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Preliminary study on modelling and simulation of virtual reality assistive tool for autism children using gaming software

Abstract

Autism Spectrum Disorder (ASD) is an early childhood disorder that affects individual ability to interact and socialize with other people. Children with ASD have problems interacting with their peers and have difficulty to exercise their social skills. In this study, a virtual reality (VR) based assistive tool was modelled and simulated using a gaming software called Dark Basic Professional (DBPro). The assistive tool was developed to support ASD children to interact and apply the social skills. Seven tasks were designed for the VR assistive tool based on three targeted skills including facial expression recognition, reading comprehension, and task delivery. As a preliminary study, only three non-ASD children were participated in the VR assistive tool experiment to analyse the tasks. The experiment results showed that all participants successfully performed five out of seven tasks. However, all participants failed to perform the video prompting task while one participant was not able to recognize the emotion from robotics-based faces in the facial expression. The results from pulse sensor showed that the heart rate was stable during the basic experiment using VR but unstable during the applied experiment and real-world discussion. There is a need to review the overall modelling and simulation technique, and the number of participants among ASD children should be increased for the future study.