

We are urgently looking for an EngD candidate for an exciting holographic augmented reality project with a lot of commercial potential. The EngD research study is similar to a PhD, yet in much closer collaboration with industry and comes with a stipend of £21053/year for the four years of the study. It is ideal for those interested in combining a research-oriented career with the advantages of working in a company.

This brand new project is with Ceres Holographics, a rapidly growing start-up in St Andrews (Scotland). It is organized within the framework of the Applied Photonics Centre for Doctoral Training, coordinated by Heriot-Watt University in Edinburgh, but with the involvement of most Scottish universities, including the University of Dundee. Ceres Holographics develops technology for head-up displays in high-end cars and will certainly be soon a standard feature in many models. In this project we'll investigate and develop the technology to project true-colour images and information in front of the car and make the technology compatible with augmented reality applications.

As this is a rapidly moving market, there is some urgency. Ideally we would like the research student to start in September 2018, though later applications are certainly considered. More details below.

Subject: Physics, Engineering, or related discipline.

Value: The successful candidate will have the student fees paid for the duration of the programme and also receive an annual stipend of £21,053 (EngD). In addition to this the candidate has access to a conference budget of up to £3000 for the duration of the course.

Start Date: Ideally September 2018, to join research training of the new EngD/PhD cohort; though a later incorporation in the programme will be considered depending on the prior experience of the candidate.

Duration: 4 years (from the start date of the September 2018 cohort).

Eligibility: The candidate will have, or expect to obtain, a 1st or 2:1 honours degree in physics or a related subject. A background in optics or applied optics would be an advantage.

The successful applicant will have good communication skills, both verbal and written to enable them to work effectively as part of an interdisciplinary team. The ideal candidate will also be keen to develop skills to theoretically simulate, design and build optical experiments and analyse data.

Programming skills for simulating experiments and analysing data as well as demonstrable prior experience with optical experiments would be an advantage.

The project is fully funded for four years including fees and a stipend for eligible students. Successful applicants will be part of a small yearly cohort that will meet for networking, technical and MBA courses as well as professional skills workshops.

Further Information: The successful candidate will investigate several proposed solutions for their efficacy and develop novel alternative methods for to enable viable augmented reality via holography with superior quality.

Project Summary: Ceres Holographics is at the forefront of volume hologram production in photo-polymerisable film. This has wide ranging applications, including augmented reality head-up displays for the automotive market. Such displays can be used for displaying driver and traffic information on the windshield of a car. While currently marketed technology displays the image only 2.5m in front of the driver, there is a high demand for a device that can project an augmented reality information, which appears to be 10-200m in front of the car, overlaying the driver's view of the landscape.

Significant challenges have to be overcome to realise the commercial potential of this technique, most notably the unacceptable size of such systems created by current technology. Ceres Holographics has the unique expertise to write custom high precision volume holograms in a transparent photo-polymerisable film. This allows it to selectively diffract red, green, and blue laser light from a hologram in the windscreen, thereby creating a digital virtual image for the driver in a much smaller system. However, as with any form of laser imaging, the long coherence length causes speckle that is unacceptable to the image quality. There are currently no sufficiently good solutions to this problem. This project specifically aims to overcome laser-speckle to create a high quality augmented reality projection that can be integrated into a car. To project images over a larger field-of-view, the research engineer candidate must devise an optical system that optimises both the projector optics and the holographic element. At present, there is no viable method to produce digital augmented reality images within a car.

How to Apply: Instructions on <https://www.cdtphotonics.hw.ac.uk/apply.html>

Applications can be submitted via the Heriot-Watt website at <https://www.hw.ac.uk/study/apply/uk/postgraduate.htm>

Under level of study, please select 'Postgraduate Research', then choose 'Applied Photonics, EngD' as your programme selection.

Please submit the following supporting documents:

- An up-to-date CV
- Previous degree certificates and transcripts
- References or contact details of two academic references. (Employer references are also accepted from applicants applying from a relevant industry background)

Under the field 'Research project information' please list "Advanced holography for augmented reality head-up displays (Ceres Holographics Ltd.)".

Contact Us:

Further information can be found on:

The Research Project: <https://www.cdtphotonics.hw.ac.uk/vacancy/2018/advanced-holography-augmented-reality-head-displays>

The Study Programme: https://www.cdtphotonics.hw.ac.uk/prospective_students/The_Programme.html

Ceres Holographics: <https://www.ceresholographics.com/>

Any queries can be directed to engd.eps@hw.ac.uk or Dr Tom Vettenburg, t.vettenburg@dundee.ac.uk.

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