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Balancing Privacy and Safety: Stakeholder Perspectives on Video- Based Monitoring in Active and Assisted Living

Tamara Mujirishvili¹, Anton Fedosov², Kooshan Hashemifard¹, Pau Climent-Pérez¹, Francisco Florez-Revuelta¹

¹ University of Alicante (Spain), ² University of Applied Sciences and Arts Northwestern Switzerland, Switzerland

{*tamar, k.hashemifard, pau.climent, francisco.florez*}@ua.es,
anton.fedosov@fhnw.ch

Abstract

Active and Assisted Living (AAL) technologies aim to improve the quality of life for older adults. While video-based AAL solutions enhance healthcare management, they also present significant privacy risks. To address these, we developed a video monitoring system with privacy-preserving filters, deployed in an assistive technology center. A qualitative study involving older adults and care stakeholders revealed diverse perceptions and experiences with the technology, providing insights for further development. The findings highlight the privacy-safety trade-off in video technologies and how our system's privacy mechanisms alleviate concerns. Additionally, we identified varying stakeholder perspectives and potential development avenues for video-based monitoring in the AAL context.

Introduction

As the global population ages, there is a growing demand for technologies that support independent living and enhance the quality of life for older adults. Video-based monitoring systems (VMS) have emerged as a promising solution (Colantonio et al., 2018), providing comprehensive insights into the daily activities and health status of seniors. However, these systems raise significant privacy concerns due to the sensitive nature of visual data. To address these issues, the authors developed a VMS that incorporates various privacy-preserving filters, allowing for a balance between safety and privacy. The study investigates two primary research questions:

1. What are the perceptions and experiences of different stakeholders regarding the VMS, particularly concerning privacy?
2. What design opportunities exist for further development of the system?

Methodology

The research utilized a qualitative approach, user testing with prototype probes and in-depth interviews, gathering insights from three stakeholder groups: older adults, healthcare professionals, and technologists. User testing sessions were conducted with a total of 29 participants from the different stakeholder groups. This human-centered approach aimed to capture a comprehensive view of user experiences and expectations regarding the VMS.

Findings

The findings revealed diverse perspectives on the VMS among stakeholders. Older adults expressed concerns about being monitored and becoming "a number" rather than individuals, highlighting the need for systems that are humane and respect their dignity. Healthcare professionals recognized the potential benefits of the VMS in enhancing care but also acknowledged the importance of addressing privacy issues to foster trust among users. The study identified several design opportunities, including: Customization of Privacy Settings, User Education, and Community Engagement. For the detailed results see the full paper (Mujirishvili et al., 2024).

Discussion

The research contributes to the understanding of privacy concerns in the context of

video-based AAL technologies. It highlights the necessity of addressing these concerns to facilitate the adoption of such systems among older adults. By adopting a privacy-by-context approach (Charaoui et al., 2014), the study offers a framework for designing technologies that respect user privacy while providing essential care support. The findings underline the importance of balancing privacy and safety in the development of monitoring systems as also highlighted in previous studies (Schomakers et al., 2023). As technology continues to evolve, ongoing dialogue with stakeholders will be crucial in shaping solutions that enhance the quality of life for older adults without compromising their privacy.

Conclusion

In conclusion, the study emphasizes the need for privacy-preserving video monitoring systems in senior care. By understanding the diverse perspectives of stakeholders, developers can create more effective and acceptable technologies that support aging in place while respecting individual privacy rights. Future research should continue to explore user experiences and refine privacy mechanisms to enhance the trust and usability of AAL technologies.

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