

## **Fully Funded EPSRC PhD Case studentship.**

### **Project Title: Intelligent filtration for Complex freeform Structured Surface**

Manufactured parts with complex structured surfaces have been widely used in automobile, bio-engineering, medical and consumer electronics etc. Compared with traditional 'stochastic surface', the complex structured surfaces have two significant characteristics: one is that they have complex base surface (reference surface/mean surface) which has complex shape, the other is that they have deterministic features with high aspect ratio on the base surface. The ability to adequately characterise these complex structured surface geometry features is crucial in the optimisation and control of such functional device/components. This proposed PhD project aims to develop an intelligent filtration framework for the complex freeform structured surface. It will be achieved through fulfilling the following three objectives:

- Develop a mathematical model for the *intelligent adaptive filtration* techniques, for example, the nonlinear diffusion filter;
- Develop a smart unsupervised *machining learning* technique to segment and classify the features by using techniques such as active contour, level set.
- Implement these practical *algorithms* in an efficient way, for example, use parallel computing through CUDA, open-source library.

**Eligibility:** The student must have a high-grade qualification, at least the equivalent of a UK 1st or 2:1 class degree or MSc with distinction in Physics, Engineering or related disciplines. The student must be proficient in both written and spoken English, and possess excellent presentation and communication skills.

**Salary:** £15,285 (2020/21 EPSRC Standard)

**Contact:**

Professor Paul Scott  
Future Metrology Hub  
Centre for Precision Technologies  
University of Huddersfield

Tel: 01484 472167

E-mail: [p.j.scott@hud.ac.uk](mailto:p.j.scott@hud.ac.uk)