Title: Future space missions and sensors for CBRN event detection and monitoring

Type of award: PhD Research Studentship

Department: Engineering

Scholarship Details: This is a prestigious EPSRC iCASE studentship co-funded by Thales Alenia Space UK spacecraft manufacturers (Bristol Branch). The studentship covers full UK/EU (EU applicants who have UK residency) PhD tuition fees and a tax-free stipend topped up above the current RCUK rate (£14,777 in 2018/19) to a minimum of £16500 (increasing each year). EU nationals resident in the EU may also apply and will qualify only for PhD tuition fees. The PhD comes with a generous allowance for equipment, software and conference travel.

Duration: 4 years

Eligibility: Home (UK)

Starting Date: 26 September 2019

PhD Topic Background/Description

Future Chemical-Biological-Radiological-Nuclear (CBRN) threats could include a chemical explosion at a plant, a use of a nerve agent in an urban environment or a radioactive leak from a facility. Thales Alenia Space (TAS) has been working on currently available satellite data which could contribute to the detection and modelling of such a scenario. Several gaps in the data are apparent: wind field data, chemical detection and radiological detection. These reveal potential areas for future missions. The objectives of the PhD are:

- To review currently available data and possible proxies for CBRN to ascertain gaps
- To review existing Earth observation instruments which could be used for CBRN
- To investigate the platforms and configuration necessary to accommodate the above Earth observation instruments
- To investigate possible instruments that can be used on identified platforms, e.g. LiDAR on a Very Low Earth Orbit satellite or Low Earth Orbit microsatellite
- To provide analysis of any adaptations necessary to instruments or the spacecraft.

URL for further information: http://www.bristol.ac.uk/engineering/departments/aerospace/

Further Particulars

The Faculty of Engineering at the University of Bristol has created an inspiring, collaborative and highly dynamic research environment for all staff and students, including access to world-class facilities – including the Bristol Vision Institute, the Bristol VR Lab, the Bristol Robotics Laboratory, the BLADE laboratory and the South West Nuclear Research Hub. Professor Lucy Berthoud’s areas of expertise
are nanosatellite design and Very Low Earth Orbit satellites. She is co-director of the University of Bristol Satellite Laboratory. The student will become involved with the University of Bristol Satellite Programme.

Please note that, whilst based at the University of Bristol, this EPSRC iCASE studentship requires a minimum of 3 months, usually working 1 day per week, to be spent on site at Thales Alenia Space, Bristol. Candidates will be required to undergo baseline security vetting.

Candidate Requirements
An enthusiastic student with either a 1st or expecting a 1st (B.Eng or M.Eng) in Aerospace, Space or Electrical and Electronic Engineering. Or a BSc / MSc in Physics (1st class).

Candidates should have an interest in the following:
- Spacecraft system design;
- Optics;
- Space instrument design especially hyperspectral and LiDAR
- Knowledge of software languages (eg C++, JAVA)
- Knowledge of mathematical modelling software (eg MATLAB/Simulink, MathCAD)

The candidate will have:
- An interest in research
- An ability to write up technical research
- Analytical approach and an interest and ability to solve complex problems
- Comfortable with working closely with colleagues in teams
- The ability to present technical and complex problems orally
- The ability to listen and learn from subject matter experts

Informal enquiries
For informal enquiries please contact Prof Lucy Berthoud lucy.berthoud@bristol.ac.uk
For general enquiries, please email came-pgr-admissions@bristol.ac.uk

Application Details
To apply for this studentship submit a PhD application using our online application system [www.bristol.ac.uk/pg-howtoapply]

Applicants should select “Aerospace Engineering” as their programme and clearly indicate the name of this studentship as their funding source in the Funding section.

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