

## Satellite-Based Humanitarian Applications for Computer Vision

**Code:** 21/09

**Company:** Satellite Applications Catapult

**Department Name:** Geospatial Intelligence

### **Project Description:**

Satellite Applications Catapult (Catapult) supports government funded projects focused on improving the effectiveness and targeting of humanitarian assistance through geospatial analysis. Given challenges of Big Data, the Catapult is particularly interested in utilising machine learning algorithms to automate the rapid interpretation of satellite imagery acquired over regions affected by humanitarian crises.

This project offers an exciting opportunity to evaluate an innovative application of deep learning / computer vision under the supervision of experts within the Catapult Geospatial Intelligence team. The case study will adopt an ambitious schedule encompassing preparation of annotated geospatial datasets, running training pipelines in the cloud, evaluation of model performance and visualization of predictive output. It is envisaged that the internship will enable a highly motivated and hardworking individual to rapidly upskill and gain valuable experience to further their career in geospatial analytics / data science domains.

The exact scope and objectives of the case study will be discussed and finalized with the successful candidate upon commencement of the internship. Use cases of relevance to ongoing Catapult humanitarian response projects include using commercial high resolution and open source multispectral imagery for feature detection and extraction of refugee shelters, damaged buildings and cemeteries through to semantic segmentation for land cover classification to validate and enrich open geospatial datasets such as OpenStreetMap. Day-to-day activities will include technical research and solution design, contributing within agile software development lifecycles, and engaging with appropriate internal and external stakeholders.

### **Applicant Specification:**

Applicants will need to demonstrate a professional interest in machine learning, algorithm development and geospatial technologies. Ideally the successful candidate will already have a portfolio of software projects published on personal GitHub page.

- Target courses: Computer Science, Remote Sensing, GIS, Geography, Physics, Engineering, Mathematics and similar

- Essential: Demonstrated Python programming experience (i.e. personal GitHub / website / projects)

Desirable: Data analysis and visualisation, Specialization in computer vision / image processing, experience of Linux operating system

**Minimum Requirements:**

- Passion for humanitarian and international development work
- Understanding of or demonstrated interested in Geospatial and Earth Observation concepts and applications
- Ability to learn new software and technologies quickly
- A 'can-do' attitude to challenges in the workplace
- Ability to follow instructions and work in a team environment
- Detail oriented

**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 (guide only).

**Interviews:**

Week of 15 March 2021 but will be confirmed.

**Closing Date for Applications: 5pm on Friday 5 March 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.