

Guest editorial

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User involvement in virtual and augmented technologies and games for rehabilitation and learning: ICDVRAT-ITAG special issue

The ICDVRAT conference series was initiated by Paul Sharkey, University of Reading, UK in 1996 and since continued to run as a biennial international conference held in different locations worldwide. Over this time, Paul established a research community of over 1,000 members from 35 countries with a range of interests in the application of virtual reality (VR) and its associated technologies for the beneficial use in assessment, treatment and support of individuals with disability, impairment or support needs. An overview of the range of technologies and applications covered by the conference, to celebrate its ten-year anniversary, was reported in Cobb and Sharkey (2007). Paul also established a wonderful resource in the ICDVRAT archive available at: www.icdvrat.org/archive.htm comprising full and short papers presented at all ICDVRAT conferences.

Following Paul Sharkey's retirement in 2016, the 2018 conference marked the beginning of a new chapter in this conference series evolution, starting with a collaboration between ICDVRAT and a related conference Interactive Technologies and Games (ITAG). Both conferences shared a focus on the development and use of assistive/educational technology and a strong ethos of inclusion, providing a forum for discussion and sharing of ideas and innovations between technology developers, clinicians, research scientists and end users and we were delighted to celebrate this through a special theme of "user involvement in research" for the ICDVRAT-ITAG 2018 conference held in Nottingham, UK. The conference papers present a range of research areas including: serious games for education, end user involvement in research, exposure therapy, stroke/TBI, cognitive impairment, technology for rehabilitation and healthcare applications.

In this special issue, seven invited papers from ICDVRAT-ITAG 2018, including some receiving best paper awards, highlight the importance of user involvement in design and evaluation of novel technologies and applications for rehabilitation and/or learning. These papers demonstrate different methods for user representation, and involvement, in technology research and development. For example, Galvez-Trigo *et al.* present a cross-cultural comparison of teacher critique of barriers to the implementation of robots in special education, whereas Pieri and Cobb describe a participatory design approach in which deaf adults informed the iterative development of a mobile app to aid them in communication with hearing people. Lahav *et al.* pick up the theme of research into the use of robots, this time with high functioning students with autism. Designing the behavior of smart artifacts, these students were able to program robotic behavior independently and directly, without the involvement of a therapist. Proffitt *et al.* build on this and explore end user engagement at different stages of the design process and offer recommendations for the effective integration of input from end user clients and therapists in the development of VR technologies for rehabilitation. Howes *et al.* explore the User Centred Design of an Active Computer Gaming system with elders to deliver tailored rehabilitation exercises to meet their needs, in the context of falls prevention. Interestingly, this group had a strong preference for a screen display compared to using an Oculus Rift VR headset. Other research in this special issue considers how designer appreciation of the needs and requirements of people with "hidden disabilities" can improve the design and use of rehabilitation technology. Zubair *et al.* show the importance of effective personae description of children with autism, while Poyade *et al.* demonstrate successful user-informed development of a mobile app to provide virtual exposure therapy to help people with autism or PTSD cope with busy public environments.

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This special issue builds on the interest shown in Vol. 10 No. 2 (www.emeraldinsight.com/toc/jat/10/2) that focused on the co-design of assistive technology, and encouraged a particular focus on innovative technologies which are showing a great deal of interest from the research community. Sharing of practical experience on the design and use of VR and associated technologies as enabling technology for users with disabilities and the value of an inclusive design approach will provide useful guidance for researchers concerning how to conduct successful inclusive design projects for future enabling technologies. This is increasingly important for research and teaching as well as for the implementation of research in practice.

Reference

Cobb, S.V.G. and Sharkey, P.M. (2007), "A decade of research and development in disability, virtual reality and associated technologies: review of ICDVRAT 1996-2006", *International Journal of Virtual Reality*, Vol. 6 No. 2, pp. 51-68.