

# Pierfrancesco Beneventano

## PhD candidate at Princeton University




Broadly interested in Machine Learning, its theory, and the math tools to develop it.  
Advised by [Prof. Boris Hanin](#) and [Prof. Jason D. Lee](#).

### Personal Data




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[Google Scholar](#)  
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### Education

- **PhD in Operation Research and Financial Engineering, Princeton University.** 2020 – curr.
- **MSc in Operation Research and Financial Engineering, Princeton University.** 2020 – 2022  
*Theory of Machine Learning, Mathematical Optimization, Deep Learning*  
Research on implicit regularization in the training of machine learning models.  
Advisers: [Prof. Boris Hanin](#) and [Prof. Jason D. Lee](#).
- **MSc in Mathematics, ETH Zurich.** 2018 – 2020  
*Statistics, Probability, Computational Mathematics, and Deep Learning*  
Theses (now ArXiv preprints):
  - Deep neural network approximations for high-dimensional functions.
  - Deep neural network approximations for high-dimensional first order Kolmogorov PDEs.Advisers: [Prof. Arnulf Jentzen](#) and [Prof. Patrick Cheridito](#).
- **BSc in Mathematics, Università di Pisa.** 2015 – 2018  
*Computational Mathematics Curriculum*
  - Thesis on numerical methods for Markov chains (Italian). Adviser: [Prof. Dario A. Bini](#).
  - INdAM Merit Scholarship, best 40 freshmen in math all-over Italy (2015–2018).
  - INdAM Summer School in Mathematics (2016, 2017).

### Industry and Research Experiences

- **Applied Scientist Intern (Machine Learning Research)** 2022 - 2023  
*AWS AI Labs, Santa Clara, CA, USA.*  
Developing explainability techniques for machine learning for time-series modeling and anomaly detection. Working with [Dr. Anoop Deoras](#), [Dr. Laurent Callot](#), [Dr. Baris Kurt](#), and [Dr. Youngsuk Park](#).
- **Machine Learning Research Intern** 2022  
*INRIA - SIERRA project-team, Paris, France*  
Working with [Dr. Blake Woodworth](#) in the team of [Prof. Francis Bach](#) on the stability of the training of neural networks.
- **Machine Learning Research Intern** 2020  
*Daedalean AI, Zurich, Switzerland*  
◦ *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*.

### Coding skills

**Proficient:** C, Matlab.  
**Experiences:** Python, R, PyTorch, Jax, ...

### Other

**Moderator & Organizer:** XAI session, conference at [OECD](#) on “*Forecasting the future for sustainable development*” (and much more as [CEST member](#)).  
**Organizer, Moderator, & Panelist:** [CEST-UCL Seminar series](#) on responsible modelling.  
**Co-Founder & Social Media Chair:** [Princeton AI Club](#) – Follow us on Twitter.

## Teaching Experiences

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### Princeton University:

- Analysis of Big Data.
- Energy and Commodities Markets.

*Courses for various STEM MSc and BSc.*

*Taught the precepts, graded homework, office hours.*

### ETH Zurich:

- Numerical Methods for Partial Differential Equations.
- Computational Methods in Engineering and Applications.
- Translator and Proofreader of a book on Calculus.

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