Guest Editorial Preface

Special Issue of Revised and Extended Papers from Virtuhoma: VR+AR Symposium

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Researchers have proposed that mixed reality (XR) tools, that include virtual reality (VR) and augmented reality (AR), have the potential to not only support different types of abilities, but also help stimulate and promote interconnections between them (McLellan, 1994; Pantelidis, 1997). More than just providing a medium for entertainment these technologies are poised on becoming the next computer platform similar to the role that personal computers have been playing in the past few decades. These tools provide new opportunities for integration of diverse skills/ representations, facilitating three dimensional simulations, communication and massive collaboration in the workplace of the future.

Virtual and augmented reality technologies are blurring boundaries between professions traditionally thought of as science/STEM based and professions traditionally thought of as arts based, providing a common medium to interact and collaborate, supporting the multi-disciplinary nature of the future workplace. Therefore, it is important to ask questions such as: How will individuals from different disciplines work together using these types of new technologies? How will the new generation of workplace environments support efficient workflows? What can these new technologies offer and what are they capable of offering these future workplaces and workflows?

With the intention of answering these questions, in January, 2018, a multidisciplinary group of faculty (with backgrounds in architecture, engineering, interior design, library and information sciences, educational technology, and graphic design) developed a project that brought together a diverse set to participate in a hackathon, where they were required to provide a solution to a question posed, within a forty-eight hour period.. The students were specifically and intentionally placed in multidisciplinary groups and their problem-solving process was documented through audio and video recordings. The collected data was analysed and presented by individual faculty as well as guest speakers in a symposium held later that year at Oklahoma State University.

This special issue of the International Journal of Virtual and Augmented Reality (IJVAR) contains four revised and extended papers that were presented at the Virtuhoma: VR+AR symposium at Oklahoma State University on September 28th, 2018 (plus two closely related articles).

The first paper *"An Exploratory Study Examining Group Dynamics in a Hackathon"* focuses on the hackathon phenomenon and compares team dynamics that occurred in multidisciplinary groups during the weekend hackathon. Alana Pulay (Interior Design) and Tutaleni Asino (Education Technology) discusses important themes such as In-group bias within the hackathon groups as well as

gender disparities in hackathon participation. They emphasise the importance of studying intergroup relations in multi-disciplinary hackathon events.

Even though not directly related to the Hackathon, *"Primary Generators. The Influence of Digital Modelling Environments in the Creative Design Process"* by Luis Mejia (Product Design) and Hugo Arango (Product Design) discuss how digital tools used in the hackathon influences the creative problem-solving process. They use an elaborate protocol analysis methodology in order to elucidate their findings. This paper was presented at the AR+VR symposium to help understand the role of digital tools in the problem-solving process.

Elizabeth Pober (Interior Design) and Matt Cook (Emerging Technology Librarian) in their paper *"Thinking in Virtual Spaces: Impacts of Virtual Reality on the Undergraduate Interior Design Process"* focuses on how students and faculty used a virtual reality platform, and share the challenges and impacts of incorporating full-scale analysis into the student's design process. This paper was presented at the VR+AR symposium due to two main reasons. On one hand, it provides information about a novel VR platform and how interior design students used it, and on the other, it focuses on the collaborative aspect of VR tools.

In the fourth paper, *"Problem Solving in Teams in Virtual Environments Using Creative Thinking"*, Aditya Jayadas discusses the importance of Problem solving while using creative thinking. Using the participants of the hackathon, he analyses their problem-solving process. He states that with increased diversity in the workplace and more individuals working remotely, there is a growing need to understand strategies used to problem solve in virtual environments.

The paper *"Gendered Experiences of Mobile Gaming and Augmented Reality: Engagement with Pokémon Go among University Students"* by William Goette, Julie A. Delello and Rochell R. McWhorter highlights similarities and differences between male and female college students' in playing augmented reality games and focuses on how these games can be used to enhance social interaction.

Finally, in the paper, *"An Empirical Investigation of the Impact of an Embodied Conversational Agent on the User's Perception and Performance with a Route-Finding Application"* Ioannis Doumanis and Serengul Smith investigates the design and evaluation of a gamified mobile tour guide prototype for route finding in historical attractions.

The well-known science fiction author, Arthur C. Clarke in two of his three laws state that any sufficiently advanced technology is indistinguishable from magic, and that the only way of discovering the limits of the possible is to venture a little way past them into the impossible. VR and AR have moved from that magical domain becoming everyday realities in our homes and workplaces. We hope that by exploring different aspects of these technologies we are pushing the boundaries of the impossible so that magic again becomes indistinguishable from the technology that is virtual and augmented reality.

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