Title: Automated sentencing for complex shaped CFRP components

Type of award  PhD Research Studentship

Department  Mechanical Engineering

Scholarship  Minimum £20,000 p.a.

Duration  4 years

Eligibility  Home / EU only

Deadline  1 October 2019

PhD Topic Background/Description

The Ultrasonics and Non-Destructive Group at the University of Bristol and Rolls Royce Aero-engines are seeking a top class candidate to undertake research leading to the award of an Engineering Doctorate (EngD) awarded by the University of Bristol.

Rolls-Royce is responsible for the design, manufacture and maintenance of the power plants in civil and military aircraft used throughout the world. Safety critical components are inspected both during manufacture and periodically in-service, using a range of non-destructive evaluation (NDE) techniques. This project will deliver automated analysis techniques for inspections of the new composite fan blades that will provide game-changing capability for the company.

Carbon fibre material is increasingly being considered for aero-engine components. Such components are being designed to withstand high loads and to have more complex shapes, making inspection for material integrity both more important and more difficult. New analysis techniques are required and are being developed for defects such as porosity. However, such techniques create large data sets that become time consuming and difficult, or impossible, to interpret by a human inspector.

The aims of the project will include:

1. Investigation of new quantitative data analysis techniques for porosity detection in CFRP.

2. Development of data fusion methods to allow extraction and presentation of information from multiple data sources.

3. Automated interpretation of 3D data.

The student will work at the University of Bristol before relocating to Rolls-Royce in Filton (Bristol) for a significant portion of their studies, where they will work within the NDE Research team.
student will work alongside engineers developing inspections and will have the opportunity to influence future inspection capability for aero-engine composite components.

url for further information:  
https://www.rcnde.ac.uk/how-to-apply/

**Further Particulars**
The studentship is offered through the EPSRC Centre for Doctoral Training in Future Innovation in NDE (FIND CDT) which is a partnership between a select group of universities and companies offering a 4-year Engineering doctorate designed to launch outstanding graduates into an engineering career. With close links to the related UK Research Centre in NDE, students are part of a vibrant community of more than 200 researchers and have access to a range of technical training courses delivered by world leading experts.

The post is supported by a bursary and fees (at the UK/EU student rate) provided by EPSRC, together with a generous top up by the sponsor company, Rolls Royce.

**Candidate Requirements**
Applicants must hold a minimum of an upper 2nd class honours degree in Mechanical Engineering, Physics or a related subject.

**Basic skills and knowledge required.**
An enquiring and rigorous approach to research together with a strong intellect and disciplined work habits. Good team-working, observational and communication skills are essential.

**Scholarship Details**
Scholarship covers full UK/EU (EU applicants who have been resident in the UK for 3 years prior to application) PhD tuition fees and a tax-free stipend of a minimum £20,000 subject to contracts and eligibility criteria.

Candidates can check the eligibility criteria for the award at https://www.epsrc.ac.uk/skills/students/help/eligibility/

**Informal enquiries**
For informal enquiries, please email Prof Robert Smith, Robert.Smith@bristol.ac.uk or find-cdt@bristol.ac.uk

For general enquiries, please email came-pgr-admissions@bristol.ac.uk

**Application Details**
Prior to application Interested applicants should send an up-to-date CV to find-cdt@bristol.ac.uk

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

Please ensure that in the Funding section you tick “I would like to be considered for a funding award from the Mechanical Engineering Department” and specify the title of the scholarship in the “other” box below with the name of the supervisor Prof Robert Smith.

**Apply now**