Andrea **Barontini**

PH.D. RESEARCHER · SOFTWARE DEVELOPER

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Summary

Current Ph.D. researcher at University of Milan. 3+ years experience in machine learning research, with focus on Neural Networks applications and explainability. Code development experience and intense interest in computer science which resulted in a broad and variegate set of IT skills. Looking for a stimulating experience and an opportunity to use and improve my skills.

Personal Informations

Birth	1997, Latina, Italy
Nationality	Italian
Gender	Male
Languages	Italian (native), English (fluent)

Work Experience

Ph.D. Researcher — *Milan, Italy*
UNIVERSITY OF MILAN — *Oct. 2021 - Current*

- Worked in Neural Networks applications within the NNPDF international collaboration to the challenging theoretical topic of determining the internal structure of the proton.
- Supervised master's theses on the topic of AI explainability resulting in a set of analysis tools for a Neural Network application.
- Contributed to a set of open source software tools used now by the high energy physics community.

Education

Master's degree in Theoretical Physics — *Rome, Italy*
LA SAPIENZA UNIVERSITY OF ROME — *Oct. 2019 - Oct. 2021*

- Field of study: Theoretical particle physics, Computational physics
- Grade: 110/110 cum laude
- Achievement: grade based scholarship maintained for the entire duration of the course

Bachelor's degree in Physics — *Rome, Italy*
LA SAPIENZA UNIVERSITY OF ROME — *Sep. 2016 - Oct. 2019*

- Grade: 110/110 cum laude
- Achievement: grade based scholarship maintained for the entire duration of the course

Skills

Software Skills	Tensorflow, PyTorch, Keras, Pandas, Scipy, Numpy, Microsoft Office, Pytest, Git, Github, Unity, Microsoft Visual Studio
Programming Languages	C, C++, C#, Python, BASH
Operating Systems	Ubuntu, MacOs, Windows, Kali Linux, Scientific Linux
Other skills	Continuous integration and delivery, Automation testing, Keynote
Certifications	Unity: Game Design and Development 1, Unity: Game Design and Development 2

Publications

The Path to N3LO Parton Distributions
2402.18635 — *Feb, 2024*

Determination of the theory uncertainties from missing higher orders on NNLO parton distributions with percent accuracy
2401.10319 — *Jan, 2024*

Photons in the proton: implications for the LHC

2402.18635

Jan, 2024

Pineline: Industrialization of high-energy theory predictions

Comput.Phys.Commun. 297 (2024) 109061

Dec, 2023

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Presentations

The inclusion of theory errors in PDF fitting

Journal club at University of Rome La Sapienza, Rome, Italy

Mar, 2024

Extraction of the strong coupling with HERA and EIC inclusive data

ECT*, Trento, Italy

Feb, 2024

The inclusion of theory errors in PDF fitting

Desy Research Center, Hamburg, Germany

Jan, 2024

NNPDF40: Neural networks techniques for parton distribution functions evaluation

ECT*, Trento, Italy

Nov, 2023

The Pineline: industrialization of High-Energy theory predictions

Durham, UK

Sep, 2023

The inclusion of theory errors in PDF fitting

QCD@LHC, Durham, UK

Sep, 2023

The inclusion of theory errors in PDF fitting

QCD23, Montepellier, France

Jul, 2023

Teaching Activity

2024	**Tutor and exerciser**, Mathematical methods for physics	*University of Milan*
2024	**Tutor and Exerciser**, Quantum mechanics 1	*University of Milan*
2023	**Tutor and Exerciser**, Quantum mechanics 2	*University of Milan*
2023	**Tutor and Exerciser**, Informatics	*University of Milan*
2022	**Tutor and Exerciser**, Quantum mechanics 1	*University of Milan*
2022	**Tutor and Exerciser**, Informatics	*University of Milan*
2022	**Tutor and Exerciser**, Quantum mechanics 2	*University of Milan*