Organization Name: The Manufacturing Technology Centre
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What type of research project?

Analysis of Software or Hardware Issues, New Standards Development

Topic of proposed research project:

Proposed Framework for measuring Usability and Safety (Human Factors) of an Augmented Reality System/Application

Goal of research project (200 words):

In order to produce robust and adoptable Augmented Reality systems, it is imperative that these systems consider human factors within its solution. The two main areas of human factors that this project will seek to understand is Usability factors and Managing Safety of a proposed augmented reality system. This project will research a method to systematically measure the usability (efficiency, effectiveness and user-satisfaction), and the associated safety/risks in a designed augmented reality system. Research will propose an evaluation methodology AR systems design (including hardware, software, and integration/process) to aid in the development of an optimum AR experience for a user. It will look into identifying appropriate and proven human factor analysis tools that could be used to measure the Usability of an AR design in relation to its application.

What are the specific objectives for the research?:

1. Identification of Human Factor Tools and down-selection appropriate for measuring Augmented Reality systems. (PPT, Excel)

2. Identification of risks, failures and mitigations for AR systems- Hardware and Software in an eco-system context. This will be done using an FMEA tool.(Excel, PPT)

3. Case Study using the tools for a ready-built system. Using the tools identified in the first two objectives to undertake a human factors analysis of a example AR system already designed at the MTC. This will be to understand the pros- and cons and issues that may occur first hand whilst running a human factors study. (Test design Report + Tools (questionnaires, etc)

4. Analysis and Evaluation of results gained from utilising the down-selected tools. (Final Report)

Who do you think has expertise to conduct this research?:

The Manufacturing Technology Centre has been actively involved in conducting literature reviews and background research around Augmented Reality for the means of developing internal knowledge/capability and understanding of AR technology. We have a team of front and back-end developers who have knowledge in user-centred design of VR and some AR applications.