Riccardo Corte

Master Student - Physics of Data

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PROFILE

If I had to describe myself in a single word, it would be **grit**. I am a Physics graduate and MSc student with a logical mindset, capable of applying advanced theoretical knowledge through programming and scientific **problem solving**. Nonetheless, what sets me apart is the **perseverance** and passion I demonstrate until I achieve my goals. I am a strong logical thinker and, from the very beginning of a project, I am capable of developing a clear **strategy** and following it with determination. I enjoy tackling complex challenges by combining academic knowledge and creativity, supported by an **unbreakable mindset** that allows me to adapt to new domains while maintaining a resilient positivity. My goal is always to **exceed expectations**, and I am confident that this mindset will enable me to contribute effectively both in technical tasks and in the collaborative, relational aspects of work.

EDUCATION

09/2024 – Present
Padova, Italy

Master's degree in Physics of Data
Università degli studi di Padova
During my master's studies, I participated in projects that involved **advanced applications of machine learning** and contributed to an **international collaboration** focused on exploring cutting-edge technologies, including **Large Language Models (LLMs)**. Among the most relevant works, I analyzed the **energy landscapes of Restricted Boltzmann Machines** and studied **embedding transformations in transformer architectures** to investigate the internal representations of LLMs.

09/2021 – 09/2024
Trieste, Italy

Bachelor's Degree in Physics - 97 / 110
Università Degli Studi di Trieste
During my bachelor's studies, I actively sought opportunities beyond my comfort zone by engaging in diverse activities. I founded and served as **president of a student association**, participated in an **Erasmus exchange program** by the **University of Granada (UGR)**, and was **elected to the student council** of the Physics Department. My bachelor's thesis focused on the analysis of **optical aberrations** in compound lens systems through the **paraxial ray matrix method** and **ray tracing techniques**. The work combined analytical and computational approaches to model and compare different optical configurations

SKILLS*

Programming and Tools: | Python (advanced) | C++ | R | MySQL | Dask, Spark | Advanced Excel, Visual Basic | LaTeX, Jupyter, GitHub

Computational Environment: | Linux (Ubuntu, Debian) | Bash scripting | SSH cluster management | Docker | Git version control

Machine Learning & AI: | Neural Networks (FFNNs, CNNs, RNNs) | Transformers | Restricted Boltzmann Machines (RBMs) | Large Language Models (LLMs, e.g., GPT-2)

Frameworks and Libraries: | PyTorch, TensorFlow, Keras | Scikit-learn, NumPy, Pandas | Matplotlib, Seaborn

Data Analysis and Data Modeling: | Multidimensional Data Analysis and Statistical Modeling | Probabilistic Models and Bayesian Inference | Time Series Analysis and Forecasting

Mathematics and Physics Theoretical Background: | Linear Algebra, Probability & Statistics, Optimization | Stochastic Processes and Information Theory | Physics-based modeling and simulation

LANGUAGES

English ●●●●○
C1 - CAE Certification

Spanish ●●●●○
B2 - EU placement test

German ●●○○○
Elementary proficiency

French ●○○○○
Elementary proficiency

AWARDS

23/05/2018 **Silver Medalist**
Italian Logic Games
Award reached both individually and as the captain of a wonderful team.

INTERESTS

Endurance Athlete — My Resilience and Perseverance are demonstrated in the context of Sportive events. I ran the 2025 Rome marathon as well as multiple half-marathons. Ended up fourth in my cathegory at the 2024 Trieste Half Marathon.

ACADEMIC CONTRIBUTIONS

06/2023 – 11/2023
Trieste, Italy

Research Experience
Undergraduate Research Internship
Contributed to a research project on precision engineering and time synchronization in 1930s Pesariis clockmaking, which culminated in a published book chapter available online:

Sincronizzazione del tempo e ingegneria di precisione: l'orologeria pesarina negli anni Trenta.

PROJECTS

Mean Reversion Metric on Financial Dataset
The project, carried out in collaboration with **XSOR Capital**, focused on developing a **self-trading bot** based on **mean reversion analysis** applied to real financial time series data.

A study on Hyper-parameters and Energy Structure
Conducted an energy analysis of **Restricted Boltzmann Machines (RBMs)** with hyperparameter optimization, focusing on the exploration of hidden spaces using **PCA, t-SNE,** and **clustering techniques**.

GPT-2 Model Transformer Architecture
This study involved an in-depth analysis of **transformers**, combining physical and phenomenological approaches to investigate the transformation of **embedding spaces** by examining the **attention mechanisms** and the complex **feed-forward networks (FFNNs)**.

PERSONAL WEBSITE
A complete portfolio of my projects, including additional **time series analysis** and **VBA-based market studies**, is available on my **personal website** .

More projects and works can be found on my personal **GitHub profile** .

*The contexts in which these skills were developed are detailed in the corresponding sections of my website.