Title: Virtual and Augmented Reality in the next generation of engineering design tools

Type of award: PhD Research Studentship

Department: Mechanical Engineering

Details: Scholarship covers full UK/EU (EU applicants who have been resident in the UK for 3 years prior to application) PhD tuition fees, a tax-free stipend at the current RCUK rate (£14,553 in 2017/18) subject to confirmation of funding. EU national’s resident in the EU may also apply and will only qualify for PhD tuition fees.

Duration: 3.5 years

Eligibility: Home/EU applicants only

Start date: From September 2017

PhD Topic Background/Description
Modern engineering design increasingly requires combination of both the digital and physical worlds, with even simple projects regularly involving the creation of physical prototypes and digital design models, physical testing, digital simulation, and physical manufacture. This variation vastly increases the need for physical / digital integration, and seamless transfer between the two.

Here a major challenge exists; in most cases, interaction with the digital world remains locked behind a 2D screen. This constraint limits our ability to bridge the gap between the digital and physical, impacting not only the ways that design tools work, but also the ways that engineers are able to design. The requirements imposed by a 2D interface create broad impact on engineering design processes, understanding, development time, and cost.

With cutting-edge Virtual and Augmented Reality technologies and interface methods currently in-development and entering the market, significant scope exists to build a better bridge between the digital and physical, for a radical re-imagining of the way in which engineers’ design.

This doctoral research aims to study such ground-breaking technologies, and how they may steer, support, and improve designer understanding and design process. This work will lead towards cutting-edge technologies, systems, and understanding which answer not only how best to interface with and enhance existing engineering design processes, but also how direct 3D interaction may allow new, radical design systems with step-change benefit.
Further Detail
Key is thought to be the direct interaction, augmentation, and manipulation of digital models and interfaces, allowing engineers unprecedented control and interactivity throughout their design, analysis, testing, and manufacture processes.

Potential research areas include but are not limited to:

- Development of highly interactive, functional VR and AR prototypes
- Augmentation of physical prototypes with digital information, analysis, and simulation
- Methods and tools for increasing the tangibility of virtual models through VR and AR
- Methods and tools for engineering design directly within 3D VR and AR environments
- In-situ augmentation and simulation of design changes and evolution through VR and AR

The successful candidate will be part of the Design and Manufacturing Futures Laboratory at the University of Bristol, and will have the opportunity to widely collaborate with staff across the faculty.

Candidate Requirements
We are looking for an enthusiastic student with a Masters or high 2:1 honours degree in Mechanical Engineering, Computer Science, or a related field.

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Informal enquiries
Please contact Dr Chris Snider (chris.snider@bristol.ac.uk)

For general enquiries, please email gsen-pgrs@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]

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 and the name of the supervisor, Dr Chris Snider.

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