

#### MATHEMATICIAN · DATA SCIENTIST

Portuguese nationality, born 04/07/1996

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#### EDUCATION \_\_\_

#### M.Sc. in Data Science and Advanced Analytics

Lisbon, Portugal

NOVA University Lisbon (Information Management School)

Sep. 2018 - Ongoing

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

### **Erasmus Studies Program**

Göttingen, Germany

Lisbon, Portugal

GEORG-AUGUST UNIVERSITÄT Mar. 2017 - Jul. 2017

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

**B.Sc. in Mathematics**Lisbon, Portugal

NOVA University Lisbon Sep. 2014 - Aug. 2018

**International Baccalaureate Diploma Programme** 

Sep. 2011 - May. 2014

Colégio Planalto

### Publications \_\_\_\_

Giovanni Petri and António Leitão, "On the Topological Expressive Power of

2020 Neural Networks" In: NeurIPS 2020 Workshop on Topological Data Analysis and

Online

Beyond, https://openreview.net/forum?id=I44kJPuvqPD

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

2020

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

### TEACHING \_\_\_\_

#### **Masters' of Data Science and Advanced Analytics**

Lisbon, Portugal

NOVA University of Lisbon (Information Management School)

Sep. 2019 - Feb. 2020

 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.

### EXPERIENCE \_\_\_\_\_

Feedzai Lisbon, Portugal

RESEARCH INTERN

Jun. 2021 - Ongoing

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

ISI Foundation Turin, Italy

RESEARCH INTERN

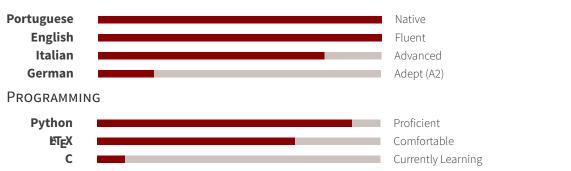
Feb. 2020 - Jun. 2020

- 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.

# Honors & Awards \_\_\_\_\_

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

### LANGUAGES.



## O 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**AEFT

Lisbon, Portugal
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.