

PhD Opportunity in Human-Computer Interaction

Project: Virtual Reality fostering inclusive and sustainable Industry 4.0

Location: University of Limerick, Ireland



Funding: The Faculty of Science and Engineering is inviting applications from qualified and highly motivated students for a PhD position in the Interaction Design Centre sponsored by the Faculty of Science and Engineering, University of Limerick. The scholarship will be valued at €95,000, to support a PhD scholar over a four-year period, encompassing annual registration fees (for four years) and a stipend of €17,000 per annum. The Department of Computer Science will provide space and facilities. Terms and conditions will apply.

Short description of the PhD project:

The goal of this research is to study the impact of Virtual Reality (VR) applications for higher education and manufacturing, particularly for frequent use and high demand applications i.e. health and safety training, remote maintenance or repair. Following a user-centred approach, these will benefit of reduced culturally induced bias and improved learning outcomes. Studies conducted in this project will focus on A) usability and B) impact assessment, contributing to

- 1) design, develop and explore augmented or VR applications in manufacturing, to be tested with users from industry partners as well as higher education;
- 2) generate and disseminate training applications and design guidelines for future work;
- 3) estimate the social, economic (e.g., workplace diversity & inclusion) and potential environmental impact (e.g., carbon emissions) comparing the existing to interactive digital alternatives (e.g., immersive CAVE vs headsets)

Background:

This research in Human-Computer Interaction (HCI) will explore VR applications for Industry 4.0, extending ongoing research in the Interaction Design Centre, Dept. CSIS-UL, SFI Research Centres Lero and CONFIRM.

The Interaction Design Centre is a multidisciplinary research group focused on the design, use and evaluation of interactive technologies in a variety of application areas including but not limited to health, education, cultural heritage, and collaborative work.

Methodology:

The research and design process are proposed to be iterative and human-centred, starting with background research and definition of the scope to address societal and industry needs. Results will be applied in design explorations and prototype testing in multiple supports (mobile devices, VR headsets, immersive Cave Automatic Virtual Environment), followed by user studies and impact assessment. The potential for VR applications remains underexplored in manufacturing, and the present proposal will focus on the evaluation of usability (e.g., ease of use, accessibility) and learning outcomes across different settings and platforms (in person vs. digital).

Expected impact:

This proposal addresses United Nations Sustainable Development Goals 9 Industry, Innovation and Infrastructure and SDG 4 Quality education, as the training tools developed for industry could be used in higher education and teaching activities

Supervisory team:

The project will be supervised by Dr Lilian G. Motti Ader, lecturer in Human-Computer Interaction at the Department of Computer Science and Information Systems.
Prof Dr Ing Tiziana Margaria will act as joint supervisor.

How to apply:

Applications must be submitted by email to Lilian.MottiAder@ul.ie

Applications will be processed on an ongoing basis. Shortlisted candidates will be called for interview in January 2023. Applications must be submitted as a single PDF file, in English, including:

- Curriculum Vitae outlining education and key achievements (one page), with links for portfolio and/or scholarly publications if available;
- Cover letter (one page) explaining your motivations, skills and expertise, and how this PhD position aligns with your career goals.
- Names and contact information for 2 academic referees;
- Copies of University degree or study transcripts.

Starting date should be no later than 1st June 2023.

Desirable criteria:

- BSc or MSc Degree in Human-Computer Interaction, Computer Science, Software Engineering, Electrical Engineering or another related area
- Excellent skills in software **and/or** hardware **and/or** design and prototyping
- Familiar with or interested in new technologies for immersive interaction
- Experience with VR applications (e.g. Unity) **and/or** data analysis **and/or** computer systems

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The scholar will be required to register for a Structured PhD and must apply for an Irish Research Council PhD scholarship within the first two years of their initial registration. The financial support of the faculty will not extend beyond four years, and it is subject to the satisfactory academic progression of the PhD scholar.

Enquiries:

For any questions, please contact by email Lilian.MottiAder@ul.ie

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