

# NICOLA ZOMER

Incoming PhD student in Mathematics and ICT

Interested in optimization, Bayesian inference, and machine learning

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in nicolazomer

 NicolaZomer

## ABOUT

I am an Italian physicist and engineer with a strong interest in applied sciences and optimization problems. Beyond my academic and professional pursuits, I am also a passionate handbalancer! This unique circus discipline allows me to deeply experience the mechanisms of human learning, which I find extremely fascinating. In my spare time, I also enjoy hiking, walking, and in general exploring.

## EXPERIENCE

### Research Intern in Network Modeling

Central European University

 Apr 2023 – Jun 2023

Master's internship under the supervision of Prof. Tiago P. Peixoto. We applied complex systems tools to understand and model the behaviour of platforms in the Fediverse, discovering the coexistence of a rich-get-richer effect with a competitive mechanism between large instances that counteracts global centralization in a single one.

### Alba CubeSat Unipd, Mission Analysis team

University of Padua

 Oct 2020 – Jun 2022

Alba Cubesat is a team of students who is building a CubeSat to send into orbit, joining the "Fly Your Satellite" Program by ESA. Some of the tasks I collaborated on were determining the orbital parameters, estimating the lifetime, and performing risk assessment from radiation and debris.

## EDUCATION

### M.Sc. in Physics of Data

University of Padua

 Oct 2021 – April 2024

Final grade: 110/110 cum laude (GPA: 29.9/30)

Thesis title: "Swarm intelligence in interacting language model agents".

Relevant courses: Neural Networks and Deep Learning, Information Theory and Inference, Statistical Mechanics of Complex Systems

Student researcher: @ComuneLab, led by Manlio de Domenico.

### B.Sc. in Aerospace Engineering

University of Padua


 Oct 2018 – Sept 2021

 Certification

Final grade: 110/110 cum laude (GPA: 29.1/30)

Thesis title: "A study of the Levi-Civita regularization of the gravity field".

## PUBLICATIONS

Margherita Bertè, Rashid Ibrahimli, Lars Koopmans, Pablo Valgañón, Nicola Zomer, Davide Colombi. Enhancing stop location detection for incomplete urban mobility datasets. in arXiv, 2024. 

## SUMMER SCHOOLS

### Summer University 2023 on Effective High Performance Computing and Data Analytics CSCS and USI

GPU architectures, GPU programming with CUDA, Python HPC libraries (NumPy, CuPy, Numba, Dask). Final exam passed.

### ModML Summer School 2023

Machine Learning Genoa Center (MaLGa)

Intro to modern topics in ML, including: implicit regularization, sketching, RL, inverse problems, optimal transport, fairness.

### Oxford ML Summer School 2022

AI for Global Goals

Machine Learning for Health and for Finance, plus optional module on ML Fundamentals.

### Qiskit Global Summer School 2022

IBM

Two-week intensive course by IBM Quantum. Completed all graded lab work assignments with a final score of 100%.

## AWARDS



### Mentee at LeadTheFuture (LTF)

Among the few Italian students selected to be mentees for LTF, a leading mentorship non-profit organization for students in STEM, with acceptance rate below 20%.



### Scholarship "Mille e una lode", University of Padua

Scholarship based on GPA for top 3% students of each degree course. A.Y. 2018/2019, 2019/2020, 2020/2021



### National finalist in the Team Mathematical Olympiad

Qualified for the national final of the Team Mathematical Olympiad. A.Y. 2017/2018

## LANGUAGES

Italian: Native Speaker

English: Full professional proficiency, Cambridge Certificate B2 (First)

Spanish: Limited working proficiency