

# André Carvalho

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<b>Website</b>	My Portfolio - <a href="https://afcarvalho1991.github.io">https://afcarvalho1991.github.io</a>
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<b>Date of Birth</b>	18 <sup>th</sup> December 1991
<b>Nationality</b>	Portuguese

## Currently

**2019 Data Scientist and Researcher - Instituto Soldadura e Qualidade**

**- Application and research of deep neural networks solutions, to identify olive tree plagues using European Space Agency (ESA) hyperspectral satellite imagery;**

*Responsible for Planing and dev. of the System architecture (front-end and backend);  
Development of deep learning models;  
Front-end development.*

*Technologies and frameworks: TensorFlow, keras, keras-tuner, OpenCV, rasterio, Matplotlib, Multiprocessing, Flask, Angular, TypeScript, HTML, CSS, Git;*

**- Application and research of deep neural networks solutions, to improve Deep Sea Mining of mineral resources, using European Space Agency (ESA) hyperspectral satellite imagery;**

*Responsible for System architecture (front-end and backend) Planing, Coordination and Dev.  
Development of deep learning models;  
Design and Dev. of REST API for front-end and back-end communication;  
Communication with clients, to share progresses ideas and deciding the following steps;*

*Technologies and frameworks: TensorFlow, keras, keras-tuner, OpenCV, rasterio, Matplotlib, Multiprocessing, Flask, Angular, TypeScript, HTML, CSS, Git;*

**- Predictive maintenance to identify machinery malfunctions at an industrial scale.**

*Dev. of database architecture i.e. relational model;  
Dev. of web-based management platform (deploy by me via EC2 - AWS);  
Dev. of machine learning models to predict possible malfunctions.*

*Communication with clients in order to decided the following development stages;  
Technologies and frameworks: Scikit-learn, Matplotlib, Flask, created REST-API, PostgreSQL, Angular, TypeScript, OpenMaint, HTML, CSS, Latex, Git;*

**- Optimization of water supply systems distribution network using machine-learning models.**

*Software engineer role:*

- Restructure and refactor existing code to a OOP approach to support future developments;
- Prepare and implement code to be used in high-performance computing infrastructures;
- Use AWS cloud computing services to speedup a custom optimization algorithm;  
to improve pump scheduling.

*Technologies and frameworks: keras, numpy, sklearn, multiprocessing, Matplotlib, AWS, Flask, created REST-API, PostgreSQL, Angular, TypeScript, OpenMaint, HTML, CSS, Latex, Git;*

## Past Experience

- 2017-2018** Lab Professor - Foundations of Programming  
**1 Semester** *Instituto Superior Técnico, Lisbon, Portugal*  
Lectures on topics such as Python3, Object-oriented programming, Lists, HashTables, Map-Reduce
- 2016-2017** Lab Professor - Introduction to Algorithms and Data Structures  
**2 Semester** *Instituto Superior Técnico, Lisbon, Portugal*  
Lectures on topics: C language, iterative and recursive algorithms, Sorting algorithms: direct sort, selection sort, bubble sort, quick sort, merge sort. Data types: stacks, queues, priority queues and heaps. Searching in trees. Dynamic data structures. Binary trees. Balanced binary trees. Hash tables. Collision resolution by chaining and open addressing. Double hashing.

## Skills e Experience

- Machine-learning, Computer Vision, Deep Learning
- Python, C, Typescript, Java, Matlab, Bash (among others)
- Angular, Flask(+waitress), Node.JS, JS, HTML, CSS
- ElasticSearch, MongoDB, SQL, S3
- Docker, Kubernetes, AWS, HPC, Hadoop, Spark
- Git, Unit Testing, Jira, Teams, Slack, Discord, Agile

## Education

- 2015-2019** PhD Information Systems and Computer Engineering - Instituto Superior Técnico  
*Passed with distinction*  
*Focused on improving recommendation systems computational efficiency by leveraging Fuzzy Fingerprints.*
- 2012-2014** MSc Telecommunications and Informatics Engineering - Instituto Superior Técnico  
*Thesis grade 17*  
*Final grade 16*  
*Development of a recommendation system that identifies relevant keywords and maps them for each user.*
- 2009-2012** BSc Computer Networks and Multimedia Engineering - Inst. Superior de Engenharia de Lisboa  
*Third Year Project grade 18*  
*Final grade 15*  
*Car track stopwatch using computer vision and machine learning models to identifying different cars that pass by.*

## Publications

- **Tag-Based User Fuzzy Fingerprints for Recommender Systems** *[url]*  
May, 2018
- **Fuzzy fingerprints for item-based collaborative filtering** *[url]*  
*Nominated for Best Student Paper Award*  
September, 2017
- **Combining ratings and item descriptions in recommendation systems using fuzzy fingerprints** *[url]*  
July, 2017

## Personal interests

- **Tennis**
- **Financial markets**
- **Travelling**
- **Photography**