MMRTD: Multi-Sensory Mixed Reality Therapy for Dementia

Chan, Ingrid (School: German Swiss International School (Hong Kong))

Every 3 seconds, someone in the world develops Dementia. By 2050, over 139 million people worldwide will be living with Dementia. Early interventions are crucial in preventing and treating Dementia due to its nature. VR interventions can be promising tools in patient management, particularly for dementia patients. This research aims to develop and engineer a Mixed Reality (MR) rehabilitation application called MMRTD: Multi-sensory Mixed Reality Therapy for Dementia that allows the elderly with Dementia to practice physical and cognitive skills simultaneously via an immersive virtual environment and customized content through three kinds of perception: Olfaction, Auditory, and Visual, with three therapy approaches. An eight-week evaluation study was conducted with six elderly living with Dementia to examine the hypotheses: 1) the benefits and positive impacts of using MR outweigh those of in-person therapy for the elderly with Dementia, and 2) MR rehab can benefit elderly therapy in an iteration method. The results showed that the participants improved relative cognitive function regarding the learning process and remembering steps and achieved a higher level of interest, emotion, comfort, and motivation in using MMRTD as a therapy tool. This research demonstrates that MMRTD will be able to perform quality of the users' brain and limb engagement and achieve a qualified rehabilitation result compared to in-person therapy. Iteration rehab with reinforcement of specific perceptions will provide users with more rigorous cognitive and physical activities and achieve an overqualified Dementia rehabilitation. Additionally, MMRTD will increase the willingness of elderly dementia patients to engage in rehabilitation activities.

Awards Won:

First Award of $5,000

Craig R. Barrett Award for Innovation