

OPP: APPLICATION FIELDS & INNOVATIVE TECHNOLOGIES

Enhancing the aging experience with VR360 technology

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Purpose This study explores the use of VR360 technology to improve the lives of elderly individuals in both home and nursing home settings. We aimed to stimulate memory and provide virtual experiences of physically challenging activities, including a novel application of the AutoVR360 app for virtual driving experiences. **Method** We utilized immersive VR360 videos to simulate environments for memory stimulation and social activities. For the virtual driving experience, the AutoVR360 app, originally designed for car dealerships, was adapted to allow elderly users to navigate dream cars on various scenic routes. Participants from both home and nursing home settings were introduced to VR sessions, including virtual tours and board games, tailored to their interests and physical capabilities. The application is equipped with advanced hand-tracking capabilities, enabling users to navigate and interact without the need for controllers. The complication with regular VR practices includes controllers. While regular users of VR may find it simple to use others may find it more difficult. Using hand tracking allows users to use their hands which everyone is used to. Users are not required to be sat down but it is always good to have both options available so the users can choose their preference. Users can seamlessly use their hands within the application, with the added feature of seeing their own hands rendered in real-time. This intuitive system allows users to activate functions through natural gestures, enhancing the overall immersive experience. Hands are tracked for movement and gestures are used to control users' actions (Figure 1). **Results & Discussion** Preliminary feedback from participants indicated a positive response to VR360 experiences in terms of emotional well-being and cognitive engagement. The AutoVR360 app, in particular, was highlighted for providing a sense of freedom and adventure, with many elderly expressing joy in virtually driving cars they once dreamed of owning. Driving does not need any controls only hand gestures. This does not mean users could not include controls if preferred. VR allows for many different design iterations. Observations noted improvements in mood, increased social interaction, and enhanced recall abilities during and after VR sessions. The application of VR360 technology presents a versatile tool for addressing the diverse needs of the elderly. The stimulation of memory lanes through virtual tours and the adaptation of the AutoVR360 app for elderly users demonstrate the technology's potential to enrich the aging experience significantly. These findings underscore the importance of technological innovation in elder care, suggesting that VR can offer meaningful, accessible experiences that transcend traditional activity limitations. Future research should explore the long-term impacts of regular VR engagement on cognitive health and social well-being among the elderly. This study illustrates the feasibility and benefits of employing VR360 technology and the AutoVR360 app to enhance the quality of life for the elderly. By repurposing existing technologies for new applications, we can create impactful, enjoyable experiences that cater to the unique needs of aging populations.

References

- Kosti, M. V., Benayoun, M., Georgakopoulou, N., Diplaris, S., Pistola, T., Xefteris, V-R., Tsanousa, A., Valsamidou, K., Koulali, P., Shekawat, Y., Sciamia, P., Kalisperakis, I., Vrochidis, S., Kompastsiaris, I. (2024). Connecting the Elderly Using VR: A Novel Art-Driven Methodology. *Applied Sciences*, 14, 2217. <https://doi.org/10.3390/app14052217>
- Restout, J., Bernache-Assollat I., Morizio, C., Boujut, A., Angelini, L., Tcalla, A., Perrochon, A. (2023). Fully Immersive Virtual Reality Using 360° Videos to Manage Well-Being in Older Adults: A Scoping Review. *Journal of the American Medical Directors*, 24(4), 564-572. <https://doi.org/10.1016/j.jamda.2022.12.026>
- Alkhalifah, E. S. A. (2023). The Importacce of UI & UX Design in Virtual Reality for Showcasing Umrah Rituals: Impact of Age and Cybersickness in User Experience. *Journal of Arts & Humaities*, 12, 224-255. <https://doi.org/8.24394/JAH.2023MJAS-2311-1187>

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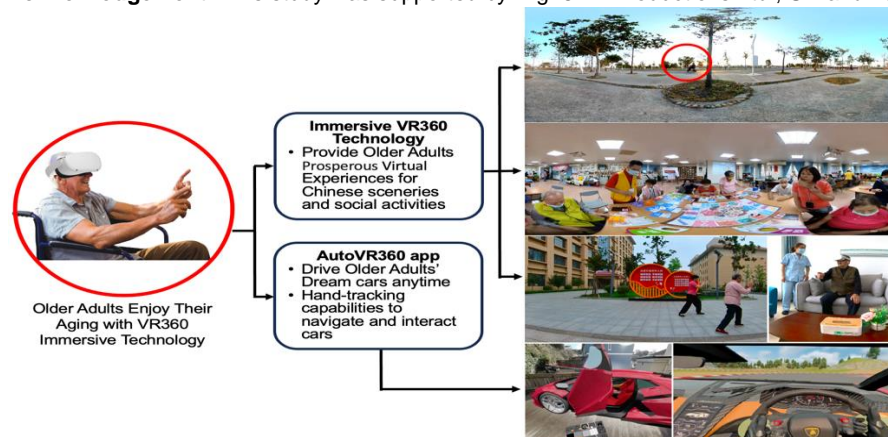


Figure 1. VR360 Immersive Methodology