

POSTER SESSION 2

Contextualizing smart home technologies with augmented reality tools to facilitate aging in place

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Purpose. Smart home (SH) technologies and the Internet of Things (IoT) have the potential to revolutionize independence and “aging in place” through access to a variety of services, including multimodal controls for appliances and systems, and connectedness to social networks and health-related supports. However, there are a variety of barriers to adoption and use of these technologies (Levy & Grandy, 2019), including a lack of awareness and understanding of the functionalities of SH applications and an understanding for how the SH technologies would work within the context of a user’s own home. To overcome the barriers to usable, useful, and inclusive IoT systems, this project developed an augmented reality (AR) support tool that allows older adults with mobility impairments (and their support network of family, friends, and caregivers) to explore device functionality, potential configurations, and user interface in a realistic, low risk, and informative way for an Amazon Alexa device. Participants explored how a virtual Alexa would work in a real home environment, connect with other technology and SH devices, and would fit in their daily lives without having to make a financial commitment to any product. **Method** These findings come from an ongoing development project funded by the National Institute on Disability, Independent Living, and Rehabilitation Research, involving older adults over the age of 60 with a mobility impairment through a participatory design process. We developed a mobile phone AR tool that can project onto a larger screen to guide users through placement requirements, usage, and technology ecosystem of the Amazon Alexa home assistant. This study explored how the AR tool provided value over the current onboarding video materials that Amazon provides, the usability of the AR tool by participants, and how the AR tool supported participant mental models of SH and Alexa functioning. **Results and Discussion** From our study with nine older adults with mobility impairments that previously had no experience with SH technologies, we found that the AR tool provides value over traditional materials in allowing users to better understand practical requirements relating to a home environment, such as proper device placement for wireless connectivity and power requirements. Participants opined higher feelings of confidence in their understanding of the technology requirements and functioning after using the AR tool, and had made definitive decisions by the end of the session if SH technologies were right for them due to exploring the virtual Alexa’s features. We present findings related to the design of the AR tool, including its accessible design and information presentation in supporting older adult understanding of SH technologies.

References

Levy, L & Gandy, M. (2019). Supporting aging in place with the Internet of Things: meeting challenges of use through augmented reality tools. *Innovation in Aging*, 3(1), S759. <https://dx.doi.org/10.1093%2Fgeroni%2Ffigz038.2789>

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Figure 1. Researchers guide the participant through the mobile AR tool by projecting its view on a larger television screen, participants can visualize the virtual Amazon Alexa where the best places are to put the device (top right) in the context of a real home and receive feedback for why certain places will not work for Alexa.