João de Jesus Costa

Software Engineer

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About me

I'm a software engineer with a Master's in Informatics Engineering. I like to develop personal software projects, take care of my servers, and write on my blog.

Skills

- C - C++
- Linux
- Python
- Docker
- Java
- JavaScript - TypeScript

Language skills

Portuguese	**Native**
English	**C1**

Soft skills

problem-solving flexibility communication

Bio

I like working in almost everything software related. I have a somewhat odd mix of work experiences, but my longest held positions mainly focused on embedded software development and safety-critical systems.

I get most of my knowledge/experience from personal projects outside of work. These projects involve informatics and electronics, spanning the whole tech stack. I'm also a big fan of open-source software and try to contribute to it as much as I can.

In my free time, you can find me working on personal projects, reading, or playing video games. I'm also a big fan of paintball and cycling.

Education

2021 - 2023 **Master in Informatics Engineering** — Faculty of Engineering of the University of Porto (FEUP)
Final grade 18/20

2018 - 2021 **Bachelor of Science** — Faculty of Engineering of the University of Porto (FEUP)
Final grade 18/20

Work experience

2024→present **Software Engineer** — Synopsys
Software Engineer developing tools and CI/CD pipelines to support the development of drivers for baremetal systems.
Tech: C, Python, Bash

2024 **Backend Software Engineer** — Codacy
Backend Software Engineer working on a new security-focused product of the company. Worked mostly with Scala code-bases. Tasks included migrating parts of old backend components, implementing new endpoints, and refactoring databases. Also did some frontend work in React.
Short stay due to the company's financial problems and mass layoffs.
Tech: Scala, Java, React

2023→2024 **Software Engineer** — Civil Engineering Department of FEUP
Solo freelancer work developing monitoring tools and pipelines for construction work that was taking place in the metro tunnels of the city of Porto. The objective was to acquire and process real-time sensor data and guarantee the safety of the workers and the historical buildings in the area.
Worked part-time, mostly during weekends, while working at Critical Software.
Tech: Python, C#

2022→2024 **Embedded Software Engineer** — Critical Software
Embedded Software Engineer working on the verification and validation of operating systems for the aerospace industry. Responsible for writing requirements, test cases, and test procedures on a team of 20 people.
Started as an intern working on my master's thesis.
Tech: C, Python, Arm ASM

2020→2021 **Web Game Developer** — LusoInfo
Member of a 4 people freelancer team tasked with porting a collection of flash games to the Unity game engine. The games are part of an educational game suite for school children.
Worked part-time, after school hours, during university.
Tech: Unity, C#

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Awards

2023 **2nd place on AI for banking competition from Millennium**

2018 **University scholarship from Amorim Cork Composites**

2018 **Highest grade in informatics from highschool**

Projects

2023 **Octree implementation for SLAM** — Project's GitHub page

An Octree implementation in C++ for use in SLAM application for an autonomous submarine. This project was developed for the university's robotics research institute. The objective was improving the performance of existing Octree implementations for the current application without compromising the spatial efficiency and accuracy.

2022 **TraSMAPy** — Project's GitHub page

A Python API for the SUMO traffic simulator with the objective of allowing researchers with limited knowledge in informatics and programming to model road traffic simulations. The API abstracts lower level concepts of the simulator and builds new concepts to make it easier to build agent-based simulations,

2022 **µKernel** — Project's GitHub page

A real-time micro-kernel for the Arduino UNO supporting POSIX style tasks, mutexes, EDF scheduling, task sleeping, and assertions. Responsible for most of the implementation and research for the project.

2021 **Dry Beans classification** — Project's GitHub page

Model (unsupervised learning) to classify beans between seven classes with similar features. This served as an opportunity to gain experience in data science and machine learning libraries for python. Responsible for part of the data analysis and treatment, the application of unsupervised learning algorithms, and the comparison of the results.

2021 **Segmentation Fault** — Project's GitHub page

Online QA web application resembling StackOverflow. This project was developed with the purpose of learning Bootstrap, Docker, Laravel, and PostgreSQL. Responsible for the Docker image, database design and indexes, most of the front-end, and accessibility/design choices.

2020-2021 **MAWW** — Project's GitHub page

Program that allows users (using X11) on Linux to have animated backgrounds, regardless of their compositor. This project is available as an Arch Linux package on the AUR.

Publications

2023 **Verification of real-time operating system for DO-178C compliance**

My Master's thesis. The objective of my thesis was to analyze and optimize the processes of the aviation real-time OS verification team at Critical Software. This work resulted in several internal tools and optimizations that streamlined the development and saved money.