

LUCA MUSCARELLA

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EDUCATION



BA in Natural Sciences (Physics)

Trinity College, University of Cambridge
OCTOBER 2019 - JUNE 2022 (EXPECTED)

- Achieved **First Class Honours** in Mathematics and Physics.

Scientific Diploma • 2014 – 2019

A. Volta High School, Milan, Italy

Final grade: **100/100**

EXPERIENCE



HUAWEI

Camera Hardware Intern at Huawei Technologies Lab

Tampere, Finland • 12 weeks – 2021

- Used OpenCV to analyse the performance of state-of-the-art **hyperspectral cameras** for an eventual future use in mobile phones. My focus has been on trying to reduce straylight in such devices.

- Used **COMSOL Multiphysics®** to study the diffractive and imaging properties of non-optically-clear elements, such as 3D-printed lenses.



VIVIDQ

Optical Engineering Intern at VividQ Ltd

Cambridge, UK • 12 weeks - 2020

- Helped to develop a holograms compression algorithm using **NumPy** and **OpenCV**

- Calculated the **efficiency of diffusers** aimed at increasing the Field of View in holographic headsets.

- Used **Zemax OpticStudio®** to analyse the performance of holographic surfaces to be used in Heads-Up Displays.



Intern at Palack University

Olomouc, Czech Republic • 4 weeks - 2018

- Built an optical setup to estimate laser pulses duration using **second harmonic generation**.

- Studied **speckle pattern** and its possible application in astronomical imaging.

- Learnt to use **ImageJ** and **MATLAB** to analyse and do statistics on data from optics sensors.

AWARDS

May 2021 **3rd place** at the Plancks Physics Competition • *Lisbon, Portugal*

PLANCKS IS THE WORLD'S MOST PRESTIGIOUS PHYSICS COMPETITION FOR **UNIVERSITY** STUDENTS

July 2019 **Silver medal** at the International Physics Olympiad (IPhO) • *Tel Aviv, Israel*

IPHO IS THE WORLD'S MOST PRESTIGIOUS PHYSICS COMPETITION FOR **HIGH SCHOOL** STUDENTS.

May 2019 **Silver medal** at the European Physics Olympiad (EuPhO) • *Riga, Latvia*

THE CONCEPT OF EUPHO IS SIMILAR TO **REAL RESEARCH SITUATIONS**, WITH SHORT PROBLEMS DESCRIPTION AND PLENTY OF SPACE FOR CREATIVE SOLUTIONS.

May 2019 **Gold medal** at the Italian Mathematics Olympiad

April 2019 **1st place** and **special price for the best solution** at the Italian Physics Olympiad

SKILLS & HOBBIES



python

Extensive knowledge of the Python **data model** and **standard library**. Experience with **NumPy** and **SciPy**, used for physics-related projects such as thermodynamics simulations.

I built a Telegram bot that enables to use a Python Interactive Console directly from Telegram, with many enhancing features.



Java

Used the **Processing IDE** to develop a number of games for both Windows and Android. Built a **physics engine** to simulate the formation of stars and galaxy clusters. Coded a rudimental **algebraic expressions parser and evaluator**.



Mentor at **Lead The Future**, where I help high school students find their path and achieve their full potential.

Scouting 10 years of participation in my local group and **three years volunteering**.