**Project Summary for IAL Website**

The following information is for publication on the IAL website. Please be reminded not to include any confidential information.

| | |
|---|---|
| **Project Title:** | Virtual And Augmented Reality Training Systems For The Elderly In Singapore |
| **Project Number:** | GA17-02 |
| **Year of Approval:** | 2018 |
| **Funding Source:** | WDARF |
| **Objectives and intended outcomes of the project:** | The main objectives of this project are: (1) To understand barriers to independent living that the elderly are facing in an increasingly technological Singapore, via social science research utilizing focus groups, interviews, and surveys with seniors and relevant stakeholders; (2) To form an interdisciplinary team consisting of scholars from Communication, Computer Science, Education, Psychology, and Human Computer Interaction to develop VR/AR training programs for the elderly to assist them in handling the challenges identified in our preliminary research, using social science theories as a guiding principle; and (3) To examine the effectiveness of the developed VR/AR training programs in multiple senior centers in Singapore, and ultimately implement the project in real-life settings, in cooperation with government organizations and welfare organizations so as to benefit the elderly, pave the way towards active ageing. The proposed project will add to the existing body of scientific research by (1) focusing on developing customizable training programs for the elderly that utilize interactive digital platforms and adding a new dimension to the literature on VR training programs from the fields of Communication, Computer Science, Psychology, Education, and HumanComputer Interaction, utilizing social science concepts and interactive technology with a long-term vision; and (2) providing tangible evidence on the effectiveness of interactive technology in improving well-being of the elderly and promoting active ageing. We will measure several key outcome variables that reflect the acceptance of the elderly towards such VR/AR training programs, including their confidence in handling the automated machines or workplace tasks after training, likelihood of seeking employment, interest in picking up other skills or learning other forms of technology, as well as their self-esteem. Through interplay between the elderly and the new training tools using VR/AR interactive technology, a large quantity and wide variety of high quality data could be captured to serve as important information to assess the process of training. Such findings from the data can help policy makers, social workers and non-profit organizations to develop better training programs for the elderly in terms of daily tasks, basic job training as well as learning of technology, not to mention direct benefits for the elderly. This will be vital for helping Singapore address the challenges and opportunities brought about by an ageing population in a cost-effective way. Our short-term vision is to form an interdisciplinary research team |

| | |
|---|---|
| | and to explore the potential of interactive VR and AR technology as learning interventions by providing empirical evidence for the effectiveness of such new tools. Our long-term vision is to implement cost-effective and empirically proven learning methods for the elderly in practice, developed from theory-based research using rigorous experimental methods. We believe that simulated learning for the elderly through the VR/AR training system will be a way forward for active ageing in a smart nation. In addition, our proposed project also answers the call by the Ministerial Committee on Ageing for more research on factors that motivate seniors to stay in the workforce and engage in lifelong learning, by capitalizing on rapid developments in VR technology that is set to revolutionize many key aspects of our lives. Recent releases of affordable and accessible VR devices, such as the Samsung Gear and the Google Cardboard also demonstrate that the findings from this project will be extremely timely in helping us understand more about the practical applications of virtual reality in the lives of the elderly. |
| **Project Team** | |
| **Principal Investigator:** | Associate Professor Jung Younbo<br>Wee Kim Wee School of Communication and Information (WKWSCI)<br>Nanyang Technological University |
| **Summary of Project (up to 300 words)** | |


In line with the government's Smart Nation initiative, Singapore is rapidly adopting technology in various aspects of daily life to improve the overall wellbeing of its people and efficiency of society. Concurrently, Singapore is also experiencing a shift in its population makeup. It is expected that by 2030, one in five people in Singapore will be aged 65 or older (National Population and Talent Division, 2016). These two trends combined make it more important to ensure that seniors are not left behind in the push towards a smart nation. One of the ways to achieve this is to help seniors stay updated with technology, so that they can live independently and confidently with dignity.

To address it, this interdisciplinary project, funded by SkillsFuture Singapore develops and assesses VR and AR training programs for seniors in Singapore in two domains, daily tasks and vocational training. The research team consists of scholars from Communication, Education, Engineering, and Social Work utilizing various methods, such as focus-group interviews, surveys, and experiments. Based on exploratory research, the research team has identified two essential tasks that seniors in Singapore expressed trouble with – using an ATM machine and a self-checkout kiosk. A discussion with relevant stakeholders also revealed that health coach training was a potential type of vocational training which seniors could engage in safely and on their own. To assist seniors in their training on these tasks and be in line with the government's Smart Nation initiative, the research team has developed a VR/AR training system. The results show that the VR training is more enjoyable than the traditional training, and such enjoyment led to future-use intention of automated technology and job search. We suggest that the effectiveness of VR on training and learning outcomes is conditional, depending on pedagogical approaches such as scaffolding with guidance.