

Development of a Remote Sensing Solution to Mapping Invasive Plant Species

Code: 21/47

Company: 2Excel Geo

Location: Sywell Aerodrome, Northamptonshire and/or remote

Company Description:

2Excel Geo operate the only commercial hyperspectral airborne capability in the UK. Our airborne platform is equipped with scientific-grade hyperspectral and photogrammetric cameras able to collect imagery over large areas at high spatial and spectral resolution. In addition, the team also integrate remotely sensed data with machine learning and compute vision techniques to solve difficult environmental problems. The team also conducts field survey and ground validation work using a range of techniques including field spectroscopy. Previous work has covered a range of disciplines including agriculture, forestry and landscape management.

Project Description:

Building on existing work carried out by the 2Excel Geo team, the focus of this project will be to design and develop an automated remote sensing solution to mapping invasive plant species in a variety of UK environments. Japanese Knotweed has been chosen as the species of primary concern, but other species may be considered if time allows (e.g. Rhododendron, Himalayan Balsam, Giant Hogweed, Buddleia).

The objectives will be 1) to assess the feasibility of spectrally separating the chosen species from look-alikes, ensuring minimal confusion, and 2) to develop an automated approach to delineating their extent with sufficient accuracy and reliability to inform ground interventions.

The successful applicant will have access to a range of software and datasets across spatial scales and spectral resolutions, including satellite multispectral imagery, airborne hyperspectral imagery and Digital Elevation Models. They will have ownership of the project delivery, with the opportunity to develop methodologies and approaches throughout the project duration. Training and support will be provided, where necessary, to assist the student and support professional and personal development.

The project will also be supported by Advanced Invasives, a leading invasive plant species consultancy based in South Wales. A visit to their survey sites for collection of ground spectroscopy measurements will be considered if national travel restrictions permit.

Remote home working will be fully supported during the entirety of the 8-week project, in accordance with government guidelines in place at the time. However, where possible, we

strongly recommend that the student spends some time at the aerodrome/survey sites to ensure they receive the full experience.

Applicant Specification:

We are looking for a candidate who is currently studying:

- Ecology, Conservation, Environmental Science, Biology or Geography with an interest in remote sensing
- OR
- Mathematics, Physics or Computer Science with an interest in environmental applications

Minimum Requirements:

- Understanding of remote sensing fundamentals
- Understanding/Experience of working with geospatial data

In addition, the candidate should feel comfortable working remotely if required by government guidelines at the time of the project.

Preferred Additional Requirements:

- Experience of using remote sensing or GIS software (e.g. ENVI, ERDAS Imagine, ArcGIS, QGIS, eCognition, SNAP)
- Basic programming experience (e.g. Python, R, IDL)
- Valid driving licence or ability to travel to Sywell Aerodrome/South Wales

Further details:

8 weeks minimum fixed term contract to be agreed with successful candidate. Virtual Induction Event to be held on 21 June 2021. Ideally to complete before the start of the next academic year. Salary is £1,500 per calendar month gross.

Closing Date for Applications: 5pm Wednesday 9 June 2021

Applications should be made through the online form on the Satellite Applications Catapult website before the closing date.

<https://sa.catapult.org.uk/work-with-us/space-placements-industry-spin/>

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. Email applications made to the Satellite Applications Catapult, UK Space Agency, or host organisations will not be processed.