Software Development for Rocket Engine Test Facility

Code: 20/45

Company: Raptor Aerospace Ltd

Location: Remote work start (opportunity to work in office dependent on changes to Government guidelines - Scottow Enterprise Park, Badersfield, Norfolk NR10 5FB)

Company Description:

Raptor Aerospace Ltd is a small sub-orbital launch company based in Norfolk, East Anglia. Established in 2018 and built on company founder, Ben Jarvis' 30 years of experience in rocket design and launch in the UK, the company is focused on providing atmospheric and sub-orbital launch capability to the UK and European markets.

With several dozen commercial launches under our belts, Raptor is one of the few UK launch companies already launching rockets. Existing launch capability has been achieved mostly using 3rd party solid fuel rocket engines but the company's future plans require bespoke propulsion solutions.

The company is now building on 20+ years of team experience in hybrid rocket engines to develop small sounding rockets capable of carrying customer payloads to the Karman line and beyond. Based in recently refurbished workshop and office space on an ex-RAF base in the idyllic Norfolk countryside, Raptor pride ourselves on our practical and hands-on approach to launch vehicle and propulsion development.

Project Description:

Working under our small but experienced engineering team, the applicant will take on a largely autonomous role designing and developing the software that will be required to run our new bespoke static engine test facility.

Liaising with both the Raptor design team who will be fabricating the test stand, and subcontractors supplying sensors for the project, the applicant will pull together the needs of all parties to develop and bring to fruition a bespoke piece of software that takes inputs from a multitude of sensors during rocket engine tests.

The sensors used will include the main test-stand load-cell (measuring the thrust of engines being tested) as well as load-cells measuring the mass of propellant tanks, thermocouples and optical pyrometers measuring temperature of the engine hardware and the exhaust and pressure transducers measuring the pressure of propellants and of the engine chamber itself.

These sets of data must be combined within the software to graphically show critical values during the test so that action can be taken if a critical safety parameter is exceeded, as well as filtered through relevant equations to graphically display the data in useful formats after the tests.

Much of the work can be undertaken remotely (from home) with support and equipment supplied by Raptor but it is hoped that the applicant will be able to attend our site to integrate their software with the hardware being developed and assist running a series of hot-fire evaluation tests using real rocket engines before the end of the internship.

Applicant Specification:

The ideal applicant would be in their second or third year of, or have completed a degree in, a relevant subject (space/aerospace related OR a programming/software subject with a personal focus on aerospace). They will be self-motivated and excited to contribute to a live engineering project.

Minimum Requirements:

The applicant must be engaged in or have completed a relevant degree which would ideally be aerospace/space related but could be in a subject related to the project such as programming, software development or even possibly electronics. The applicant must show strong software development/programming skills, ideally showing experience of taking data from multiple sensors and outputting graphical representations of the results.

Ability to travel to Norfolk for a period during August (if it is possible under Covid 19 restrictions) to integrate their work with the hardware and assist with testing would be extremely useful.

Preferred Additional Requirements:

An interest in and/or practical experience in rocketry or propulsion systems would be an advantage, eg: involvement in a student rocketry project. Having qualifications in more than one area of the project (engineering, electronics, software) would also be a significant advantage. Good team-working skills and an enthusiasm to work in the space sector with a small and highly focused team is a great advantage as well. Practical/project experience will be more critical to the selection than pure academic/theoretical skills.

Further details:

8 weeks minimum fixed term contract to be agreed with successful candidate but nominally with a start date in July 2020 to attend the SPIN Induction day, hosted remotely on 15 July by the Satellite Applications Catapult. Salary is £1,500 per calendar month gross. If needed Raptor Aerospace can assist the successful intern with local accommodation.

Closing Date for Applications: 5pm Monday 13 July 2020

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.