Identification of Cobalt from Space

Code

20/03

Company

Satellite Applications Catapult, Extractive Industries Value Stream

Project Description

The need for rapid global decarbonisation is becoming increasingly important. This is being somewhat reflected with governments and companies around the world making statements about moving towards a carbon neutral, or even in some cases a zero carbon, approach. This means that the demand for energy storage will continue to rise in the future, with an immediate focus on lithium-ion batteries. Vertical market pull mixed with technology push and customer behavioural changes is accelerating the need for this change, an example is the automotive industry rapidly moving from hydrocarbons to electric vehicles.

A key, and often overlooked, component of the batteries is cobalt. The need for Cobalt has increased by 30% over the last 4 years alone. About 75% of all batteries being made today contain cobalt.

Now 60% of all cobalt is mined in the DRC with 98% of all cobalt being mined as a by-product of extracting other metals (such as copper and nickel). There is an increasing need to find new locations for cobalt extraction.

Geological mapping from remote sensing has historically, and continues to, play a significant role in mineral exploration. Multispectral satellite data analysis provides a cost-effective, wide area approach to preliminary geological exploration. Over the last few years we have used and proved the use of satellite technology to identify lithium resources. We now want to expand this capability to try and find the presence of Cobalt.

A small amount of work has been carried out demonstrating environmental proxies for the identification of cobalt. This project will use these proxies to use satellite technologies to identify the presence of cobalt. It is likely that a mixture of spectral and machine learning techniques will be used to identify the relevant proxies.

Applicant Specification

- A successful applicant will be a numerate, have computing skills, able to critically evaluate problems, suggest solutions and show initiative in a supervised R&D project.
- Experience in one or more of the following areas: application development, geography, artificial intelligence, remote sensing, maths and geology.

- Students undergoing courses in geology/Earth Science, Remote Sensing, Engineering, Physical Geography, Computer Science, Mathematics and other similar courses can apply.

Minimum Requirements

Currently in first year of a STEM undergraduate degree.

Preferred Additional Requirements

General programming experience in high level languages such as python and/or Javascript

Application Closing Date

5pm Monday 9 March

Interview Dates

19 & 20 March and 23 & 24 March

While sending in your applications, ensure you will be available for an interview for the days mentioned above.

Start date & salary:

The internship is for 8 weeks fixed term contract starting on 15 June 2020 and the salary is £1,500 per calendar month. The SPIN induction day will be on the start date.