



# Álvaro Campos

## ABOUT ME

I am enthusiastic about space and telecommunications because they are areas where there is a lot of innovation and every year there are more and more challenges to be overcome. I have always been very interested in internal security and intelligence "games". So far my path has been versatile and with many positive surprises, I started working a year before starting college to help with household and university expenses. I have dedicated the majority of my research endeavours to the captivating realm of Synthetic Aperture Radar (SAR). I am deeply enchanted by the potential of SAR technology and its ability to improve the world we live in.

Throughout most of my life I have played federated sports, I started playing soccer from 8 to 14 years old and at 18 years old I started playing indoor and beach volleyball.

## WORK EXPERIENCE

Lisboa, Portugal

### SALES

- Managing
- Buying the product
- Selling

28 FEB 2023 – CURRENT Lisboa, Portugal

### TELECOMS ENGINEER SOLVIT

- Dimensioning GSM-R telecoms networks for the Portuguese railways systems.
- Selecting antennas for base stations.
- Implementation of propagation models for radio coverage systems, specifically the ITM model.
- Creation of a broadcast channel decoder for Telecommunications using a Software Defined Radio (SDR) and GNU.

## EDUCATION AND TRAINING

1 SEP 2018 – 1 JUN 2021 Lisboa, Portugal

### BACHELOR'S DEGREE IN ELECTRONICS, COMPUTERS AND TELECOMMUNICATION Instituto Superior de Engenharia de Lisboa - ISEL

**Address** Rua Conselheiro Emídio Navarro, 1, 1959-007 , Lisboa, Portugal

1 JUL 2021 – 15 DEC 2023 Lisboa, Portugal

### MASTER'S DEGREE IN ELECTRONICS AND TELECOMMUNICATIONS Instituto Superior de Engenharia de Lisboa - ISEL

**Address** 1959-007 , Lisboa, Portugal

## LANGUAGE SKILLS

Mother tongue(s): **PORTUGUESE**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
<b>ENGLISH</b>	C1	C1	B2	B2	C1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

## ● DIGITAL SKILLS

### Microsoft

Microsoft Excel | Microsoft Word | Microsoft Powerpoint

### Programming

MatLab | C | Java | Git | Python Language - Basic knowledge

### Data Bases

SQL | MySQL

### Antennas

CST - studio suite

### Synthetic Aperture Radar Products

SNAP Desktop

### Software Defined Radio's

GNU Radio

## ● ADDITIONAL INFORMATION

### PROJECTS

1 JAN 2021 – 1 SEP 2021

#### **Bachelor's degree final Project on Vessel detection using Synthetic Aperture Radar Images**

Currently Portugal has the third largest Maritime Exclusive zone (EEZ), in the European Union (EU), at 1,727,408 km<sup>2</sup>. In 2009 Portugal submitted a claim to extend its jurisdiction over additional 2.15 million m<sup>2</sup> resulting in a maritime territory of more than 3,877,408 kilometers making it hard for Portugal's Navy to patrol at all hours.

The purpose of this project is to create a system for detection of vessels with suspected activity with the objective of improving surveillance of Portugal's EEZ using European Space Agency's (ESA) Sentinel-1 C-band, Synthetic Aperture Radar's (SAR) images. The SAR data will be correlated with Automatic Identification System (AIS) to detect suspicious activities like smuggling and illegal fishing on high seas. To validate the developed system we started with optimization of the parameters for automatic vessel detection, followed by location tests by cross-correlating data from SAR with data from AIS. The obtained results are promising and illustrate the applicability of the proposed methodology.

This project equipped me with competencies in SAR, AIS, signal processing and detection algorithms.

12 JUL 2022 – CURRENT

#### **Master's degree Dissertation on Computationally efficient vessel classification using shallow neural networks on SAR data**

Ship detection and recognition in SAR images has become an important topic in research in recent years.

This project presents a computationally efficient algorithm for classifying vessels in Synthetic Aperture Radar (SAR) images using Neural Networks (NN) with a reduced number of hidden layers, also called shallow networks. The use of shallow neural networks for vessel classification will be divided into two main steps: feature extraction and classification. Feature extraction aims to lessen the burden deep neural networks cause on computational resources by extracting key features beforehand from the SAR image. The low computational requirements make this implementation compatible with onboard vessel systems and real-time applications. The classification is implemented using a shallow neural network that uses parameters obtained from feature extraction algorithms to classify the vessels present in the radar image.

Feature extraction processes data from the Open SAR Ship dataset in order to obtain the vessel's various features, such as ship length, width, mean, standard deviation and the number of scatter points present on the ship.

This project further improved my insight into how SAR systems work and how to utilize, process, and classify SAR images. Gave me competencies in the use of statistical methods to extract the most effective information from SAR images and also how to use and explore the usabilities of Artificial intelligence in SAR classification systems.

## **HOBBIES AND INTERESTS**

**Volleyball** I played volleyball for five years on a team called Clube Nacional de Ginastica. This experience made me have a better knowledge of how a team works and how to deal with the people who make it. This experience also made me realize, that with hard work everything is within my reach.

**Volleyball Coach** Recently, I embarked on a coaching role for a senior women's volleyball team, a journey that has significantly contributed to my professional skill set. This experience has been instrumental in enhancing my abilities in team development, effective mentoring, precise time management, astute leadership, and adept problem-solving.

**Driving license** Driving License: Category B (Automobile) - Held since [2020]