

Passionate and seasoned engineer with over 15 years of hands-on experience in cutting-edge international companies and organizations like DYSON, the European Patent Office, SAR, BOSCH, and BIAL. Adept at developing intricate and resilient systems across electronics, software, and robotics. Energized by tackling challenging projects and collaborating with dynamic teams in vibrant, stimulating environments.

Technical Skills

- Algorithm development and mathematical modelling
- C/C++, Matlab, Python, Linux, ROS, Gazebo
- Motion control, Trajectory tracking, Path planning, Sensor fusion, Mapping, Localisation
- Computer vision, Object detection/recognition, Machine learning, Deep learning
- Portuguese (native), English (proficient), French (intermediate), Spanish (intermediate), German (A2)

Projects

DYSON 360 EYE ROBOT VACUUM CLEANER – *using 360 degrees vision system for autonomous navigation*

- Developed several algorithms for motion control, path planning, mapping, localisation and perception taking into account the geometry, kinematic constraints and limited CPU resources over 3 generations of products

GOLF BALL PICKER ROBOT – *mobile robot for picking balls autonomously in golf driving ranges*

- Developed new path planning algorithm for multiple non-mandatory targets, TWIN-RRT* which enables efficient asymptotically optimal trajectories to be generated in real time for up to 20,000 targets

BOT'N ROLL ONE – *mobile educational robot platform*

- Developed 4 generations of a mobile robotic platform from concept to product over 7 years which became a standard educational platform used in Roboparty® and Robocup™ international events

Professional Experience

DYSON – *Principal Robotics Algorithms Engineer*

MALMESBURY, UK | Oct. 2014 – Present

- Lead investigations in 6 areas: path planning, motion control, sensing, localization, simulation and mapping
- Worked with the architecture team to identify functional requirements in several mobile robotic projects
- Collaborated with test teams to define testing strategies for new algorithms and behaviours
- Provided technical leadership over 5 years in teams of 5-12 people
- Submitted 3 patent applications (GB2618104A, WO2022157474A1, US11829147B2)

EUROPEAN PATENT OFFICE - *Patent Examiner*

THE HAGUE, THE NETHERLANDS | Oct. 2013 – Oct. 2014

- Assessed over 20 patent applications in the field of computer devices and human interfaces
- Provided detailed reports on state-of-the-art technologies

UNIV. OF GRONINGEN - *Guest Researcher*

GRONINGEN, THE NETHERLANDS | Mar. 2013 – Sep. 2013

- Developed algorithms, simulations and path planning methods such as TWIN-RRT* for mobile field robots
- 2 publications and PhD thesis: "Golf ball picker robot: path generation in unstructured environments towards multiple targets"

SAR – *Project Developer*

GUIMARÃES, PORTUGAL | Sep. 2006 – Feb. 2013

- Investigated and implemented sensor-guided mobile robotics solutions for 2 innovative products
- Developed software for computer vision, motion control and path-planning projects
- Submitted 3 patent applications: PT106417, WO2009022929 (A3), WO2007035122 (A1)
- Co-organized several Roboparty® events, workshops and exhibitions
- Managed and coordinated an European Project Application with a consortium of 3 companies

Education

UDACITY - *Self-Driving Car Engineer Nanodegree*

October 2017

MIT PORTUGAL - UNIVERSITY OF MINHO - *Leaders for Technical Industries, Ph.D.*

January 2015

UNIVERSITY OF MINHO - *Industrial Electronics and Computer Engineer, Licentiate Degree*

July 2006

UNIVERSITY OF COIMBRA - *Biochemistry, Licentiate Degree*

December 1999