Matteo Barbetti

Ph.D. Student in
Smart Computing

May 6, 1994

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About Me

Ph.D. Student in Smart Computing at the University of Florence, I deal with Artificial Intelligence and its applications to Particle and Medical Physics. Passionate about innovation and scientific dissemination, I never refuse going out to discuss new ideas.

Memberships

Associazione Italiana Studenti di Fisica

Istituto Nazionale di Fisica Nucleare

LHCb Collaboration

Social Network

matteo-barbetti

@mbarbetz

mbarbetti

Education

Study

2020 – now **Ph.D. in Smart Computing** — Università degli Studi di Firenze
Focus: Multidisciplinary Ph.D. program aimed to provide expertise on advanced computational methods to meet the needs of society.
Topic: Smart Computing Techniques applied to Medical Physics, Nuclear Physics and Particle Physics.

2017 – 2020 **Master's degree in Particle Physics** — Università degli Studi di Firenze
Focus: Curriculum of studies oriented to Physics Data Analysis with a strong focus on modern Computing Technologies, like Machine Learning and Artificial Intelligence.
Score: $110/110$ *cum laude*

Master thesis — Genève, Switzerland
Focus: Development of a Python-based simulation framework for Particle Physics applications integrated with Deep Learning solutions to parameterize the detector response of the LHCb experiment.
Title: "Techniques for parametric simulation with deep neural networks and implementation for the LHCb experiment at CERN and its future upgrades".

2013 – 2017 **Bachelor's degree in Physics** — Università degli Studi di Firenze
Focus: Standard course of study in Physics and Astrophysics during which I discovered a natural inclination towards Experimental Science and Data Analysis.
Score: $110/110$

Bachelor thesis — Genève, Switzerland
Focus: Data Analysis work in Particle Physics in collaboration with the LHCb experiment at CERN.
Title: "Study of the charmonium resonances in $B^+ \to p\bar{p}K^+$ and $B^+ \to p\bar{p}\gamma K^+$ decays with the LHCb experiment at CERN".

2008 – 2013 **Previous education** — Liceo Scientifico G. Galilei di Terni
Focus: First general smattering on Scientific Approach and Critical Thinking thanks to which I decided to continue studies in Physics.
Score: $100/100$ *cum laude*

Other courses

2018 – 2019 **Impresa Campus Unifi** — Università degli Studi di Firenze
Focus: Development of innovative ideas and business culture in university context with Team Building path and personal expert support.

2018 **Palestra di Intrapredenza** — Università degli Studi di Firenze
Focus: Evaluation of personal motivation and entrepreneurial propensity thanks to Design Thinking and LEGO Serious Play® methods.

Experience

Tutoring

2018 – now **Teaching assistant** — Università degli Studi di Firenze
Support to laboratory activities for the BSc degree course in Physics. Since October 2020, I am responsible for brief lessons of Python for the third year students.

2016 – now **Maths and Physics Reps Teacher**
Private lessons for high-school and university students.

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Soft Skills

- Complex problem-solving
- Analytical thinking and innovation
- Critical thinking and analysis
- Attention to detail, trustworthiness
- Leadership and social influence

Technical Skills

- Operating systems
  - Windows
  - Mac OS
  - Linux
- Programming languages
  - Python ●●●●○
  - C/C++ ●●○○○
- Machine Learning frameworks
  - Scikit-Learn
  - TensorFlow
- Other suites
  - Visual Studio Code
  - Google Workspace
  - Microsoft Office
  - LaTeX
  - Git

Languages

- Italian ●●●●●
- English ●●●○○
- Spanish ●○○○○

Italian Association of Physics Student (AISF)

2020 – now **Vice President**
Support to Association organization.

2019 – now **Secretary**
Member of the Executive Committee that organizes and coordinates the Italian Local Committees.

2018 – 2019 **President of the Florence Local Committee**
Organization of events and representative for about 40 members.

2018 – now **Member of the Editorial Board of *Sistemi di Riferimento***
Vulgarization activity to valorise Italian Physics Departments.

2017 – 2018 **Vice President of the Florence Local Committee**
Support to events organization and Local Committee coordination.

Conferences, Workshops and Schools

2021 **8th Thematic CERN School of Computing** online
Focus: Scientific software for heterogeneous architectures.

2021 **Workshop della Commissione Calcolo e Reti dell'INFN** online
Participation with a presentation titled "Simulating the LHCb detector with Generative Adversarial Networks".

2021 **1st CloudBank EU Workshop** online
Participation with a presentation titled "LHCb deployment in AWS".

2020 **Summer School in Physical Sensing and Processing** online
Focus: Sensing devices, DAQ systems and data processing strategies across various Physics subdomains.

2019 **Artificial Intelligence in Health and Well-Being** Firenze, Italy
Focus: Artificial Intelligence applied to health and well-being.

Outreach and Dissemination

2021 **Book author** Sassi Junior
On behalf of the INFN, I have prepared a paragraph dedicated to Artificial Intelligence for "Inventions", a science book for kids.

2018 **Jury member** Premio Galileo
Premio Galileo is a literary prize for science communication.

2017 – 2018 **Blog author** Fisici Senza Palestra
Dissemination of science on *Fisici Senza Palestra* blog.

Awards

2019 **INFN scolarship** Istituto Nazionale di Fisica Nucleare
Scholarship funded by the National Institute for Nuclear Physics (INFN) for spending three months at CERN.

2017 **Scholarship for thesis abroad** Università degli Studi di Firenze
Sholarship funded by the University of Florence for spending a part of the bachelor thesis work at CERN.

2013 **Scholar merit award** Liceo Scientifico G. Galilei di Terni
Merit award for the excellence of high-school career.