JOÃO GARCIA FARINHA

Data Science R&D Scientist Engineer

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SUMMARY

A multidisciplinary R&D scientist and engineer specializing in statistical modeling, machine learning, and the implementation of complex theoretical concepts into functional, data-driven systems. Expertise in leading the full innovation lifecycle, from fundamental research and data analysis to prototyping, validation, and production. Demonstrated success in developing AI-powered solutions, time-series analysis, and physical simulations. Seeking to leverage my end-to-end development and data science skills to solve ambitious R&D challenges.

EXPERIENCE

PhD Researcher in Neural Engineering

Universidade de Lisboa

2025 – Present Lisbon, Portugal

- Leading end-to-end research on novel sensor systems, developing **ML models for time-series signal analysis** and sensor fusion.
- Investigating sensor fusion techniques to solve core interpretability issues in neurotechnology, bridging hardware data acquisition with software analysis.
- First author of a submitted systematic review on EEG noise reduction methodologies.

Founder & Lead Innovator

MMB Venture

2023 – Present Lisbon, Portugal

- Spearheaded the complete product development lifecycle from fundamental research to patent filing and production planning.
- Managed the entire business stack including R&D, regulatory strategy, financial modeling, and market analysis.

Teaching Assistant: Electronics & Instrumentation

Universidade de Lisboa

2022 – 2023 Lisbon, Portugal

- Led weekly lab sessions for over 100 students on electronics and electric circuits.
- Developed new lab experiments that bridged theoretical concepts with hands-on prototyping.
- Mentored students in solving theoretical problems and practical design challenges.

TECHNICAL SKILLS

Engineering & Prototyping

Soldering
Engineering Design (FreeCAD)
3D Modeling (Blender)
PCB Design (KiCad & SPICE)
Rapid Prototyping

Research & Development

Physical Simulation (ODE/PDE, FMA)
Numerical Methods
Signal Processing
Sensor Fusion
Algorithm Design
Geospatial Analysis (QGIS)
Monte Carlo Simulation

Programming & Data

Python (6+ years, NumPy, Pandas, Scikit-learn)
Machine Learning (PyTorch/TF)
Data Pipelines (Spark)
Time-Series Analysis
Statistical Modeling
Data Analysis & Visualization
Version Control (Git)

Systems & Cloud

Cloud DevOps (GCloud, AWS, Azure)
Containerization (Docker, Kubernetes)
Microservices Architecture
Distributed Systems

EDUCATION

PhD in Computer Science

Universidade de Lisboa

2025 – Present

Thesis: Advancing Concept Identification via Novel EEG/fNIRS Device Development

MSc in Informatics

Universidade de Lisboa

2023 – 2025

RELEVANT R&D PROJECTS

Braille Anywhere - Portable Tactile Display

MSc Thesis | Patent Pending

- **Development:** Engineered a full-stack solution: custom PCB (KiCad), optimized firmware (C++), 3D-printed enclosure (FreeCAD), and a companion Android app for control (Kotlin).
- **Relevance:** The principles of designing and prototyping a novel, low-cost sensor system are directly transferable to developing custom oceanographic equipment and underwater sensors.
- **End Result:** Filed a patent for commercialization. Successfully demonstrated a functional prototype that significantly reduced cost and size compared to existing solutions.

Shallow Water Simulation Toolkit

Research Assistant

- **Research:** Aimed to create a more accessible numerical model for teaching oceanographic concepts.
- **Development:** Implemented finite-difference solvers for partial differential equations (PDEs) in Python.
- **Relevance:** Directly demonstrates experience in oceanographic modeling, a core part of CMRE's research. This shows you can translate theoretical concepts into functional scientific software.
- **End Result:** The toolkit was **adopted by the university's department** and used for over 2 years, a direct validation of its utility and effectiveness.

Multivariable Meteorological Cluster Network

BSc Final Project

- **Research:** Formulated a hypothesis that a network of low-cost sensors could achieve higher-resolution data than traditional systems.
- **Development:** Architected and built a proof-of-concept system, including sensor nodes, a cloud data pipeline (AWS), a real-time video analysis stack (Python, OpenCV), and a time-series database.
- **Relevance:** This project showcases your ability to design and implement a distributed sensor network, a core requirement for operating autonomous underwater systems and collecting data at sea.
- Processed and fused high-volume data from multiple sensor streams, including cloud movement, temperature, pressure, and force.

Monte Carlo Simulation for Probabilistic Modeling

Personal Project

- **Development:** Designed and implemented a Monte Carlo simulation in **Python** to computationally estimate Pi, demonstrating proficiency in probabilistic sampling and algorithm design.
- **Relevance:** The use of Monte Carlo simulation is a foundational skill in the analysis of complex, uncertain systems, which is highly relevant for modeling oceanographic phenomena.

Thesis: *"Braille Anywhere: A Portable and Affordable Tactile Display"* - Patent Pending

BSc in Meteorology, Oceanography & Geophysics

Universidade de Lisboa

2019 – 2023

Final Grade: 15/20

- Ranked **1st/92** in Algebra, **1st/86** in Numerical Laboratory, **3rd/56** in Numerical Modeling.

CERTIFICATIONS & LANGUAGES

Portuguese (Native) ●●●●●

English (Fluent) ●●●●●

ScienceIN2Business® Innovation Program

ULisboa

2023

Boat Pilot License

West Coast Lisbon Sailing Center

2023

ACADEMIC ACTIVITIES

Braining Seminars

Multiple European Universities

2025

- Attended a series of collaborative seminars on brain drug screening as part of the ERASMUS+ Programme.
- Gained exposure to interdisciplinary research and international academic collaboration in a scientific context.

- **End Result:** Successfully validated the principles of convergence and uncertainty quantification through a large-scale simulation, providing hands-on experience with a powerful modeling technique.

Multiple Micro-services Cloud Deployment

Personal Project

- **Development:** Engineered a multi-service cloud architecture that simulated a data analysis company, deploying services on **GCloud, AWS, and Azure**.
- **Technology:** Used **Docker** and **Kubernetes** for containerization and orchestration, establishing a robust and scalable infrastructure.
- **Relevance:** Your experience with cloud deployment, microservices, and distributed systems is crucial for managing and processing the vast amounts of data collected during sea trials and from underwater systems.