12/01/2023

Job Information

Organisation: Université Grenoble Alpes, France.
Institute: Institute of Earths Sciences, ISTerre, Grenoble.
Research Field: Environmental science: Earth science; Geosciences
Researcher Profile: Recognised Researcher (R2)
Country: France
Application Deadline: 28/02/2023
Type of Contract: Temporary (CDD)
Job Status: Full-time
Hours Per Week: 35
Offer Starting Date: 01/03/2023
Funding: MIAI / H2020 ERC, F-IMAGE Grant agreement No 742335

Requirements

Education Level: PhD or equivalent. PhD in geophysics or signal processing.
Skills/Qualifications: The work requires expertise in seismology, signal processing, data mining and Python programming skills.
Years of Research Experience: 1-4

Offer Description

We are seeking a candidate for a project of data exploration in seismology. Large amounts of seismological data are available and the various tools developed with the rise of machine learning open new possibilities to track down signatures of physical processes at work in the depths of the Earth.

The classical data product in seismology is the event catalog. Considerable progress has recently been made in detection, both by implementing weak event detection through network response (Beaucé et al., 2022) and by developing statistical detectors robust to noise (El Bouch et al., 2022). In addition, an advanced data representation (ScatNet: Seydoux et al., 2020) gives access to new continuous characteristics of the signals that can be related to changes in the environment (e.g. Steinmann, 2022). These approaches will be applied to seismic and geodetic data sets.

The work is part of the activities of MIAI (Multidisciplinary Institute in Artificial Intelligence of Université Grenoble Alpes) and of ERC AdG F-IMAGE. The funding is for an initial one-year contract, renewable for a second year.

- Beaucé, E., van der Hilst, R. D., & Campillo, M. (2022) Microseismic constraints on the mechanical state of the North Anatolian Fault Zone 13 years after the 1999 M7.4 Izmit earthquake. Journal of Geophysical Research: Solid Earth, 127, e2022JB024416.
- El Bouch, S., O. Michel, & P. Comon (2022) A normality test for multivariate dependent samples. Signal Processing Volume 201, December 2022, 108705.

- Seydoux, L., R. Balestriero, P. Poli, M. de Hoop, M. Campillo, R. Baraniuk (2020) Clustering earthquake signals and background noises in continuous seismic data with unsupervised deep learning. Nature communications 11 (1), 1-12
- Steinmann, R., Seydoux, L., & Campillo, M. (2022) AI-based unmixing of medium and source signatures from seismograms: ground freezing patterns Geophysical Research Letters 49, e2022GL098854.

Selection process: To apply, please send your CV, a cover letter, a sample of recent publications and two references to: michel.campillo@univ-grenoble-alpes.fr (cc: marian.ramirez-nino@univ-grenoble-alpes.fr)

Applications will be accepted until the position will be filled.

Websites for additional information:

https://f-image.osug.fr
https://miai.univ-grenoble-alpes.fr
https://www.isterre.fr