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Summary

I am a curiosity driven and passionate student with a strong interest in theoretical physics and cosmology. I am currently studying for a Master's degree in Physics with Theoretical Physics at Imperial College London. I am looking for a PhD position in Theoretical Physics, starting in 2023. Outside of physics, my interests extend to computer science, machine learning, and graphic design.

Professional Experience

Graduate Teaching Assistant

2022 - 2023

Department of Physics, Imperial College London (London), United Kingdom

Education

MSci Physics with Theoretical Physics

2019 - present

Imperial College London (London), United Kingdom

- Attended a variety of courses that granted a solid foundation in scientific and critical thinking, with a focus on theoretical physics
- Achieved 1st class in theoretical modules: Mathematical Methods, Foundations of Quantum Mechanics, Advanced Classical Physics, Group Theory, Nuclear and Particle Physics, Statistical Mechanics
- Current relevant courses: Quantum Field Theory, Unification, General Relativity, Cosmology
- Used Python extensively for data analysis of experiments and simulations

Diploma di Liceo Scientifico Tradizionale

2013 - 2019

Liceo Scientifico Giovanni Gandini (Lodi), Italy

- Scientifically oriented high school program with a wide range of subjects spanning both sciences and humanities
- Participated in extracurricular events and activities with a focus on Physics and Mathematics
- Graduated with 100/100 at *Esame di Stato*

Projects

Shining Light on Missing Red Giants:

Red Giant Photoevaporation in the Galactic Centre

2022 - present

MSci Project at Imperial College London

- I determined the photo evaporation rate of red giants around supermassive black holes and determined how it affects their evolution, with the aim of explaining the observed lack of these stars compared to equilibrium theoretical predictions.
- Computational and theoretical project: involved designing, writing and testing code that could be shared with others.
- Helped develop critical scientific thinking and research skills.
- The project reached positive and encouraging conclusions.

Search for beyond SM physics from LHCb data

2021

Group Project at Imperial College London

- Involved coordinating with other ~20 students to analyze data from LHCb experiment.
- Participated in group discussions and contributed meaningful ideas.
- Main role was to train a decision tree model to separate background from signal.

Improving people counter image recognition neural network

2020

Summer work experience at GrottiniLab with Politecnico di Ancona

- Was assigned to a software engineer working on a "people counter" neural network, with the aim of exploring new avenues of improvement.
- Reviewed literature on the current state of the art of image recognition neural networks.
- Proposed and coded a new data augmentation strategy to improve the product.

Critical Temperature of an Ising Model on a Sierpinski Gasket

2020

Year 1 Summer Project at Imperial College London

- Worked remotely with a peer to simulate an Ising model on a Sierpinski gasket network.
- Wrote Python code to run, visualize and analyze the simulation, and numerically evaluated the model's critical temperature and the corresponding critical exponent.
- Delivered a video summary of the project and a project report.

★ Experiences

DeepLearn Summer School 📄

2021

4th International School on Deep Learning

- Attended 38 hours of postgraduate level lectures given by Machine Learning experts from various fields.
- Learned to comprehend and acquire meaningful information from lectures that assumed more advanced background knowledge than I had.

Project Extreme Energy Events (EEE) 📄

2013 - 2019

Long running project organized by INFN involving multiple Italian high schools

- Participated in the data taking and analysis process for a MRPC muon detector.
- Attended lectures and conferences on particle Physics.
- Participated in joint conferences between participating schools summarizing recent results.

Building a MRPC muon detector chamber at CERN 📄

2017

- Worked with peers in a laboratory to assemble a muon detector chamber.
- Attended seminars hosted by CERN personnel regarding the present state of particle Physics.

🔧 Skills

>_ Coding

🐍 Python



☕ Java



⚙️ C++



⚡ Haskell



⚙️ Mathematica



📄 JavaScript



📄 Ruby



📄 HTML



TeX LaTeX



📄 Git



📄 Shell



🌐 Languages

🇮🇹 Italian



🇬🇧 English



🇪🇸 Spanish



🇯🇵 Japanese




🇨🇳 Mandarin




Others

 Adobe Suite: Illustrator, Photoshop, InDesign, Premiere Pro

 Machine Learning libraries: PyTorch, Keras, OpenCV

 AI Prompt Engineering

 Independent Study

Achievements

	Where	Year	Award
Japanese Level 3	Imperial Horizons	2022	Pass with Merit
Jiu-Jitsu	Imperial Jiu-Jitsu	2022	Orange Belt
Understanding the Nature of Science	Imperial Horizons	2020	Pass with Merit
Aikido	Aikikai Carpiano	2019	5th Kyu