João Garcia Farinha

R&D & Scientist Engineer

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Multidisciplinary R&D engineer building end-to-end systems: sensor hardware, ML pipelines, cloud deployment. Currently developing neural interfaces at ULisboa.

Education

2025–Present **PhD in Computer Science**, *FCUL*, Universidade de Lisboa
Thesis: Advancing concept identification via novel EEG/fNIRS device development and analysis pipelines.
- **Focus:** Brain-Computer Interfaces (BCI), physiological signal analysis (EEG/fNIRS), and multimodal machine learning.
- **Objective:** Developing novel pipelines for signal processing and transfer learning in neurotechnology.

2023–2025 **MSc in Informatics**, *FCUL*, Universidade de Lisboa
Thesis: Braille Anywhere – A Portable and Affordable Tactile Display (Patent Pending)
- **Key Achievement:** End-to-end prototype development combining custom hardware design and software engineering.
- **Skills Applied:** Embedded systems, circuit design, and full-stack mobile integration.

2019–2023 **BSc in Meteorology, Oceanography & Geophysics**, *FCUL*, Universidade de Lisboa
Ranked 1st/92 in Algebra, 1st/86 in Numerical Laboratory, 3rd/56 in Numerical Modeling.
- Developed strong foundation in physical system simulations and numerical data analysis.

Experience

Research & Development

2023–Present **Founder & Lead Innovator**, *MMB Venture*, Lisbon
Spearheaded complete product development lifecycle from fundamental research to patent filing and production planning. Managed entire business stack including R&D, regulatory strategy, financial modeling, and market analysis.

2022–2023 **Teaching Assistant – Electronics & Electric Circuits**, *Universidade de Lisboa*, Lisbon
Taught 64 students (Meteorology + Environment Engineering) electronics/circuits via bi-weekly labs, exercises, and R&D projects. Designed experiments blending circuit theory with embedded prototyping.

Languages

Portuguese	Native
English	C2
French	A1+
Japanese	A1

Technical Skills

Programming	Python (6+ yrs), C, Go, Kotlin
Machine Learning	PyTorch, TensorFlow, Spark
Engineering	Hardware-Software Integration, PCB Design (KiCad), Prototyping
Cloud & DevOps	AWS, GCloud, Azure, Docker, Kubernetes
Data Science	NumPy, Pandas, Scikit-learn, Large-scale graph/network analysis
Neuroscience & Signals	BCI, EEG/fNIRS Processing, Physiological Signal Analysis, Sensor Fusion
Specialized	ODE/PDE Solvers, 3D Modeling (FreeCAD, Blender), CFD
Version Control	Git, Distributed Systems, Microservices Architecture

Certifications

Innovation Program	ScienceIN2Business Innovation Program (ULisboa, 2023)
Pilot License	Local Skipper License (Patrão Local) (West Coast Lisbon Sailing Center, 2023)

Academic Activities

International Seminars	Braining Seminars at Multiple European Universities (2024–2025) – ERASMUS+ Programme, neuroscience methods dissemination focus
International Seminars	Walter E. Dandy Neurosurgical Society (2024–2025) – Seminars on Brain surgery and neurosciences focus

Key R&D Projects

2025 **Pipeline for bibliometric analysis**, *Research*, Lisbon

Developed a pipeline to process and analyze a citation graph of 33k papers into 1M+ nodes and tens of millions of edges (each with $\geq$30 citations), including network construction, cleaning, and computation of centrality/community metrics.

Technologies: CUDA, Graph networks, Python, Matplotlib, Pandas, Dataframes

2023–2025 **Braille Anywhere – Portable Tactile Display**, *MSc Thesis – Patent Pending*, Lisbon

Engineered full-stack solution: custom PCB design (KiCad), optimized firmware (C), 3D-printed enclosure (FreeCAD), Android companion app (Kotlin). Filed patent for commercialization; demonstrated functional prototype significantly reducing cost and size versus existing commercial solutions.

Technologies: KiCad, C/C++, FreeCAD, Kotlin, Embedded Hardware

2023 **Multi-Service Cloud Deployment**, *Personal Project*, Lisbon

Engineered multi-service cloud architecture across GCloud, AWS, and Azure using Docker and Kubernetes. Established robust, scalable infrastructure for distributed data analysis and microservices.

Technologies: GCloud, AWS, Azure, Docker, Kubernetes, Go, Microservices, Kafka, Grafana

2022 **Shallow Water Simulation Toolkit**, *Educational Tool*, Lisbon

Implemented finite-difference solvers for partial differential equations (PDEs) in Python to create accessible oceanographic numerical models. Toolkit adopted by and used for 2+ years.

Technologies: Python, NumPy, PDE Solvers, Numerical Methods

2021–2023 **Multivariable Meteorological Cluster Network**, *BSc Final Project*, Lisbon

Architected distributed sensor network with cloud data pipeline (AWS), real-time video analysis (Python, OpenCV), time-series database. Processed and fused high-volume data from multiple sensor streams (temperature, pressure, force, cloud movement).

Technologies: Python, C/C++, AWS, OpenCV, Sensor Networks, Data Fusion