JOSÉ DUARTE LOPES

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EDUCATION

Instituto Superior Técnico, Lisboa   *September 2023 – December 2025*

Master in Electrical and Computer Engineering

Final Grade: 18/20

MSc Thesis: Densifying SLAM for Real-Time 3D Reconstruction with Embedded GPUs (Grade: 19/20)

Technologies: C++, Vulkan

Danmarks Tekniske Universitet, Copenhagen   *Spring 2024*

Erasmus Student for 2024 Spring Semester

Instituto Superior Técnico, Lisboa   *September 2020 - July 2023*

Bachelor's Degree in Physics Engineering

Merit Board Student

Integrated Project in Engineering Physics - Automatic Control of a Two Axis Parabolic Mirror for a Solar Light Concentrator

WORK EXPERIENCE

Teaching Assistant   January 2025 - March 2025

Department of Physics   *Instituto Superior Técnico, Lisbon, Portugal*

· Deployed and managed online section of Experimental Physics course, with randomized experiments and automatic grading (Python).

e-lab: Remote Laboratories   October 2023 - Dezember 2024

Pedagogic Innovation Projects Grant   *Instituto Superior Técnico, Lisbon, Portugal*

· Developed quizzes and deployed remote controlled experiments to the Framework for Remote Experiments in Education (FREE) (Python, C++).
· Established communication with partner universities to maintain worldwide network of remote experiments.

ACTIVITIES

HackerSchool   May 2022 - Present

Board Member - Development Team Lead   *Instituto Superior Técnico, Lisbon, Portugal*

· Overhauled the website, making it more accessible for any member to make contributions. Managed the server and digital infrastructure, deployed self-hosted internal tools (Go, JavaScript).
· Pico-Synth: fully functional FM digital synthesizer based on RPi-Pico micro-controller, with 64 voice polyphony, adjustable envelopes, fixed-point low-pass filters, sequencer, sample playback from SD-Card, USB MIDI and USB mass storage device. Programmed the firmware and designed 3D printed case (C++, CAD).
· HS-MIDI: upgrading an old keyboard to feature MIDI capabilities using an Arduino; wrote all the firmware and completed the wiring, making it work as intended (C++).

Athens Course - Finite Element Modeling of Vibrating Elastic Structures
March 2023
Participant
TU Delft, Delft, Netherlands

· Attended one week intensive course at TU Delft, alongside international students, about Finite Element Modeling.
· Developed a Finite Element Model Engine from scratch capable of performing simulations on simple geometry (Julia).

Propagation of Error Calculator (errorpropagation.com)
April 2023
Co-Creator & Lead Developer

· Co-Created and Developed website that offers automatic calculation of the error propagation for any expression, helping hundreds of engineering students with their lab courses (JavaScript, Python).
· Won second place at Jornadas de Engenharia Física (JEF) Awards for best project and presentation.

Best Course - The Engine so Advanced it's Unreal
August 2022 - September 2022
Participant
University of Novi Sad, Novi Sad, Serbia

· Attended course organized by BEST Novi Sad, at University of Novi Sad, alongside multidisciplinary group of international students, about Unreal Engine; built a room for an Architecture Demo and a more complex game (C++).

AfterSchool - Programming
May 2022 - June 2022
Instructor

· Gave weekly classes and continuous support about the Python programming language to a group of middle school students new to programming (Python).

WebSummit Lisbon
November 2021 / November 2022
Volunteer
FIL, Lisbon, Portugal

· Two time volunteer at the WebSummit Lisbon Event

INTERESTS

Additive Manufacturing Processes
Electric Bassc

TECHNICAL STRENGTHS

Languages	Portuguese, English
Computer Languages	C, C++, Python, JavaScript, Go, Rust
Tools	Vim, Git, Vulkan, Docker, CAD