Andrea Dapor

PhD · Theoretical Physics · Data Science

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About me

I am a theoretical physicist with several years of experience in research, now working as a data scientist and consultant. Everyday I work with clients and collaborators to solve complex problems using my analytical mind, coupled with a deep understanding of advanced modeling and statistical tools.

I believe in the power of data and cutting-edge machine learning technologies to improve the way industry works, as well as to push science and society towards an exciting future.

Experience

Data Scientist, Inverence (Spain) since Oct. 2020

- Work with customers and partners from various industries and academia, analyzing their data and using it to train models with purposes of decision-making, optimization of operations, and risk management. My main focus is on time series modeling and forecast, using mostly Python and SQL.

Scientific Researcher (postdoc), Louisiana State University (USA) Oct. 2018 – Sep. 2020

- Research in the theoretical physics and quantum cosmology, developing simulations of the universe close to the big bang and investigating the fate of black holes singularities.

Scientific Researcher (postdoc), University of Erlangen-Nurnberg (Germany) Oct. 2015 – Sep. 2018

- Research in the theoretical physics and quantum gravity, solving mathematical and numerical problems to determine the evolution of discrete geometries within the theory of loop quantum gravity.

Education

PhD in Theoretical Physics, University of Warsaw (Poland) Oct. 2011 – Sep. 2015

MSc in Physics – Summa Cum Laude, University of Trento (Italy) Oct. 2008 – Sep. 2011

BSc in Physics – Summa Cum Laude, University of Trento (Italy) Oct. 2005 – Sep. 2008

Scientific record

20+ scientific papers in peer-reviewed journals details

30+ talks at international conferences and invited seminars

Principal Investigator of Preludium grant funded by Polish National Science Centre (2013-2015)

Teaching assistant of 10+ advanced courses in mathematics and physics at various universities

BSc supervisor at University of Erlangen-Nurnberg (academic year 2016/17)

Skills

Programming skills

In my work, I manipulate large datasets on a daily basis. I make extensive use of:

- Python (numpy, scipy, matplotlib, pandas, sklearn)
- SQL
- Linux, LaTeX, Mathematica

Mathematical skills

My research background in theoretical physics made me develop a deep understanding of many aspects of mathematics. Among others:

- statistics and probability theory
- linear algebra, calculus and differential geometry

Modelling skills

In my current position, I have been working on several projects with varying degree of modelling abstraction. I have gained experience in:

- ARIMA models for time series modelling and forecasting
- Markov Chain Monte Carlo and Bayesian approach to parameter estimation
- regression models (linear, piecewise linear, polynomial)
- classification models (logistic regression, neural networks)

Consulting skills

Throughout my career, I have been exposed to teamwork (both as member and leader), and in my current position I often work with clients. This experience made me develop:

- teamwork and cooperation skills
- project-management, organizational and decision-making skills
- communication, confidence in public speaking, clarity of exposition
- capacity of conveying complex concepts to different audiences

Soft skills

I am a naturally curious person, who takes pleasure in learning new things and loves to challenge any preconceived knowledge. Some of my defining characteristics are:

- curiosity, inquisitiveness and scientific creativity
- problem solving, analytical mind, logical reasoning
- capacity of learning new subjects at a fast pace
- adaptability and versatility

Languages

- English (fluent)
- Spanish (proficient)
- Italian (native)

Projects

Examples of projects I have worked on in my current position:

- Simulation of vaccination strategies in the Covid19 crisis, for the Carlos III Health Institute of the Spanish Department of Health. Our contribution was instrumental in the decisions of the authorities.
- Scheduling optimization of medical appointments, for Quirónprevención.
- Mathematical modeling of the Mar Menor ecosystem (with the goal of developing a tool for early detection and prevention of anoxic crisis in the context of eutrophication), for the Dirección General del Mar Menor, in collaboration with the University of Murcia.

“Superheroes” – A deep learning end-to-end project

A project I came up with to test my skills in deep learning applied to image recognition, as well as deployment of an online app: it is a convolutional neural network trained to classify superheroes based on images.

- Online app – the model is deployed here: feel free to test it!
- GitHub repo – the notebook used to train the model can be found here