Automating & digitising the spaceport of the future

Code: 21/39

Company: UK Launch Services Limited

Location: London / Scotland/ remote (to be negotiated)

Company Description:

UKLSL was founded in 2017 to design and deliver sustainable spaceport operations for the commercial space age.

We are a launch operations service provider offering management, regulatory support, logistics support, range services and operations planning services for commercial small satellite launch. Together with our delivery partners we have extensive knowledge of small satellites and their launch requirements, and are facilitating commercially competitive launch operations from the UK. UKLSL also has wide ranging technical knowledge of launch vehicles, their technology and comprehensive knowledge of all potential UK launch sites (as well as the global market and competition).

Project Description:

Most spaceports (launch sites) around the world are government owned, and/or operated. These state subsidies have allowed sites to grow organically over decades with little consideration to operation costs. The UK hopes to license small spaceports from 2022. These are unlikely to benefit from government support of operation costs, therefore they must be extremely efficient an cost effective. Because the UK commercial launch programme is not looking to leverage legacy infrastructure (since there is none) there is an opportunity to explore new approaches to delivering pioneering launch service operations.

Satellite manufacturers and small rocket builders are increasingly applying novel and innovative technologies to manufacturing methods: how can a commercial spaceport emulate industry practise, applying digital and robotic techniques to reduce launch service costs? Can improved data fusion help to achieve dedicated launch service prices for small spacecraft, competitive with current rideshare? Can automating hazardous and repetitive physical and planning tasks around a launch campaign still allow creation of high-value jobs? Is it possible to affordably implement robotic safe handling of hazardous substances during rapid turnaround launch operations, even at low initial launch cadences?

The intern will identify key data (eg weather, airspace management) and physical (delivery of spacecraft, hazardous & non-hazardous consumables) services needed by in a modern small spaceport, examine applicability and make recommendations for a range of different industry 4.0 techniques such as standardised connectivity, data fusion coupled with AI and machine learning, automation and robotics, and augmented reality including digital twins.

Applicant Specification:

Applicant Specification: Applicants meeting the minimum requirements are encouraged to apply however the following additional attributes and knowledge can be used to support your application:

- A strong motivation to contribute to the growth of the UK space industry,
- A willingness to quickly adapt to changing business requirements and new challenges on a day to-day basis is fundamental to our team,
- An interest in launch vehicle design and architecture,
- An interest in the practical aspects of complex engineering systems and their failures,
- Comfortable using spreadsheets and other analysis tools.
- Hardworking & self-motivated. We are a start-up so we like people who are willing to try to start solving problems after only a short briefing period and a limited set of information.

Academic: The applicant should have an undergraduate or postgraduate 1st or 2:1 degree in an engineering or a physical science, computing science or architectural design subject.

Minimum Requirements:

Demonstrable interest e.g., through previous placement, university or school project involving automation, robotics or a digital twin design.

Preferred Additional Requirements:

Desirable requirements are prior experience designing building or operating industrial robots, automation, or standards for the same. The ideal candidate would be London area or Scotland (Glasgow / Edinburgh / Inverness based), to allow easy access to UKLSL's office and operating sites, although we envisage the majority of this placement will take place from home or University. while COVID restrictions remain in place.

Further details:

8 weeks minimum fixed term contract to be agreed with successful candidate. Virtual Induction Event to be held on 21 June 2021. Project should ideally complete before the end of the summer. Salary is £350 per week gross.

Closing Date for Applications: 5pm Friday 4 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.