

# PEDRO F DA COSTA

## PhD Researcher - Machine Learning Applied to Neurosciences

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## EDUCATION

King's College London & Birkbeck College

**PhD Researcher - Computational Neuroscience**

📅 April 2019 – April 2022

📍 London, UK

Leveraging methods in **active sampling**, **autoML** and **Bayesian optimization** to build new tools for neuroscience research.

Building new computational models of learning based on **embodied agents** and **reinforcement learning**.

Imperial College London

**Computational Cognitive and Clinical Neuroimaging Lab**

📅 Jan 2018 – Sep 2018

📍 London, UK

MSc Thesis - Visiting Student

Mark = 18/20

Instituto Superior Técnico

**MSc in Biomedical Engineering**

📅 Oct 2016 – Sep 2018

📍 Lisboa, PT

**Mark = 18/20 (Hons)**

Some included modules:

- Machine Learning
- Decision Support Models
- Health Informatics
- Information Systems and Databases

## COMPLEMENTARY EDUCATION

Machine Learning Summer School - Tübingen

📅 July 2020

📍 online

Neuromatch Academy - Observer's track

📅 August 2020

📍 online

## ACHIEVEMENTS

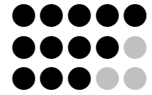
- Designed and **delivered lectures on Machine Learning** as part of MSc Neurosciences @ Kings College London
- Created, debugged, released and maintained an open-source **scikit-learn compliant version of the RVM algorithm**.
- PAC2019 Predicting brain age competition- **Top 10 out of 79 teams**
- King's College Neuroimaging Hackathon (2019) - **1st Place**
- Kaggle APTOS 2019 Blindness detection - Top 30%
- Roller Hockey National University League - 1st Place (2015)
- Captained the Portuguese Floorball University Team in the World University Championship (2016)

## SKILLS

Python, C#, TF, Keras, sklearn

Unity, ML Agents, MATLAB

PyTorch



## HONORS & AWARDS

- Awarded EU Marie Skłodowska-Curie Actions (MSCA ITN) Grant - Horizon 2020
- Awarded Merit Certificate at IST for the academic years 16/17 and 17/18
- Awarded 2 Erasmus travel grant (2016 - Istanbul, 2018 - London)

## WORK EXPERIENCE

Heart Genetics

**Internship - Data scientist**

📅 2017

📍 Lisbon, PT

Applied skills in Machine Learning, statistics and R by studying correlations of imputed variants with real genetic data.

Champalimaud Foundation

**Internship - Research Assistant**

📅 2015

📍 Lisbon, PT

Gave support in task development to two PhD projects in Renart's Lab

AIESEC India

**International Volunteering**

📅 2015

📍 Ahmedabad, In

## PROJECTS

**Sklearn - RVM**

- Created and maintain an open-source RVM implementation in Python, fully compatible with sklearn, which currently does not provide the algorithm.

**ModelZoom**

- Developed an AutoML solution, through space of machine learning algorithms that, by means of Bayesian Optimization, finds the optimal models to solve any dataset in a small number of iterations.

**Cognitive Tablet Battery**

- Developed a tablet battery of cognitive tasks aimed at phenotyping children with Autism.

## PUBLICATIONS

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- Costa, P. da, J. Dafflon, and W. Pinaya (2020). "Brain-age prediction using shallow machine learning: Predictive Analytics Competition 2019". In: *In review*. URL: <https://bit.ly/33F1YxY>.
  - Costa, P. da, R. Lorenz, et al. (2020). "Bayesian Optimization for real-time, automatic design of face stimuli in human-centred research". In: *ICML2020 - WS AutoML*. URL: [https://www.automl.org/wp-content/uploads/2020/07/AutoML\\_2020\\_paper\\_58.pdf](https://www.automl.org/wp-content/uploads/2020/07/AutoML_2020_paper_58.pdf).
  - Pinaya, W. et al. (2020). "Normative modelling using deep autoencoders: a multi-cohort study on mild cognitive impairment and Alzheimer's disease". In: *bioRxiv*. URL: <https://www.biorxiv.org/content/10.1101/2020.02.10.931824v1.full.pdf>.
  - Costa, P. da, S. Popescu, et al. (2019). "Elucidating Cognitive Processes Using LSTMs". In: *CCN2019*. URL: <https://ccneuro.org/2019/proceedings/0000272.pdf>.
  - Costa, P. da, R. Nunes, and R. Leech (2018). "Application of Artificial Neural Networks for modelling cognitive dimensions". In: *Master Thesis*. URL: [https://pedroferreiradacosta.github.io/files/daCosta\\_Master\\_thesis.pdf](https://pedroferreiradacosta.github.io/files/daCosta_Master_thesis.pdf).
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