José Bonança Pedreira

MSc Researcher in Hybrid Modeling
Published author and creator of HYBpy
+351-934-559-276 joko.bp.17@gmail.com pedreira-jose joko1712 Portfolio

Education

Universidade Autónoma de Lisboa | BS, Computer Science and Engineering 2018 - 2021

- Studied subjects such as Object-oriented programming, Robotics, Web Development, Artificial Intelligence and Database Applications.
- The most notable project was the final bachelor's degree project (essentially a smaller thesis) where I developed a user-centric mobile application for managing/creating shopping lists. I got a score of 17/20 the highest score of that year.

NOVA School of Science and Technology | MSc, Computer Science and Engineering 2021 - 2026

- In the degree I completed courses like Web Search and Data Mining, Visualisation and Data Analytics, Bioinformatics, Games and Simulation, Machine Learning and Deep Learning.

Professional Experience

Software Developer Intern | Linde (AI Department) Dec 2022 – Dec 2023

- Full-stack development in the Artificial Intelligence department, contributing to internal and client-facing web applications.
- Implemented and maintained front-end features across multiple websites, and developed backend components for a conversational agent (API integration and data persistence).

Researcher | NOVA.id.FCT Oct 2025 – Present

- Conduct research in hybrid modeling and software frameworks for biological systems, extending my MSc thesis work at NOVA School of Science and Technology.

Publications

HYBpy: A web-based framework for hybrid modeling of biological systems Dec 2025

Digital Chemical Engineering, Vol. 17, Article 100278 DOI: 10.1016/j.dche.2025.100278

- First-author peer-reviewed journal article introducing HYBpy, a web-based framework to build, train, and evaluate hybrid models for biological systems.
- Demonstrates the framework on literature case studies and provides an implementation to streamline hybrid modeling workflows for non-expert users.

Projects

HYBpy | Python, React.js, FireBase, Flask Apr 2023 - Dez 2024

Master thesis

- Master's thesis developing HYBpy, an open-source, user-friendly framework for hybrid models. Awarded a final score of 17/20.
- Combines ML algorithms with mechanistic models.
- Features a web-based interface built with React.js, a Flask backend and Firebase database.
- Supports predictive modeling, process monitoring, and model predictive control, enhancing process systems engineering and systems biology.
- Delivered a lecture on HYBpy at ECCE-ECAB 2025, showcasing its applications in hybrid modeling for process systems engineering.
- Presented as a poster in ESBES 2024 Symposium. `https://www.esbes2024.org/`
- The website of the tool is `www.hybpy.com`

Wha-Wha | JavaScript, React-Native, FireBase

Bachelor's Degree Final Project Mar 2021 - May 2021

- Created a phone app that allows the user to create lists, modify/add items to a shopping list by using their voice. Used Google Firebase to implement the back-end of the user logins and data.

Achievements & Certifications

- Machine Learning Specialization.
- The Complete React Native + Hooks Course.
- SQL for Data Science.
- Introduction to Data Science in Python
- Become a Python Master
- Game Theory