Loughborough University

PhD Studentship

A novel camera-based approach to measure daylight exposure for conservation/management of light-sensitive objects in heritage buildings

School of Civil and Building Engineering

Background to the research: Many heritage buildings contain artefacts that degrade if over exposed to natural light, e.g. paintings, fabrics, wallpapers, furnishings etc. Management of the long-term exposure of these objects to daylight is a key issue for the bodies that have responsibility for managing the buildings and preserving their contents, e.g. The National Trust. It is acknowledged that systematic monitoring of light exposure is very sparse, and also that many valuable objects are at risk. Monitoring, if carried out at all, is usually just at one or two points in a space. However, the spatial variation in long-term exposure is known to be great- typically several orders of magnitude depending on the geometry and reflective properties of the space. The installation of commonly used measurement apparatus can be invasive, expensive and/or impractical.

Aim: This project will employ a novel combination of measurement, GPS, photogrammetry and lighting simulation to quantify the spatial distribution of cumulative daylight exposure in spaces, with a particular application to the management and conservation of light sensitive objects in heritage buildings. The research tasks will include the both laboratory and field studies together with simulation/modeling.

The position: The School of Civil and Building Engineering at Loughborough University invites applications for a PhD studentship from individuals interested in fusing light modelling with modern spatial measurement techniques. A background in physics/engineering/mathematics or related discipline will be required, combined with some expertise in software development using Matlab/IDL. As part of a large, growing and supportive research community within the School, the successful candidate will benefit from the University's Graduate School and their extensive and targeted skills training for research students. The successful candidate will be joining a lively community of research students and staff, where doctoral students are given great academic and administrative support and are an integral part of the University's research culture.

Funding and eligibility: The studentship is open to graduates with experience in numerate subjects such as mathematical modelling, statistics or those with a strong engineering background provided that they are good communicators, well qualified and highly motivated. The minimum entry qualification is a 2.1 Honours degree or equivalent. A lower qualification is acceptable if supplemented with an appropriate postgraduate (MSc) qualification and relevant experience. The studentship is for 3 years and covers fees and a tax-exempt stipend of £13,726 for the 2013/2014 academic year with cost of living adjustments in years 2 and 3. Tuition fees will be paid at the UK/EU rate.
Studentships must start on the 1st April 2014.

Additional Information: Applications can be made on-line at http://www.lboro.ac.uk/study/postgraduate/essentialinformation/howtoapply/.
For an informal discussion on the broad topic area, please contact Prof John Mardaljevic (School of Civil and Building Engineering), on 01509 222630 or J.Mardaljevic@lboro.ac.uk .

For enquiries about the application process, please contact Ms Helen Newbold, H.Newbold@lboro.ac.uk.

Closing date for applications: Applications will be accepted until **31st of January 2014**, or until the post is filled.

Disciplines: Architecture and Building, Civil Engineering, Physics and Astronomy