JOÃO PEDRO GOMES DOS SANTOS

PhD in Computational Neuroscience | Scientific Software Developer

jpgs.12390@gmail.com | +351 963264450 | Copenhagen, DK / Remote | joaosantos1992 | jpgsantos
Portuguese (EU Citizen)

PROFESSIONAL SUMMARY

Computational Neuroscience PhD graduate with 8 years of experience in mathematical modeling (ODEs) and developing robust, reusable scientific software (MATLAB). Proven ability in implementing complex algorithms and tackling analytical challenges. Eager to apply computational and problem-solving skills to innovative projects in neurotech, scientific computing, or AI/ML.

EXPERIENCE

PhD Researcher (Computational Neuroscience)

University of Porto / Karolinska Institutet / KTH Royal Institute of Technology/ SciLifeLab

Jan 2016 – Mar 2025 | Porto, PT / Stockholm, SE

Thesis: A workflow for developing biochemical pathway models using ordinary differential equations.

- Developed **Subcellular_Workflow**: a modular, FAIR-compliant MATLAB framework for ODE-based biochemical pathway modeling (simulation, analysis, parameterization).
- Implemented algorithms from literature: parameter estimation, local and global sensitivity analysis, and profile likelihood analysis.
- Validated workflow on complex benchmark models (neuroscience/systems biology).
- Authored documentation (ReadTheDocs) and managed Git/GitHub collaboration.
- Published results in a ***peer-reviewed article in Neuroinformatics***.

Research Scholar

UCIBIO @ REQUIMTE, University of Porto

Apr 2015 – Dec 2015 | Porto, PT

Project: Porphyrin Materials Synthesis by Ionic Self-Assembly.

- Conducted synthesis, characterization (spectroscopy), and analysis of porphyrin nanostructures.
- Contributed to research leading to a **publication in *Tetrahedron***.

EDUCATION

PhD, Computational Neuroscience (GABBA Program)

University of Porto (FCUP, ICBAS FMUP)

Jan 2016 – Mar 2025

MSc, Biochemistry

University of Porto (FCUP, ICBAS)

Sep 2013 – Sep 2015

Grade: 16/20

BSc, Biochemistry

University of Porto (FCUP, ICBAS)

Sep 2010 – Jul 2013

Grade: 16/20

SKILLS

Programming Languages

MATLAB (Extensive) | Python (Beginner) | Kotlin (Beginner)

Technical Expertise

Scientific Software Dev | Algorithm Implementation | ODE Modeling | Parameter Estimation | Sensitivity Analysis | Profile Likelihood Analysis | FAIR Principles

Software Tools

Git / GitHub | LaTeX | SimBiology | AI/LLM Tools | Android Dev (Basic)

Languages

Portuguese (Native)
English (Fluent C2)

Key Strengths

- Complex Problem-Solving & Analytical Rigor
- Algorithm Development & Implementation
- Scientific Software Architecture & Usability
- Mathematical Modeling & Simulation Expertise
- Rapid Learning & Adaptability (e.g., Kotlin/Android project)
- Collaboration & Communication

PROJECTS

Subcellular_Workflow (PhD Project)

MATLAB, Python, Git

2016 – 2025

FAIR-compliant framework for ODE biochemical pathway modeling, analysis, and parameterization. Publicly available (**GitHub**, **Docs**).

Chore Division App (Personal Project)

Kotlin, Android Studio

Oct 2024 – Mar 2025

Self-taught mobile development basics (aided by LLMs) to create a functional Android app for personal use.