

Andrea Barontini

PH.D. IN THEORETICAL PHYSICS · UNITY / PYTHON SOFTWARE ENGINEER

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Summary

I am Andrea, Ph.D. in Theoretical and Computational Physics with 4+ years of experience in Python-based software development and AI. Currently focused on creating immersive AR/XR applications using Unity, merging scientific expertise with advanced interactive technology.

Personal Informations

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

Work Experience

Leonardo

Rome, Italy

UNITY / PYTHON SOFTWARE ENGINEER

Sep. 2025 - Current

- Developing and maintaining a network-based XR/AR application using Unity.
- Designing and developing a Python-based CSCI responsible for complex mathematical computations, including Monte Carlo integration and multi-dimensional interpolation. Also responsible for designing and implementing network protocols for both data input and output.
- Writing unit and regression tests for both the Unity-based XR/AR application and the Python-based CSCI.

Capgemini

Rome, Italy

UNITY / PYTHON SOFTWARE ENGINEER

Oct. 2024 - Sep. 2025

- Working on systems based on virtual and augmented reality in the Unity framework, following the entire development process, from designing to testing.
- Proposing R&D solutions based on AI and deep learning. In particular, I am currently working on voice authentication, time-series forecasting and supervised models for the analysis of multi-dimensional data.
- Integrating and managing the CI-CD of the project by writing pipelines and managing containers.

Education

Phd in Theoretical and Computational Physics

Milan, Italy

UNIVERSITY OF MILAN

Oct. 2021 - Nov. 2024

- 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. 📄

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	Unity, Unreal Engine, Tensorflow, PyTorch, Keras, Pandas, Scipy, Numpy, Microsoft Office, Pytest, Git, Github, Unity, Microsoft Visual Studio, Rider
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 <i>Unity: Game Design and Development 1; Unity: Game Design and Development 2; The Ultimate Guide to Video Game Optimization; Learn Advanced C# Scripting in Unity 5 for Games; Unreal Engine 5 C++ Developer: Learn C++ and Make Video Games; Unreal Engine 5 C++ The Ultimate Game Developer Course; Unreal Engine 5: The complete Beginner's Course; Cutting-Edge AI: Deep Reinforcement Learning in Python; Become a Tensorflow Professional Developer; Qt5 Core for Beginners with C++; Ready, Set, Qt!; Complete Modern C++ (C++ 11/14/17); Design Patterns in Modern C++</i>
Certifications	

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

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