

Carlos Cardoso

Software Engineer

(+351) 934 009 080



carlos.esf.cardoso@gmail.com



[/in/cesfcardoso](https://www.linkedin.com/in/cesfcardoso)



[carlos-cardoso.github.io](https://github.com/carlos-cardoso)



github.com/carlos-cardoso

Summary & Skills

I'm a software engineer with over seven years of research experience at VisLab, the Computer Vision Laboratory in ISR/LarSYS, and publications as a first author in IEEE conferences such as ICRA/ICDL/IROS. I also have experience programming secure internet-connected embedded systems. In addition, I'm a lifelong Unix/Linux user and open-source enthusiast (see my side [projects](#)). Currently, I'm finishing my Ph.D. in Human-Robot Interaction at Técnico Lisboa while working in VisLab under the supervision of Professor Alexandre Bernardino.

I got experience building, shipping, and supporting software for high-reliability products in use worldwide. I applied statistics, data modeling, and mathematical analysis to develop novel algorithms to make robots learn from large datasets of real-world data. I have debugged complex robots and embedded systems and developed creative solutions to solve practical, real-world problems. Recently I have been eagerly studying Rust and applying this knowledge to my embedded and robotics research projects.

Skills: C/C++; Rust; Python; Unix/Linux; bash; Git; Docker; Javascript; Java; Machine Learning; Embedded Systems; SQL; ROS; Robotics

Experience

VisLab ISR / Researcher

October 2016 - Present, Lisbon, Portugal

The Robot Vision Laboratory (VisLab) of ISR/LarSYS is a top graded research institution in Portugal. I researched Machine Learning applied to Physical Human-Robot Interaction, focusing on tasks such as Human-Robot handover and handshaking. I published papers as a first author in top IEEE conferences (see [publications](#)). In addition, I supervised MSc and BSc students in robotics and deep learning projects and contributed to **open-source projects in C++, Python**. Postgraduate Courses: **Convex Optimization** (19/20); **Deep Structured Learning** (17/20); **Statistical Learning** (17/20); Outreach and Teaching Skills (17/20).

Técnico Lisboa - University of Lisbon / Teaching Assistant

October 2017 - February 2018, Lisbon, Portugal

I worked as a TA for the MSc. level course on Real-Time **Distributed Control Systems (SCDTR)**. Created an evaluation sheet generator (**javascript**) that fetches student information from the university's database. Helped students with different backgrounds (Electrical Eng. and Aerospace Eng.) control lights according to a distributed system of luminance sensor readings (ADMM method running on Microcontrollers). Evaluated the student's final projects.

Feerica S.A. / Embedded Software Engineer

January 2016 - August 2016, Mafra, Portugal

Feerica is a Portuguese technology company providing security systems to Banks and major ATM manufacturers (Diebold Nixdorf, Hitachi, Fujitsu, etc.) At Feerica, I developed firmware for secure and connected Cash-in-Transit (CIT) Systems with ink protection. Integrated sensors (accelerometers, temperature, light, impact), peripherals (EEPROMs, RTC, GPS, 4G GSM, ePaper, LCD, fingerprint) over 1Wire, I2C, and UART. Used **low-level C/C++** code, running in ARM microprocessors and **Python** for **automating build systems** and **system configurations**. Implemented Behavior Trees for **code generation** and customization of business logic; FFTs of the accelerometer signal to detect Siren malfunctions in the field; Accelerometer signal processing for classification of CIT movement (walking/stationary/vehicle) and fraud detection. I got to work in a **high responsibility position** where I had to adapt to challenging requirements and deadlines for clients **worldwide**.

Education

Técnico Lisboa / PhD. in Robotics
October 2016 - Present, Lisbon, Portugal

Técnico Lisboa / BSc and MSc in Electrical & Computer Engineering
April 2016, Lisbon, Portugal
MsC Thesis: Reinforcement Learning for a Ping Pong Playing Robot. Grade 18/20

IIT: Instituto Italiano di Tecnologia/ iCub Summer School
July 2015, Sestri Levante, Italy

Örebro University/ Lucia AI & Robotics Winter School
December 2016, Örebro, Sweden

Publications

IEEE-RAS ICRA 2015 Seattle, USA. 2015 - C. Cardoso, L. Jamone and A. Bernardino, A novel approach to dynamic movement imitation based on quadratic programming. (first author) [link](#)

MSc Thesis @ Técnico Lisboa, 2016 - C. Cardoso, "Robot Skills: Imitation and Exploration Learning - Dynamic Movement Primitives and Reinforcement Learning for a Ping Pong playing Robot" [link](#)

IEEE-RAS ICARSC 2017 Coimbra, Portugal. 2017 - C. Cardoso and A. Bernardino, Adaptive Non-Maximal Suppression Filtering for Online Exploration Learning with Cost-Regularized Kernel Regression. (first author) [link](#)

Workshop at RO-MAN 2017 Lisboa, Portugal. - Avelino, Joao, Paulino, Tiago, Cardoso, Carlos, Nunes, Ricardo, Moreno, Plinio and Bernardino, Alexandre. "Human-aware natural handshaking using tactile sensors for Vizzy, a social robot." (co-author) [link](#)

Paladyn Journal of Behavioral Robotics 2018 - Avelino, João, Paulino, Tiago, Cardoso, Carlos, Nunes, Ricardo, Moreno, Plinio and Bernardino, Alexandre. "Towards natural handshakes for social robots: human-aware hand grasps using tactile sensors." (co-author) [link](#)

IEEE ICDL-EpiRob 2019 Oslo, Norway - A. Dehban, C. Cardoso, P. Vicente, A. Bernardino and J. Santos-Victor, "Robotic Interactive Physics Parameters Estimator (RIPPE)," (co-first author, *equal contribution) [link](#)

EgoVIP workshop at IROS 2021 Prague, Czech Republic - C. Cardoso*, A. Bernardino, "Bayesian Interaction Primitives for Robot to Human Handover with Giver-Egocentric Observations" (first author)

IEEE ICDL 2022 London, United Kingdom - C. Cardoso*, A. Bernardino, "Exploiting a Statistical Body Model for Handover Interaction Primitives" (first author)

Research Projects/Grants

European Research Council Advanced Grant "ORIENT"
November 2020 - November 2021

University of Lisbon - Fully Funded PhD. Scholarship
October 2017 - October 2020

ISR/LARSyS Strategic Funds from FCT [UID/EEA/5009/2013]
October 2016 - October 2017

European Project: POETICON++ Robots Need Language
December 2014 - December 2015

