Requirement for two Junior Research Fellows (Research Associate I)

Project: Solar Flares: Physics and forecasting for better understanding of space weather
Agency: ISRO RESPOND
Duration: Total 3 years (extendable annually based on evaluation)

First Junior Research Fellow [JRF 1]

Job Description: Solar flares are the most energetic phenomena observed in the solar atmosphere. The successful candidate will work on multi-wavelength observations (both imaging and spectroscopic) recorded from the space-based observatories such as Solar Dynamics Observatory (SDO), Solar Orbiter (SO) and the Interface Region Imaging Spectrometer (IRIS) to study the physics of solar flares, primarily on the origin and evolution. These studies will be in the preparation for the observations recorded from the Solar Ultraviolet Imaging Telescope (SUIT) and other payloads namely SoLEXS and HEL1OS on board ISRO's Aditya-L1 mission. Note that IUCAA is a PI institute for SUIT payload.

Essential Qualification: MSc Physics or other related areas (with more than 65% marks or equivalent) / B.E. or B.Tech (with more than 70% marks or equivalent).

Essential Skills: Experience in Programming in Python. Candidates with experience in IDL will be given preference.

Age Limit: Not more than 35 years

Fellowship: @Rs 31000 pm + 27% HRA for the 1st and 2nd year and @ Rs 35000 pm + HRA for the 3rd year

Second Junior Research Fellow [JRF 2]

Job Description: Solar flares are the most energetic phenomena observed in the solar atmosphere and have important consequences on space weather and geo-space climate. Therefore, it is of paramount importance to provide an early forecast for these eruptions. Due to the existence of huge amount of data and ever-increasing Machine Learning (ML) and Deep Learning (DL) algorithms, a number of recent developments have been made towards their forecasting. However, further improvements are required. The Solar Ultraviolet Imaging Telescope (SUIT) on board ISRO's Aditya-L1 will provide unique data points in the photospheric and chromospheric region that will help improving the ML/DL models for the forecasting. The successful candidate will start with understanding the existing ML/DL models for flare forecasting and eventually improve and develop codes based on the state-of-the-art deep learning modules. These codes will then be tested on existing dataset such as AIA, HMI and IRIS. The final module will then be deployed to use Aditya-L1 data for the forecasting of the flares for space weather warning.

Essential Qualifications: MSc Physics, scientific computing or other related areas (with more than 65% marks or equivalent) / B.E. or B.Tech in computer Science or other relevant branch (with more than 70% marks or equivalent).

Desirable Qualification: Experience with Machine Learning and Deep Learning modules

Essential Skills: Experience in Programming in Python. Candidates with experience in IDL will be given preference.

Age Limit: Not more than 35 years

Fellowship: @Rs 31000 pm + 27% HRA for the 1st and 2nd year and @ Rs 35000 pm + HRA for the 3rd year

How to apply

Interested candidates can send their CV, 1/2 page writeup on their interest by email to Professor Durgesh Tripathi (durgesh@iucaa.in). The candidate should also arrange for two reference letters to be sent directly to Prof Tripathi.

Please mention clearly if you are applying for JRF 1 or JRF 2 or both.

Last Date for application
Friday Feb 03, 2023