

# 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,  $\text{\LaTeX}$ .

**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](#)).