

António Leitão

MATHEMATICIAN · DATA SCIENTIST

Portuguese nationality, born 04/07/1996

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EDUCATION

M.Sc. in Data Science and Advanced Analytics

NOVA UNIVERSITY LISBON (INFORMATION MANAGEMENT SCHOOL)

- Thesis: Topological Expressiveness of Neural Networks
- Supervisor: Dr. Giovanni Petri

Lisbon, Portugal

Sep. 2018 - Ongoing

Erasmus Studies Program

GEORG-AUGUST UNIVERSITÄT

Full scholarship awarded for a 6-months study period at Göttingen University

Göttingen, Germany

Mar. 2017 - Jul. 2017

B.Sc. in Mathematics

NOVA UNIVERSITY LISBON

Lisbon, Portugal

Sep. 2014 - Aug. 2018

International Baccalaureate Diploma Programme

COLÉGIO PLANALTO

Lisbon, Portugal

Sep. 2011 - May. 2014

PUBLICATIONS

- 2020 **Giovanni Petri and António Leitão**, "On the Topological Expressive Power of Neural Networks" In: *NeurIPS 2020 Workshop on Topological Data Analysis and Beyond*, <https://openreview.net/forum?id=I44kJPuvqPD> *Online*
- 2020 **António Leitão and Giovanni Petri**, "On the Topological Complexity of Decision Boundaries" In: *50th Scientific Meeting of the Italian Statistical Society*, pp. 588-594 *Pisa, Italy*

REVIEW WORK

PROCEEDINGS OF THE ROYAL SOCIETY A: MATHEMATICAL, PHYSICAL AND ENGINEERING SCIENCES

Junior Reviewer

TEACHING

Masters' of Data Science and Advanced Analytics

NOVA UNIVERSITY OF LISBON (INFORMATION MANAGEMENT SCHOOL)

- Invited teaching assistant of Data Visualization. The expected student outcome was the creation of online interactive dashboards for efficient visualization of high volumes of data.

Lisbon, Portugal

Sep. 2019 - Feb. 2020

EXPERIENCE

Feedzai

RESEARCH INTERN

- Responsible for the research project "EMO": creating machine learning methods for detecting money laundering entities in transaction datasets.

Lisbon, Portugal

Jun. 2021 - Ongoing

ISI Foundation

RESEARCH INTERN

- Full scholarship awarded to intern at the research group of Topological Data Analysis. (collective initiatives halted due to Covid-19.)
- Responsible for the research project "Topology of Learning": initiative to understand Neural Networks through Algebraic Topology, under the supervision of Dr. Giovanni Petri, since Feb. 2019.



Turin, Italy

Feb. 2020 - Jun. 2020

HONORS & AWARDS

2021	5th Place , ICLR Computational Geometry & Topology Challenge 2021	<i>Online</i>
2020	2nd Place , Nokathon 2020: Nokia's international machine learning competition	<i>Online</i>
2019	1st Place , Nokathon 2019: Nokia's international machine learning competition	<i>Lisbon, Portugal</i>
2019	Scholarship , Erasmus scholarship to pursue an internship in ISI Foundation and the University of Turin	<i>Turin, Italy</i>
2018	Scholarship , Winner of a fully funded scholarship to participate in a 10-day workshop on Geographical Information Systems (GIS) in Delft University.	<i>Delft, Netherlands</i>
2016	Scholarship , Merit scholarship to fund a 6 months erasmus study period at Georg-August Universität in Göttingen, Germany.	<i>Göttingen, Germany</i>

LANGUAGES

Portuguese		Native
English		Fluent
Italian		Advanced
German		Adept (A2)

PROGRAMMING

Python		Proficient
LaTeX		Comfortable
C		Currently Learning

DBSampler: Library to sample decision boundaries.

PYTHON

- Library containing a method to sample decision boundaries of classification problems (binary and multiclass).
- Points are uniformly sampled from the edges of the Condensed Voronoi Diagram.
- Is theoretically exact (proof of convergence) and fast even in high dimensions. Also available in PyPI.

EXTRACURRICULAR ACTIVITY

SPORTS

Volleyball

Lisbon, Portugal

AEFT

20014 - 2019

- Played volleyball for the university team AEFCT in the national university championship.
- Awarded best player of the university in the first year. In charge of player scouting for the subsequent years.

SPORT LISBOA E BENFICA (S.L.B.)

2006 - 2014

- Played volleyball for Sport Lisboa e Benfica, winning most regional championships and consistently achieving good ranking in the national championship.
- Briefly participated in the Portuguese National Volleyball team (under-18).

MUSIC

Conservatory of Lisbon

Lisbon, Portugal

STUDENT

2008 - 2014

- Studied piano, musical theory and jazz. Achieved grade 5 on piano.

OTHER PROJECTS

Ongoing

- Self-taught in guitar and bass guitar. Currently learning the drums.
- Still involved in multiple amateur rock bands, some of which haven't failed yet.

VOLUNTEERING

João Paulo II center for the disabled.

Fátima, Portugal

VOLUNTEER

- Volunteer work in the center for disabled in Fátima, Portugal for several weeks over a period of 3 years

Santa Casa da Misericórdia.

Azores, Portugal

VOLUNTEER

July 2015

- Volunteer work on a geriatric center in Azores, Portugal for several weeks.