Pierfrancesco Beneventano

Teaching Assistant and MSc student, ETH Zürich

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Focusing on statistics, numerical analysis and theoretical machine learning. I am working on my research thesis on deep-learning-related instances of numerical analysis at ETH Zürich.

Education

2018 – pres. **MSc in Mathematics**, *CGPA 5.86/6*, expected graduation: June 2020, ETH Zürich.

2015 – 2018 **BSc in Mathematics**, *Computational Mathematics Curriculum*, *final grade: 110/110 cum laude*, Università di Pisa.

Thesis and Papers

Dec 2019-pres **Master Thesis**, *Deep neural network approximations for high-dimensional functions*,
Supervisors: Prof. Patrick Cheridito, Prof. Arnulf Jentzen, ETH Zurich.

Feb-Dec 2019 **Semester Paper**, *Deep neural network approximations for high-dimensional first order Kolmogorov PDEs*,
Supervisor: Prof. Arnulf Jentzen, ETH Zurich.

Jan-Jul 2018 **Bachelor Thesis**, *Numerical methods for infinite states Quasi–Birth-and-Death processes (Italian)*,
Supervisor: Prof. Dario Andrea Bini, Università di Pisa.

Experiences

2020 **Teaching Assistant**, *TA in the course: Numerical Methods for Partial Differential Equations*, ETH Zürich.
I am teaching at the exercise lectures of the course. Programming language: C++. Course for, among others: Physics MSc, Data Science MSc, CSE BSc.

2019 **Teaching Assistant**, *TA in the course: Computational Methods in Engineering and Applications*, ETH Zürich.
I taught at the exercise lectures of the course both explaining PDEs approximation techniques and how to use C++ for numerical purposes.

2019 **Teaching Assistant**, *Translator and Proofreader of a book on Calculus*, ETH Zürich.

2016 – 2017 **INdAM Summer Schools in Mathematics**, *for students with the INdAM Merit Scholarships, with scholarships both years*, Perugia.

Awards and Scholarships

2015 – 2018 **Awarded the National INdAM Merit Scholarship**, *ranked 29^{th} among all the student enrolled in a Mathematics bachelor all-over Italy*, renewed per merit for the second and the third year of bachelor.

2019 **Awarded the Intel® Edge AI Scholarship**.

Coding skills

Fluent *C++, C, Matlab,* LaTeX

Experieces *R, Java, Python, OCaml.*

Languages

Native Italian.

Fluent *English*, 7.5/9 IELTS Academic, 2020.

Extra-curricular Activities

currently **Student Project: Machine Learning in Finance**, Zurich.
We are developing algorithms to find optimal strategies in finance and we plan to use it to infer which are the relevant economical factors for our problem.

2017 **Project in Algorithms and Data Structures**, Università di Pisa.
The goal was to code a routing algorithm in C able to compute the shortest circle path between n nodes of the map on http://www.openstreetmap.org/.

Mathematical competitions:

Statistics 2015, 1st place at the Semifinal, 4th at the Final of Italian Statistics Olympiad.

Maths Olympiads 2012–2015, Finalist at the National Individual Competition; Team Member (2012–2014) and Captain (2015) for the National Team Competition (ranked 4th-4th-3rd all-over Italy).

Kangourou 2012, 2014, and 2015, National finalist of the mathematical competition (scoring in the top 5 of my age for the first two years).

Other interests

Sep 2020 Organizing Committee Member of the conference **"Forecasting the future for sustainable development: New Approaches to Modelling and the Science of Prediction"**, *moderator and organizer of the panel on explainable AI*. OECD Paris

Oct 2019 Attended the conference **"Tracking innovation Trajectories in the Complex Economy. Network analysis and big data for risk mitigation"**, *selected by an international call for ideas, with scholarship*.