Project 18/20 - EO SPINtern

Evaluating state-of-the-art open source deep learning techniques and their applicability to satellite Earth Observation datasets

Company Description

The Satellite Applications Catapult is a not-for-profit company and one of a network of centres established by Innovate UK to accelerate the take up of emerging technologies. The Catapult is transforming the way the world uses satellite technology, enabling new business and improving people's lives. We are accelerating the growth of the UK space sector by: raising awareness and increasing demand for satellite-enabled services; making space technology more accessible and relevant; and helping businesses, entrepreneurs and innovators to overcome challenges and bring new products and services to market.

Working around the globe, the Catapult is bringing together multi-disciplinary and technical entities from government, industry and academic to deliver new innovative ideas and solutions for a variety of markets including agriculture, mining, transport, government services and maritime.

The Catapult is looking for an enthusiastic and skilled student to evaluate open source deep learning algorithms and their implementation within geospatial platforms. Leading platforms offer access to vast satellite data (up to 30 cm in resolution) archives alongside abundant compute resources. The successful student shall work alongside the Catapult's Earth Observation and Software Engineering Teams to design and implement an appraisal of relevant state of the art algorithms and evaluate their implementation upon very high-resolution satellite imagery.

Project Description

To date the Earth Observation industry have failed to come to close to servicing the total addressable market. This failure in delivery has been associated to a number blockers including, but not limited to:

- Access to Scalable compute: EO data is the world's third largest contributor of data
- Automated scalable analysis: The true value of the data can only be unlocked through intelligent analytics
- Visualisation/ information delivery: providing tailored intuitive and powerful visualisation

Emerging geospatial platforms exploiting 'infinitely' scaleable computing resources are changing the way in which Earth observation data is being manipulated to create novel applications across unexplored markets. A fundamental technical enabler to meeting these applications is the maturing of deep learning techniques implemented upon EO datasets within compute-abundant environments.

The successful student shall work across the Catapult's Earth Observation and Software Engineering Teams, directed by the Smart Analytics programme of work. They will be responsible **for** undertaking a technical appraisal of the suitability of state of the art open source deep learning techniques for developing and delivering new and innovative solutions and applications in support of Catapult Programme areas.

Expected activities will include:

- Working with Catapult Programme heads to define market centred test scenarios based upon programme strategic goals
- Appraisal of available open source deep learning algorithms in their potential for application to EO datasets within readily accessible geospatial platforms.
- Deployment of appropriate algorithms within market centred test scenarios.

Expected Competencies to be Developed

Through working in a very dynamic and diverse environment within the Catapult and as part of the Earth Observation and Geospatial Systems and Solutions Teams the successful candidate will gain a variety of soft and technical skills. This are expected to include:

Technical:

- Demonstrable experience with programmatic EO data management
- Familiarisation with traditional GIS and image analysis tools stacks
- Familiarisation with a variety of open source and commercial EO datasets
- Understanding of emerging EO and computer vision developments shaping industry
- Understanding of key market challenges the Catapult is working with industry to address

Soft:

- User centred design and requirements gathering
- Communication skills of dealing with a diverse set of technical, operational and sales stakeholders, including with international partners
- Project management

Minimum Requirements

Applicants will need to have strong computing skills, the ability to critically evaluate problems, suggest solutions and show initiative in a supervised R&D project.

- Experience in one or more of the following areas: Physics, Mathematics, Computer Science, and Earth Observation
- Knowledge/ experience of open source machine learning/ computer vision techniques and tools would be highly advantageous
- Knowledge/ experience of one of the Catapult Programme/ Market areas would be advantageous

Target courses: Physics, Engineering, Mathematics, Remote Sensing, GIS, and other similar courses

Closing Date

Monday 14 May

Interviews

Week commencing 21 May

Further Details

8 weeks fixed term contract to be agreed with successful candidate but nominally with a start date around 18 June which is also the SPIN Induction day at Harwell. Salary is £1,500 per calendar month.

Apply on the website: https://sa.catapult.org.uk/people/space-placements-industry-spin/