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27 anos

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isep Instituto Superior de
Engenharia do Porto

U. PORTO
FEUP FACULDADE DE ENGENHARIA
UNIVERSIDADE DO PORTO

SAXION
UNIVERSITY OF
APPLIED SCIENCES

INESCTEC
ASSOCIATE LABORATORY
PORTUGAL

I played basketball as a federated athlete for 12 years, was part of a student association, and volunteered at sports events, so I'm a disciplined and determined person. I got my professional experience in robotics when I co-founded a start-up (ANT Robotics) in partnership with INESC TEC. Since then, I've been part of the Aerial team of the Autonomous Systems Laboratory at INESC TEC's Center for Robotics and System Automation. At the same time, I'm currently pursuing my PhD in Reinforcement Learning oriented to UAV localization and navigation in cluttered GPS-denied environments.

Being persistent, dedicated, and organized, I envision a career that evolves and challenges me in competitive and innovative companies.

Professional Experience

INVITED ASSISTANT PROFESSOR | ISEP | OCTOBER 2023-PRESENT

CTesP; Bachelor's in Electrotechnical and Computer Engineering; Master's in Autonomous Systems; Master's in Artificial Intelligence.

RESEARCHER | INESC TEC | JANUARY 2023-PRESENT

Development of Indoor and Outdoor UAVs. Design and conceptualization of [MANTIS UAV](#) for indoor logistics operations. Implementation of Reinforcement Learning obstacle avoidance on the UAVs.

Implementation of a landing and charging pad for the DJI M350 with a custom payload with AI capabilities for PV panels inspection.



Projects: [Drivolution](#), [Nexus](#), [Overwatch](#)

UAV ML Perception, Localization, and Navigation in indoor and outdoor scenarios.

Co-Supervisor: Master's Thesis in Autonomous Systems

<https://www.inesctec.pt/en/centres/cras>

ROBOTICS ENGINEER | ANT ROBOTICS/AMORINS, LDA | INESC TEC | 2020-2022

Spin-off Co-Founder.

Development of robotic platforms in protected crops.
Conceptualization, design, implementation, and validation of robotic platforms developed.

[Acrobat Agricultural Robot](#)



Promoting the project and introducing the MVP to potential investors.

Academic Background

PHD IN ELECTRONICS AND COMPUTER ENGINEERING | 2023-PRESENT | FACULDADE DE ENGENHARIA DA UNIVERSIDADE DO PORTO

Development of an AI Framework for UAVs in Indoor Inventory Systems. (Deep VIO, Deep Reinforcement Learning Navigation, Collision Avoidance, Routing and Efficiency Algorithms)

MASTER IN AUTONOMOUS SYSTEMS | 2020-2022 | INSTITUTO SUPERIOR DE ENGENHARIA DO PORTO | AUTONOMOUS SYSTEMS LABORATORY

- Grade: 18 out of 20.
- Dissertation - Development of an ISO-compliant Collision Avoidance system based on Visual Perception and Machine Learning for integration into robotic platforms for agriculture.

EUROPEAN PROJECT SEMESTER | HEART-ON-A-CHIP | 2020 | SAXION UNIVERSITY OF APPLIED SCIENCES

Development of a chip capable of simulating the human cellular environment to attach cardiac cells in full activity. The cells will then be subjected to tests with drugs and medications to study their influence on the heartbeat. The goal is to replace animal testing and directly implement the platform (chip and control station) in laboratory and hospital environments.

DEGREE IN ELECTRICAL AND COMPUTER ENGINEERING | 2017-2020 | INSTITUTO SUPERIOR DE ENGENHARIA DO PORTO

Technical Skills

- Linux: Ubuntu, Fedora
- Programming: C, C++, Python, CUDA, Tensorflow, Pytorch
- Real-Time Operating Systems: FreeRTOS
- Robot operative system ROS/ROS2, Gazebo Simulation, PX4, LiDAR and Camera Fusion Perception,
- Simulation: Gazebo, Isaac Gym, Genesis
- Monocular Visual Inertial Odometry, AI, ML, Deep Reinforcement Learning Navigation, and Control.
- Assembly and C oriented to microcontrollers, Atmega, STM32, ESP32
- Communication Protocols: CAN, CANOpen, RS232, RS485, Modbus, Ethernet, SPI, I2C
- CAD Software: Solidworks, Fusion 360, Altium, EasyEDA, Eagle, Kicad
- Design, manufacture, and soldering of Printed Circuit Boards
- Git
- 3D Modeling, 3D Printing
- English: Advanced
- Spanish: Intermediate

Licenses e Certifications

- UAV License – Open A1-A2-A3
- UAV License – Specific STS-01/STS-02
- STCW

Publications

- ORCID: <https://orcid.org/0009-0008-6007-3726>

- Scopus: <https://www.scopus.com/authid/detail.uri?authorId=57889560200>
- ResearchGate: https://www.researchgate.net/profile/Joao_Martins133

Soft Skills

LIDERSHIP

- I was a member of the student association at Escola Secundária da Maia while I was at secondary school, which showed my ability to make decisions and guide a group of 25 people.
- I coordinated the Electrical Engineering team in developing the Heart-on-a-chip project to stimulate heart cells in partnership with the company [Micronit](#).
- I coordinated the development of a prototype robotic platform up to the MVP stage and subsequent pilots for validation.

COMMUNICATION

- I volunteered as a guide for sports teams and was responsible for planning their schedules and accompanying them to the National School Sports Championships.
- I developed my network of contacts during the last project I was involved in, as it was a start-up, and gave me contact with investors and other entrepreneurs, both national and international. I collaborated with companies such as [Varta](#) and [Velodyne](#) to test their prototypes on robotic platforms and ROS implementations.
- I teach at ISEP, giving theoretical lectures and practical classes for undergraduate students.



Highlights / Hobbies

NACIONAL ROBOTICS FESTIVAL 2019 – 2022

- Participation in the "Factory 4.0" competition (senior division). Navigation test in a warehouse environment to transport a box with a robot measuring no more than 30x30 centimeters, only locating it with ARUCO tags scattered around the warehouse.

SPORTS

- I've played federated basketball for 12 years, having played for teams in the 1st League and Pro League, as well as the 1st and 2nd division national championships, and was district champion at the age of 14.
- Currently playing Padel.

COLLEGE BASKETBALL

- I was a member of the Students' Association of the Higher Institute of Engineering of Porto basketball team and played in the National University Championship.

AGRICULTURAL DRONES

- I develop UAV solutions for significant farming associations in northern Portugal.
- The leading service is spraying phytosanitary products on crops.

