TUS
Technological University of the Shannon:
Midlands Midwest
Ollscoil Teicneolaíochta na Sionainne:
Lár Tíre Iarthar Láir

POSTGRADUATE RESEARCH OPPORTUNITY

Project Title: A Quality of Experience Evaluation a Multisensory Virtual Reality Art Exhibit for Individuals with Visual Impairments

Short Project Description:
In recent years, museums have become more interactive and immersive through the adaptation of technology within large scale art exhibitions. These new types of cultural experiences are more appealing to younger audiences. However, some museum experiences are still primarily focused on visual art experiences and hence remain out of reach to those with visual impairments. Such unimodal and visual dominated experiences restrict these users who depend on sensory feedback to experience the world around them.
This PhD project will design, develop, and evaluate novel interactive eXtended Reality (XR) 2.5D art experiences that include multisensory components. As part of the project, 2D paintings will be transformed into 2.5D virtual objects. In 2.5D, flat 2D image planes and 3D elements are mixed and different layers allow people to gain an appreciation of the depth and textures of the painting. The combination of 2.5D virtual objects, auditory and haptic feedback (via multisensory technologies) will provide users with a multimodal, immersive and interactive experiences. It will allow individuals to engage and interact with an artwork museum experience presented in Virtual Reality (VR). Users can interact with virtual paintings and trigger sensory zones which deliver multisensory feedback to the user. These sensory zones are unique to each painting. The experience will facilitate thematic audio and scents, custom haptic feedback to feel the artwork, and lastly air, light, and thermal changes in an effort to engage those with visual impairments.
A key component of this research will be the experimental quality of experience (QoE) evaluations undertaken with users who have normal visual abilities and those who have visual impairments. The research is motivated to understand and quantify factors that influence user perceived QoE of these new accessible multisensory XR art experiences.

Duration of Project: 48 months

Funding Agency: TUS RISE Scholarship comprises of a monthly stipend, materials budget and postgraduate fee for the duration of the award only.

Type of Degree Offered: PhD

Minimum Qualifications/Experience Necessary/Any Other Requirements:

- Primary Degree (hons) in computer science, computer engineering, HCI or aligned field.
- Experience with Game Development Engines (Unity3D, Unreal etc.)
- Experience with 3D Modelling software (Blender etc.)
- Minimum classification of 2.1 honours or equivalent.
- IELTS [International English Testing System] Applicants must have a minimum of 6.0 with no component score less than 6.0.

Research Supervisors:

- **Dr Conor Keighrey** – TUS: Midlands Midwest (Athlone Campus), Ireland.
- **Dr Niall Murray** – TUS: Midlands Midwest (Athlone Campus), Ireland.
- **Mr Tupac Matir** – Satore Studio, Portugal.

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TU RISE is co-financed by the Government of Ireland and the European Union through the ERDF Southern, Eastern & Midland Regional Programme 2021-27 and the Northern & Western Regional Programme 2021-27

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For further information please contact:

- **Dr Conor Keighrey** – conor.keighrey@tus.ie

Closing date for receipt of completed application form is 5pm on Tuesday, 4th June. Interviews will take place within subsequent weeks.

Download TUS RISE application form here:
https://tus.ie/rdi/research/office/funded-research/

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