X-ray imaging for industrial applications

Studentship: PhD for 3 years
Funding: Funded for UK/EU students for 3 years
Supervisors: Dr Jay Warnett
Start Date: October 2017

Project overview:
X-ray imaging originated as a medical tool in the 1980’s, but given its ability to generate 3D models of internal structures it has exploded as a tool for non-destructive testing in industry. From X-ray reconstructions of the body, medical professionals are able to diagnose health related ailments. In industry this could be to find faults in critical components, measure features (and failures) in work pieces for conformances, and even to initiate simulations of real geometries.

Recent projects at our X-ray imaging facility include:
- Root cause analysis of aerospace subsystem failure
- Forensic investigation of murder cases
- Optimisation of additively manufactured [3D printed] parts
- Improving the compression forming process of composite materials
- Aiding conservation of specimens recovered from a sunken ship

This PhD will push the limitations of x-ray imaging applications and relate results to the efficacy of measurement in terms of dimensioning and feature extraction. Given the large number of variables in X-ray imaging and subsequent processing, the measurement accuracy and uncertainty of such systems is much debated among researchers and engineers. It is expected that the successful candidate will work throughout the PhD to develop methodologies and process guidelines to obtain the best possible results in the directed area of research. This will be achieved through applying appropriate scanning procedures to novel set-ups and/or image processing techniques.

The established work will be validated through real case studies provided by industrial partners that will inevitably influence their product development process. WMG has a history embedded in industrial collaboration from medical to automotive, and our Metrology and Visualisation group have worked with BAE Systems, West Midlands Police, EOS, Aston Martin, NHS and Tata Steel to name a few.

The project will be multidisciplinary, suited to candidates from engineering, science, computer science or general sciences background. The precise project direction can be aligned to the particular skills of the candidate and relevant training will be provided where appropriate.

Eligibility:
Applicants should have an undergraduate (BEng, MEng) 1st Class or 2.1 degree and/or postgraduate master’s qualification in a science/technology based discipline.

For funding reasons the applicant must be a UK/EU national
Funding Details:
Stipend of circa £14,000 per year, for 3 years.
Available only for UK or EU citizens.

Application:
For informal enquiries please contact Dr Jay Warnett j.m.warnett@warwick.ac.uk
To apply, please complete our online form and upload your CV