

NINO PEREIRA

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Enthusiastic engineer with more than 10 years of industrial experience working in highly innovative international companies and organisations (DYSON, European Patent Office, SAR, BOSH, BIAL) developing complex and robust systems in the field of electronics, software and robotics. Driven by challenging projects and working with a motivated team in stimulating environments. Looking into a role in automotive industry on self-driving cars.

Technical Summary

ADVANCED

- Algorithm development and Mathematical modelling
- C / C++ , Matlab, Python programming languages
- Motion Control, Trajectory tracking, Path Planning
- Computer Vision

INTERMEDIATE

- Machine Learning, Deep learning
- Sensor fusion
- Mapping and Localisation
- Object detection/recognition

Most Recent Projects

DYSON 360 EYE ROBOT VACUUM CLEANER

using 360 degrees vision system for autonomous navigation

- Developed a new path deformation algorithm which combines both motion control and trajectory tracking functionalities taking into account the exact geometry of the robot and its kinematic constraints

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

Languages

- Portuguese (native)
- English (proficient)
- French (intermediate)
- Spanish (intermediate)
- German (A2)

Online Presence

- [Linkedin.com/in/ninopereira](https://www.linkedin.com/in/ninopereira)
- [Github.com/ninopereira](https://github.com/ninopereira)
- [Google scholar](#)
- [Youtube personal channel](#)
- [Youtube educational channel](#)
- [Stackoverflow](#)

Most Recent Professional Experience

DYSON, LTD, MALMESBURY, UK

Advanced Robotics Algorithms Engineer, October 2014 – Present

- Lead algorithmic investigations in 5 areas including path planning, motion control, sensor arrangement, 3D simulation modelling and mapping;
- Research algorithmic solutions in 3 projects and develop prototype demonstrators;
- Present reports to management team about key enabler and risk areas of proposed algorithmic solutions;
- Work with the architecture team to identify functional requirements in 3 projects;
- Liaise with functional teams to define relevant domain strategies;
- Collaborate with test teams to define testing strategies for new algorithms;
- Work with relevant implementation domains early in the development lifecycle to ensure timely and complete knowledge transfer;
- Provide complete documentation and investigative support;
- Guide and mentor fellow algorithm engineers.

PATENT EXAMINER, THE HAGUE, HOLLAND

European Patent Office, October 2013 – October 2014

- Assessed over 20 patent applications in the field of computer devices and human interfaces;
- Provided detailed reports on state-of-the-art technologies and communicated with applicants on any objections to the grant of a patent;

UNIVERSITY OF GRONINGEN, GRONINGEN, HOLLAND

Guest Researcher, March 2013 – September 2013

- Developed several algorithms, simulations and advanced path planning methods such as TWIN-RRT* for mobile field robots;
- 2 publications;

SAR – SOLUÇÕES DE AUTOMAÇÃO E ROBÓTICA, GUIMARÃES, PORTUGAL

Project Developer, September 2006 – February 2013

- Investigated and implemented sensor-guided mobile robotics solutions for 2 innovative products;
- Performed mathematical modelling and algorithm development to achieve real-time sensor-guided robot motions;
- Developed software for computer vision, motion control and path-planning projects;
- Submitted 3 patent applications;
- Managed and coordinated an European Project Application with a consortium of 2 companies and a University as partners;
- Launched mobile robotics educational platform Bot'n Roll ONE.

Most Relevant Education

UDACITY INC, MOUNTAIN VIEW, CALIFORNIA, USA

Self-driving Car Engineer Nanodegree, October 2016 – October 2017

- Expanded skills through interactive projects in deep learning, computer vision, control, localisation, path planning, machine learning, sensor fusion, safety and systems;
- Successfully completed over 13 projects;

MIT PORTUGAL - UNIVERSITY OF MINHO, GUIMARÃES, PORTUGAL

PhD in Leaders for Technical Industries, October 2008 – January 2015

Golf Ball Picker Robot: path generation in unstructured environments towards multiple targets

- Completed the MIT-Portugal doctoral program in Leaders for Technical Industries (LTI) within the Engineering Design and Advanced Manufacturing (EDAM) focus area;
- Successfully submitted projects within an Engineering Systems framework on Product Development, Systems Engineering, Product and Process Innovation, Complex Decision-making and Leadership;
- Thesis on the development of a mobile field robot with focus on new algorithms for path planning - “Golf Ball Picker Robot: path generation in unstructured environments towards multiple targets”.

