JOB OFFER

The Royal Observatory of Belgium (ROB) is looking for a scientist (with a Master or PhD) to join the team of the DELPHFI project, aimed at increasing our understanding and prediction capabilities of solar flares using Deep Learning techniques.

THE PROJECT

DELPHFI (DEep Learning Prediction and Hindsight of Flare Initiation) is a collaboration project between ROB and KU Leuven University, within the Brain-be 2.0 framework funded by the Belgian Federal Science Policy (BELSPO). It aims at:

- improving our understanding of the mechanisms that lead to solar flares, thanks to the interpretation of the results obtained by modern Machine Learning techniques (solar flares originate in the “active regions” of the Sun. These are sudden energy releases that emit extensive radiation in a very broad range of wavelengths from X-ray to radio ranges);
- demonstrating how modern Machine Learning techniques, based on the automatic extraction of active region features, can provide better flare forecasts than human operators or existing automatic methods;
- increasing the expertise of ROB in the development of Machine Learning flare predictions, and to set the ground for a new operational tool and its possible extension to other kinds of eruptive events.

The successful candidate will:

- participate in the creation and pre-processing of the solar data sets (time series of images in multiple bandpasses) to be input into the neural networks;
- pre-select and train different algorithms of deep learning neural networks to optimise the solar flare prediction capabilities;
- use explainable methods to interpret the results;
- contribute to the peer-review publications of the project.

The initial contract is for one year and can be extended depending on the available funding.
THE ROYAL OBSERVATORY OF BELGIUM


Social security, pension scheme and working conditions are according to Belgian contractual civil servant regulations (salary scale SW1 of the scientific personnel). These include a flexible system of working hours and teleworking.

YOUR PROFILE

The ideal candidate will combine a maximum of the following characteristics:

- a Master or a PhD with a strong experience in using Deep Learning techniques, especially in relation with image analysis;
- good programming skills, familiarity with Machine Learning libraries (like Keras, PyTorch and scikit-learn);
- up-to-date knowledge and skills in recent Machine Learning tools and techniques;
- fluent communication in written and spoken English;
- experience in Solar Physics is a benefit.

HOW TO APPLY

Send your CV, a motivation letter and minimum one letter of recommendation to the coordinator of the DELPHFI project, Dr. Laurent Dolla (laurent.dolla@oma.be), with copy to hrob@oma.be. Questions and requests for more information should be sent to the same e-mail address.

The position is available immediately, for beginning at the latest in October 2021. The application deadline is 4 April 2021 included.