

Multi-scale object detection on satellite imagery using deep learning

Code: 20/38

Company: Earth-i

Location: Guildford, UK

Company Description:

Earth-i is an innovative geospatial information provider specialising in the application of Artificial Intelligence and Machine Learning to derive value from very-high-resolution satellite imagery. We work with multi-operator, multi-resolution, multi-sensor Earth Observation data, including full-colour high resolution satellite video. We make use of advanced analytics, data science and geospatial data processing expertise to provide near-real time actionable insights to customers in the defence, commercial and governmental domains.

Earth-i has a team of 25 committed individuals based in an office on the Surrey Research Park in Guildford, with easy access to the University of Surrey, the vibrant town centre of Guildford, and easy road and rail links into London or down towards Portsmouth and the south coast.

Project Description:

Earth-i specialises in applying Artificial Intelligence and Machine Learning to interpret very-high-resolution (VHR) satellite imagery. The project will focus on applying these techniques to detect features in satellite imagery that aren't easily discernible to the naked eye - for example, distinguishing and counting different types of vehicles in a car park from 80 cm resolution optical imagery, that would otherwise not be identifiable in native resolution using traditional techniques.

The successful candidate would work on a clearly defined self-standing project to achieve a set of outcomes agreed with the supervisor and regularly discussed and reviewed with them. Starting with a set of archive satellite imagery, the candidate would build a machine learning model to recognise features of interest. This will include preparing a training data set with which to train the model, tagging features of interest, and then running the model on unseen data to validate its performance. The model parameters would then be fine-tuned by the candidate to improve the levels and accuracy of detections.

As the work nears completion candidate would be invited to make an internal presentation to the Earth-i team and management on the work conducted and results achieved, and to prepare a final report and handover materials.

Applicant Specification:

We welcome applications from students who are enthusiastic to work in the space sector and want to develop new skills. The project would suit students with Python and/or other coding skills, an understanding of machine learning, and an interest in satellite sensor technologies.

Ideally, applicants will be studying a numerate degree e.g. Physics, Computer Science, Geography, Mathematics, or Environmental Sciences.

Minimum Requirements:

- Strong working knowledge in the Python programming language.
- Strong problem solving and critical thinking skills.
- Excellent written and verbal communication.
- An ability to work independently with minimal supervision.

Preferred Additional Requirements:

Previous experience with machine learning / computer vision technologies e.g. TensorFlow Keras, Pytorch, OpenCV, NumPy, Pandas, SciPy.

Further details:

8 weeks fixed term contract to be agreed with successful candidate but nominally with a start date around late June/early July 2020 to attend the SPIN Induction day, which this year will be held remotely in July. Gross Salary is £10 per hour, equating to £3,000 for the 8-week contract (37.5 hours per week).

Closing Date for Applications: 5pm Thursday 25 June

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.