UNIVERSITY OF MINHO, GUIMARÃES, PORTUGAL

Licenciate Degree – Industrial Electronics and Computer Engineer, October 2001 – July 2006

- Gained competences in the domain of Electronics and Computers Engineering, namely design and implement electronic systems and/or devices in several specialization areas: Automation, Control and Robotics; Energy Systems; Computer Technology, Robotics and Telecommunication Systems;
- Joined the Automation and Robotics Laboratory research group and took part in several national and international robotic competitions on wheeled mobile cooperative robots.

Patents

- “Sistema para cadeira de rodas omnidireccional motorizada, roda omnidireccional e utilização dos mesmos” – (Portuguese patent number 103 354, submitted on 21st September 2005)
- International Patent “Omnidirectional Electric Wheelchair Control System”, n.º 2006000022, (PCT/PT2006/000022), on 21st September 2006. Published on 29th March 2007 under WO 2007/035122
- “Sistema de Recolha de Bolas de Golfe Totalmente Autónomo ou Remotamente Operado” – (Portuguese patent 103 807, on 13th August 2007). Published on the Journal of Industrial Property no. 8/2009, edited on 13th January 2009, under the 66º of “Código da Propriedade Industrial”.
- Fully Autonomous or Remotely Operated Golf Ball Picking System – (International Patent number PCT/PT2008/000031, on 18th August 2008).
- “SIMPLO - Hybrid Real-Virtual Electronic Information System” – Submitted on December 2011, (conceded on September 2014)

Publications

- Pereira, Nino, et al. "Path planning towards non-compulsory multiple targets using TWIN-RRT." *Industrial Robot: An International Journal* 43.4 (2016): 370-379.
- Ribeiro, António Fernando, et al. "Learning Robotics for youngsters-the RoboParty experience." *Robot 2015: Second Iberian Robotics Conference-Advances in robotics* (vol. 1). Springer, 2016.
- Pereira, Nino, et al. "A golf ball picking robot design and development." *15th International Conference on Experimental Mechanics*. 2012.
- Pereira, N., et al., Autonomous golf ball picking robot design and development. *Industrial Robot: An International Journal*, 2012. 39(6): p. 541-550.
- Ribeiro, António Fernando, et al. "Bot'n roll robotic kit as a learning tool for youngsters." *9th International Conference on Hands on Science (HSCI'2012)*. Universidade do Minho, 2012.
- Lopes, G., F. Ribeiro, and N. Pereira, Catadioptric system optimisation for omnidirectional robocup MSL robots. 2011.
- Ribeiro, F., et al., High accuracy navigation in unknown environment using adaptive control. *RoboCup 2007: Robot Soccer World Cup XI*, 2008: p. 312-319.
- Ribeiro, A.F., et al., Optimized robot strategy, ball filters and new referee whistle hardware filter. 2007.
- Ribeiro, A.F., et al., Mobile robot construction for edutainment application. 2007.
- Ribeiro, A.F.M., et al., Omnidirectional Electric Wheelchair Control System. 2006, Google Patents.
- Ribeiro, A.F., et al., Cooperative Behaviour of specific tasks in multi-agent systems and robot control using dynamic approach. 2006.
- Pereira, N., et al., Computer-controlled model railroad. 2006.
- Ribeiro, A.F., et al., Optimization of fast moving robots and implementation of I2C protocol to control electronic devices. 2005.
- Ribeiro, A.F., et al., Vision, kinematics and game strategy in multi-robot systems like MSL RoboCup. 2005.
- Ribeiro, A.F., et al., Controlling omni-directional wheels of a MSL robocup autonomous mobile robot. 2004.
- Ribeiro, A.F., et al., Three omni-directional wheels control on a mobile robot. 2004.

Honors and Awards

- 1st place at Robotics National Festival Robotica, at Freebots Competition, 2006
- Honor medal awarded by Guimarães Town Mayor, 2006
- Honor medal awarded by Fafe Town Mayor, 2006
- Best Student in Industrial Electronics and Computer Engineering at University of Minho (2003,2004,2006)
- 1st place at BES National Innovation Contest with « Omnidireccional Wheelchair, 2005
- 1st place at Inventuminho National Innovation Contest with « Omnidireccional Wheelchair, 2005
- 3rd place at Inventuminho National Innovation Contest with "SIR – Intelligent Traffic Signaling System", 2005
- 1st place at « 1º Encontro de Robótica do Algarve », Portugal on Medium Soccer Robots Competition, 2005
- 1st place at Robótica 2006 – Guimarães, Portugal on Medium Football Robots Competition,
- 1st place at Robocup 2005 – Osaka, Japan, in "Technical Challenge" of Medium Soccer Robots,
- 1st place at Robótica 2005 – Coimbra, Portugal on Medium Soccer Robots Competition,
- 1st place at Robótica 2004 – Porto, Portugal on Medium Soccer Robots Competition