Wilson W. Oliveira de Souza

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I am an undergraduate Geophysics student specializing in Seismic Processing under the supervision of Dr. Ellen de Nazaré, PhD, at the Federal University of Pará (UFPA), within the Seismic Processing Analysis Laboratory (ProSisLab). I am also a researcher at INCT of Criosfera. My research interests include seismic processing and analysis, differentiable numerical simulators, machine learning, numerical modeling, automatic differentiation, and optimization theory.

Experience

- **Meteorological Data Analysis in Tatuoca:** *[Data Filtering - Python, Pandas, and Excel]*

  This project involved processing meteorological backup data from Tatuoca Island to assist in the seismic processing of tides. The seismic data is collected by a highly sensitive device called Geode, which picks up numerous disturbances and collects a significant amount of noise. To reduce this noise, we filtered Wind, Wind Direction, Rainfall, and Solar Radiation data. Python was used to read and filter the data, while Excel was employed for universal data visualization.

- **Passive Seismic Analysis in Tatuoca Island:** *[Processing and Analysis Data - Python, Obspy and others]*

  This project involved a Processing Passive Seismic data with a Influence the Ocean and Tides on Island.

- **Application of Lanczos Spectral Decomposition Method in Multifrequency Magnetotelluric Data Modeling:** *[Numerical Modeling - FEM, Fortran, MatLab, Python]*

  This work aimed to estimate the multifrequency magnetotelluric (MT) field. This estimation is computationally expensive as it is performed for each frequency individually. Additionally, the problem size involves large sparse matrices, which can lead to significant rounding errors. One possible solution to these challenges is applying convergence accelerators. Among several available methods, the Lanczos spectral decomposition method (SLDM) offers a promising alternative.

Education

Academic Qualifications

- **Federal University of Pará (UFPA)** — **Pará**
  Bachelor's in Geophysics — *2022–2025*

Projects

- **Extension Project** *[Science Outreach - Geocientes Project]*

  The "Geocientes" project is a science outreach initiative in the field of Geosciences, studying everything from the Earth's interior to outer space.

- **Teaching Assistantship**

  Physics II and Experimental Lab I/II

Technical and Personal Skills

- **Programming Languages (Data Science):** Python, C++, Fortran, Julia. Familiar with frameworks: PyTorch, TensorFlow, NumPy/Matplotlib/SciPy, GeoPandas.
- **Databases Knowledges:** PHP, MySQL, AWS, and Azure.
- **Industrial Software Proficiency:** MatLab (Intermediate), QGIS (Advanced), PowerBi (Intermediate), MS Office Suite including Project and Excel (Advanced).
- **Soft Skills:** Strong presentation skills, teamwork abilities, effective communication.
- **Language Proficiency:** Fluent in English (C1), conversational proficiency in German (B1).
- **Additional Skills:** Ability to write technical reports, create technical flowcharts, and experience in group project settings.

Courses and Trainings

- **Introduction to Python GIS: Applying Python for Geoprocessing:** This course focuses on using Python for geoprocessing, covering Python's built-in and external modules for data processing and automation, generating results that support routine geoprocessing activities. (Udemy Academy: 10h 27m)