Technology intervention for the preservation of intangible cultural heritage with motion detecting technologies

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Background:
This trans-disciplinary study presents the initial outcomes of a key study undertaken to explore the role of augmented reality and motion detecting technologies in the context of Intangible Cultural Heritage (ICH) for museums-related environments. Initial prototypes are in the form of an interactive infrared camera based application for children to engage with an Aboriginal puppet, and Arabic calligraphic writings without touching any input devices. This study is unique as it tries to combine two extremes: the curation of historical intangible artifacts and their preservation through digital intervention.

Objectives:
This project aims to produce the following outcomes:
* create a proof-of-concept ICH intelligent kinesthetic learning space;
* evaluate and explore knowledge transfer opportunities of ICH afforded by peripheral games technology.

The central research questions are:
1. Design: What do motion-capture and associated gaming technology experiences that are suitable for knowledge transfer of ICH in a museum situation look like?
2. Exemplified/perceived effectiveness: What is the contribution of this augmenting technology in terms of the perception of authentic and engaging learning environments?
3. Sustainability, scalability and interoperability: How can museums ensure ICH content is reusable and transferable?

Methods and Results:
The data will be collected and analyzed according to the differences in visitors' interactions and engagements. The data will be examined using (2 x 3 x 4) matrix triangulation strategy. The qualitative data will then be analyzed using quantitative methods such as Chi Square test and Analysis of Variance (ANOVA). The analysis will culminate the visitors’ behaviors and further development of the motion-detecting prototype. It is anticipated that the results will clarify the visitors' frequency of interaction with ICH content and their length and quality of engagement with the prototype.

Conclusions:
Heritage-related intangible content is always restricted because of its non-physical nature and has never been fully embedded in an environment like museums and related exhibitions. The study explores alternative opportunities for knowledge transfer of ICH content that manifest with playfulness in order to elicit a deeper understanding of such intangible cultural artifacts. This study complements multiple disciplines, including heritage preservation, museum technologies and emerging interaction design.