Machine Learning for Urban Tree Monitoring

Code: 21/06

Company: The Open University

Location: The Open University, Milton Keynes

Company Description:

The Open University is an internationally recognised research leader in planetary and space sciences and the development of space instrumentation. Covering a wide range of disciplines from astrobiology to electrical engineering, geochemistry to quantum physics; and technologies from electronic imaging to remote sensing, mass spectroscopy to novel sensors; Open University researchers are often found in key roles in international space science missions such as Rosetta, ExoMars, Euclid, JUICE and Athena; with much of the activities performed in collaboration with Space Agencies, Universities and companies around the World. This research also informs our world-leading teaching in the Physical Sciences, Engineering and Earth and Environmental Sciences

Project Description:

Urban trees provide a huge range of ecological and societal benefits. Understanding tree type, condition and context are all key to understanding the extent of these benefits. The successful applicant will work across Environmental Science and Engineering to develop and validate an approach for automating the measurement of tree parameters from hyperspectral imaging data. The project will contribute to an analysis pipeline with the option of field validation work (depending on the situation). The project findings will inform wider research in both schools, including the development of novel sensors and instrumentation that may be deployed on future space, aerial or terrestrial missions. The project will help the applicant develop applied skills in data processing, model development and scientific computing and would suit an applicant with strong mathematics, computer science, physics or similar background with some Python/R experience and an interest in trees and natural science.

The project offers the applicant:

The work will feed into pipeline development for the retrieval of different plant characteristics. It is expected that the successful applicant will work on a very specific subset (e.g. particular species, health characteristic etc.) but the work will contribute to overall justification for a future space mission (TreeView).

Person specification:

Essential:
- Some knowledge of any of Python/R/C++
- A strong understanding of statistics or Machine Learning
- The ability to conduct independent research involving data analysis, simulation or software development
- Excellent written English
- Excellent verbal communication

Desirable:
- Knowledge of remote sensing of plants
- Evidence of ability to write high quality Python code as part of a team
- Knowledge of software development tools (e.g. Git) for collaborative code development
- Evidence of use of applied machine learning algorithms

Further details:

8 weeks minimum fixed term contract to be agreed with successful candidate but nominally with a start date around June 2021 to attend the SPIN Induction day hosted by the Satellite Applications Catapult, and completion before September 2021 for the Showcase that month. Salary is £1,500 per calendar month gross.

Closing Date for Applications: 5pm on Friday 5 February 2021

Applications should be made through the online form attaching a CV, before the closing date. Please note that elements of the form left incomplete will be deemed to render the application ineligible. They will be checked for eligibility and forwarded to the employer.