



# Paulo Medeiros

## Work Experience

- 2018-Present **Scientific Software Developer**, *SMHI*, Norrköping, Sweden  
Software development, testing & optimisation. R&D. Student supervision. Product/user support. Collaboration with national and international groups and consortia.
- 2015-2017 **Postdoctoral Research Associate**, *University of Cambridge*, UK  
Theory of Condensed Matter Group (TCM), Physics Department (Cavendish Lab.).
- 2010-2011 **Guest Research Fellow**, *Linköping University*, Linköping, Sweden  
Computational Physics Division, Department of Physics, Chemistry and Biology (IFM).
- 2007-2008 **Computer Lab Technician**, *Institute of Physics*, Salvador, Brazil  
Management and maintenance of computer hardware, systems and networks.

## Leadership Roles

- 2022-2023 **Project Management, Research & Development**, *SMHI*, Sweden  
*R&D on Quality Control Tools for Observations from Personal Weather Stations.*  
Project description: International collaboration between partners in the Netherlands (KNMI), Norway (Met Norway), Sweden (SMHI) and UK (Met Office), with a research grant from the European Centre for Medium-Range Weather Forecasts (ECMWF).  
Roles: Principal investigator for the Swedish team. Project planning, writing, submission and management. Software development and testing.
- 2022 **Master Thesis Supervision**, *SMHI*, Sweden  
*Precipitation Nowcasting using Deep Neural Networks*, by Valter Fallenius (KTH).

## Education

- 2011-2015 **Ph.D. in Physics**, *Linköping University*, Linköping, Sweden  
Specialisation in **Theoretical and Computational Physics**
- 2008-2010 **MSc. in Physics**, *Federal University of Bahia*, Salvador, Brazil  
Specialisation in **Solid State and Materials Physics**
- 2004-2008 **BSc. in Physics**, *Federal University of Bahia*, Salvador, Brazil

## General Computer Skills

- Languages Python, Fortran, R, Bash, C, among others. Always learning more.
- Parallelism OpenMP, MPI, multiprocessing
- Profiling cProfile, GNU gprof, Intel Parallel Studio
- Platforms Linux, Mac OS, Windows
- Math Tools Maple, Mathematica, MATLAB
- VCS Git, Subversion, Mercurial

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IDEs VSCode, PyCharm, vim  
Miscellaneous Test-Driven Development, CI/CD, Makefiles, Autotools, LaTeX

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## Selected Open-Source Software

- Since 2023 **pyRobBot**, *python*, <https://github.com/paulovcmedeiros/pyRobBot>  
User interface to chat with GPT large language models (OpenAI API) over voice, web-based chat app or terminal, all with access to real-time data from the internet.
- Since 2017 **Obsmon**, *R*, <https://github.com/Hirlam/obsmon>  
User-friendly database explorer and GUI tool for analysis, visualisation and monitoring of large amounts of data from meteorological observations. Used operationally by many meteorological institutes across Europe via the HIRLAM and ACCORD consortia.
- Since 2014 **BandUP**, *Fortran*, <https://github.com/band-unfolding/bandup>  
Tool for the quantum mechanical study of the electronic structure of realistic materials. Very popular in the materials science and condensed matter communities, so far gathering more than 800 citations in peer-reviewed scientific publications.

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## Selected Courses/Workshops

- *Machine learning for numerical weather predictions and climate services*. ECMWF (online, 2021)
- *19th Workshop on high performance computing in meteorology*. ECMWF (online, 2021)
- *Introduction to GPU programming: When and how to use GPU-acceleration*. Chalmers Center for Computational Science and Engineering (C3SE), Sweden (online, 2020)
- *Advanced numerical methods for earth system modelling*. ECMWF, UK (2019)
- *An Initial Guide to Leadership*. University of Cambridge, UK (2017)
- *Modern Fortran*. NAG & University of Cambridge, UK (2016)

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## Languages

Portuguese Native speaker  
English Full professional proficiency  
Swedish Professional working proficiency

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## Additional Information

- Publications Please visit my Google Scholar profile at <https://scholar.google.se/citations?user=R--GyM4AAAAJ&hl=en> for an updated list of publications and related citation statistics.
- On the News *Scientists construct a stable one-dimensional metallic material*. Interview published in the Research News website of the University of Cambridge, UK (2017).
- Hobbies Music is my main, lifelong hobby. I play multiple instruments in different groups of a variety of styles (*e.g.* funk, soul, disco, pop, Brazilian music, etc). Keyboards were my first door to programming already in the early 2000s, and I am now increasingly interested in applications of artificial intelligence to music.

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