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Department of Statistics, Faculty of Science
3182 Earth Sciences Building, 2207 Main Mall
Vancouver, BC, Canada, V6T1Z4

Dear Members of the Search Committee:

I am writing to apply for the position of Lecturer in the Masters of Data Science Program of the University of British Columbia, as advertised on the website of the Department of Statistics. I am currently a Visiting Research Scholar at the University of Hawai'i in the Department of Geology and Geophysics. My research interests include geophysical inverse problems, scientific software development, and geospatial data visualization.

My research training was in the development of computationally efficient algorithms for solving geophysical inverse problems. The focus of my graduate research was in estimating subsurface density variations from observation of disturbances in the Earth's gravity field (e.g., Uieda and Barbosa, 2012, 2017). Recently, I have been investigating the application of machine learning and data science techniques to geophysical datasets, in particular to long-term GPS measurements (Uieda and Wessel, 2018; github.com/leouieda/aogs2018-gps). I intend to continue my research program in the intersection of geophysics and data science and would welcome collaborations with the Data Science Lab. I would also use this opportunity to establish a relationship the members of the Department of Earth, Ocean and Atmospheric Sciences and the UBC Geophysical Inversion Facility.

To support my research and teaching efforts, I have created the open-source Python library *Fatiando a Terra* (www.fatiando.org). The project uses software development best practices, such as version control and the Github pull request workflow, automated tests and continuous integration, and packaging and distribution through the Python Package Index and conda-forge. My current work at the University of Hawai'i is to develop a Python wrapper library for the *Generic Mapping Tools* (GMT; gmt.soest.hawaii.edu), an open-source software packaged widely used across the Earth, Atmospheric, and Ocean Sciences to process and visualize geospatial data. I have also contributed to other open-source projects, all of which can be accessed through my Github profile (github.com/leouieda).

As a proponent of open and reproducible science, I publish all of the source-code and data

for my first author publications through my research group's Github page (github.com/pinga-lab). To promote reproducible research best practices within the group, I maintain a template (github.com/pinga-lab/paper-template) which is used for creating new research projects. I am interested in exchanging information and learning from the experiences of the Data Science Workflows course of the MDS program.

I have three years of teaching experience from my work as Assistant Professor at the State University of Rio de Janeiro (UERJ), Brazil. I had the opportunity to design two geophysics courses for the Geology program (leouieda.com/teaching/geofisica1.html and leouieda.com/teaching/geofisica2.html) and a programming and numerical methods course for the Oceanography program (leouieda.com/teaching/matematica-especial.html). All three are based on active learning principals and rely heavily on hands-on exercises using Jupyter notebooks, numerical simulations, and real world datasets. Each module of the geophysics courses includes a Jupyter notebook with interactive simulations or real datasets to guide the students through a series of formative and summative assessments (e.g., nbviewer.jupyter.org/github/leouieda/geofisica2/blob/master/notebooks/1-ondas-sismicas.ipynb). The programming course was entirely implemented using Github repositories and Github Classroom (classroom.github.com). Each module has a repository with a group project containing instructions, a Jupyter notebook, and data (github.com/mat-esp). The students submit their work as repositories in a separate Github organization (e.g., github.com/mat-esp-2016). Grading and feedback are provided through Github issues (e.g., github.com/mat-esp/about/issues/259). This workflow allowed me to manage a project-based class with over 70 students as the sole instructor. I have also taught short workshops on Python programming and inverse problems in geophysics. All of my teaching material is available on Github and on my personal website (leouieda.com/teaching). Evidence of my public speaking skills is also publicly available through my talks at the Scipy Conference, which have been recorded and uploaded to YouTube (see leouieda.com/talks).

I look forward to the opportunity to learn from the experience of the MDS faculty and to use my geoscience expertise to expand and enrich the program. I am particularly interested in the Capstone projects, for which I see great potential for collaboration with the mining and oil and gas industries.

Thank you for your consideration,

Leonardo Uieda

P.S. Please find attached the contact information for three references.

References for Leonardo Uieda

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