Elementary

AWARDS

05/2018 — Silver Medalist
Italian Logic Games
Individual medal and team captain.

INTERESTS

Endurance athlete: ran the **2025 Rome Marathon** and multiple half-marathons; **4th** in category at the **2024 Trieste Half Marathon**. Passionate about problem solving, scientific computing, and open-source.

PROJECTS

Mean Reversion Metric on Financial Dataset

XSOR Capital Collaboration

- Built a self-trading bot based on mean-reversion signals over real financial time series; full pipeline from data prep to strategy evaluation.

Energy Analysis of Restricted Boltzmann Machines

Univ. project

- Energy landscape study with hyperparameter optimization; explored hidden spaces using **PCA**, **t-SNE**, and clustering; visualization and diagnostics.

Transformer (GPT-2) Architecture Study

Univ. project

- Phenomenological and physics-inspired analysis of embedding transformations; examined attention maps and FFNN blocks to probe internal representations.

Cooke Triplet Ray Tracing (Bachelor Thesis)

Geometrical Optics Simulator in Python

- Combined **matrix optics** and **ray tracing** to model the Cooke Triplet; quantified **spherical** and **chromatic** aberrations; compared paraxial vs. full-ray results.

PERSONAL WEBSITE

A complete portfolio (including time-series analysis and VBA-based market studies) is available on my website: riccorte.github.io. More works on GitHub: github.com/riccorte.