

Pierfrancesco Beneventano

PhD candidate at Princeton University

Researching on theory of deep learning.
Broadly interested in Machine Learning, its theory, and the math tools to develop it.

Personal Data

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Education

PhD in Operation Research and Financial Engineering, Princeton University, NJ, USA

2020 – curr.

Mathematics of machine learning, Statistics, Computational Mathematics

- o Summer research assistant (2021) of [Prof. Boris Hanin](#).



MSc in Mathematics, ETH Zurich, Switzerland

2018 – 2020

Statistics, Probability, Computational Mathematics, and Deep Learning

Theses:

- o Deep neural network approximations for high-dimensional functions.
- o [Deep neural network approximations for high-dimensional first order Kolmogorov PDEs](#).

Supervisors: [Prof. Arnulf Jentzen](#), [Prof. Patrick Cheridito](#).



BSc in Mathematics, Università di Pisa, Italy

2015 – 2018

Computational Mathematics Curriculum

- o Thesis on numerical methods for Markov chains (Italian). **Supervisor:** [Prof. Dario A. Bini](#).
- o INdAM Merit Scholarship, best 40 freshmen in math all-over Italy (2015–2018).
- o INdAM Summer School in Mathematics (2016, 2017).



Experiences

Machine Learning Research Intern

2020

[Daedalean AI](#), Zurich, Switzerland

- o *Explainability of AI*.
- o *Theoretical Guarantees for Neural Networks (Generalizability)*.

My work was part of the project [Concepts of Design Assurance for Neural Networks \(CoDANN\)](#) in partnership with EASA, European Union Aviation Safety Agency, which will lead to the first guidelines for *AI certification in safety critical system*.



Teaching Assistant

2019 – 2020

ETH Zurich, Switzerland

- o [Numerical Methods for Partial Differential Equations](#).
- o [Computational Methods in Engineering and Applications](#).
- o Translator and Proofreader of a book on Calculus.

Courses for, among others: Physics MSc, Data Science MSc, CSE BSc, Mech. Eng. BSc.

Taught at the exercise lectures of the courses (both theory and C++ for problems.)



Coding skills

Proficient: C, Matlab, \LaTeX .

Experiences: C++, Python, R.

Languages

Native: Italian.

Fluent: English

Other

Moderator&Organizer: XAI session, conference at [OECD](#) on “*Forecasting the future for sustainable development*” (and much more as [CEST member](#)).