

ORAL PAPER PRESENTATION 3: PHYSICAL AND MENTAL HEALTH

Development of a design framework to support pleasurable robot interactions for older adults

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Purpose The majority of developments in care robots for older adults have focused on functionality and usability evaluations (Pino et al., 2015). This is perhaps not surprising, considering the prevailing challenges connected with safety, cost, and capabilities of the robot, which are currently still being addressed (Aguiar et al., 2021). However, the eventual acceptance of these robots by older adults will require more than a usability-based approach. The emergence of new technologies and particularly care robots supporting older adults has revealed high expectations of the older adults regarding design of these products (Rogers et al., 2021). Older adults are not likely to be satisfied by just the existence of robots or their usability but seek more in terms of excitement, pleasure, and joy of using the robots. This pleasurable aspect of the design of care robots has not been given sufficient attention in the past decade; yet it might influence widespread acceptability of robots (De Angeli et al., 2020). This spurs the need for a more holistic approach to the interaction design. The goal of this research is to present an interaction design strategy that bridges the ergonomic and hedonic values in care robots to create a more appealing and engaging interaction with older adults that will promote sustained engagement and acceptance of care robots in the long term.

Method We adopted a structured approach to developing a framework for robot design that will incorporate this pleasurable experience. The framework incorporates understanding older adults more comprehensively, beyond their anthropometrics and abilities, to their personalities, preferences, fears, hopes and values. Based on the literature we identified the different dimensions of pleasure that should be considered and link the benefits to different aspects of the interaction. These dimensions include: physio pleasure (e.g. ensuring that the robot's communication fits in pleausrably with the physical sense of hearing), socio pleasure (e.g. ensuring that the robot interactions provides enjoyable social engagement with others), pyscho pleasure (e.g. ensuring that the emotional state of the older adult is considered in the interactions), and ideo pleasure (e.g. ensuring that the interactions considers the values and ideals of the older adult). We propose this framework as a guide for incorporating these dimensions of pleasure into the interaction with the care robot. **Results and Discussion** The outcome of our review and conceptualization is a pleasurable interaction design model for care robots that incorporates a richer understanding of the values and lifestyle of the older adults. This framework provides a testbed for an improved generation of well-designed care robots that older adults can enjoy. In addition, we have developed a properties checklist that can be used as an evaluation tool for researchers, care partners, and designers to assess pleasurable interactions with such care robots. Our framework encourages a holistic approach to designing care robots that extends the design beyond ease of use to the joy of use for the enrichment of the lives of the older adults.

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