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# Challenges and Opportunities of Leveraging Intelligent Conversational Assistant to Improve the Well-being of Older Adults

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**Abstract**

Recent advancements and economic feasibility have led to the widespread adoption of conversational digital assistants for everyday work. While research has focused on the use of these conversational assistants such as Siri, Google Assistant or Alexa, by young adults and families, very little work focuses on the acceptance and adaptability amongst the older adults. This SIG aims to discuss the use and benefits of these conversational digital assistants for the well-being of older adults. The goals for this SIG are to (i) explore the acceptance/adoption of voice-based conversational agents for older adults. (ii) explore anthropomorphism in the design of conversational digital assistants. (iii) understand triggers (scenarios of use) that can initiate the process of reminiscence thus leading to meaningful conversation. (iv) explore conversational User Experience. (v) explore co-existence of non-conversational use case.

**Author Keywords**

older adults; speech; conversational assistants; accessibility; intelligent personal assistants; well-being

**CCS Concepts**

•Human-centered computing → Auditory feedback; Personal digital assistants; Human computer interaction (HCI); User studies;

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## Introduction

Advancements in AI and ML have improved conversational user interfaces to become user-friendly and accessible. Their integration in hand-held or stand-alone devices have experienced huge growth [5]. Research on perception [11] and adoption [6] of conversational digital assistants for older adults also has shown positive results. Conversational digital assistants have been successful in generating a feeling of empowerment for people with disabilities [1].

Kim et. al [4] list in their work that the focus of conversational digital assistants for health and well being has mostly been around three core themes: therapeutic alliance, trust, and human intervention. However, they also mention that the inherent characteristics of target patients have so far not been considered. Also, generic conversational digital assistant platforms (Google Assistant, Siri or Alexa) are being used to cover different domains of healthcare, but there is a lack of understanding around how age might impact on the experience of engaging with these conversational agents [2].

Another point of observation is the non-inclusion of anthropomorphic features in these assistants. Pradhan et al. [7] found that older adults shift between thinking these assistants as human-like or object-like based on the nature of interaction. This raises the question of how sustained the interactions were when older adults anthropomorphize and when they don't.

We propose a Special Interest Group (SIG) to discuss how future directions of research can investigate Conversational User Experience of these digital assistants that go beyond instrumental aspects (e.g. setting up a reminder) to enrich the lives of older adults. This SIG brings together leading researchers from a broad range of communities related to speech, dialogue, HCI and voice UX to bring a multidisciplinary

approach to solving these issues. We encourage discussions from different fields of research that focus on gerontology and conversational digital assistants so that a tentative framework can be built for enhancing the social network of the older population - caregivers, friends, relatives. etc.

## Focus Area

The SIG focuses on conversational digital assistants like Siri, Alexa, Google Assistant which are either present in mobile phones or can be used from stand-alone devices like Amazon's Echo, Google's GoogleHome or Apple's Homepod. The SIG also takes into account the digital display of some of the available devices but the focus should be on conversational digital assistants and how older adults can benefit from their existence in their everyday lives.

## Goals

The goals of this SIG are:

1. *Explore the acceptance/adoption of such devices for older adults:* In this SIG we discuss how digital conversational assistants can be adopted by older people for their regular use and the limitations and challenges in doing so. We also explore the possibilities of knowing or remembering what to say, how to say and when to say it so that the conversation proceeds [10, 8].
2. *Challenges and need of designing anthropomorphizing conversational digital assistants.:* Exploring anthropomorphism in the area of conversational digital assistants has been understudied. This leads to questions like how do older adults anthropomorphize and when they do, what triggers this change in behavior. In this SIG we discuss the challenges and the

need for anthropomorphism of conversational digital assistants and possible impact on the older adults.

3. *Understanding triggers or scenarios that leads to meaningful conversation.*: Most triggers for reminiscence involve an image that the person recollects from and starts a conversation. However, in the case of most of these conversational digital assistants, we do not have a visual trigger. This SIG will explore the approaches and challenges towards collecting personal information which produces meaningful personalized triggers that lead to conversation, without visual triggers.
4. *Conversational User Experience*: There are reasons to suggest that digital assistants can make interactions with computers significantly better for older adults. Many difficulties they experience while using computers and smartphones come down to the ubiquitous use of Graphical User Interfaces (GUI) across platforms and its desktop metaphor. Using voice as an interaction paradigm should help address many GUI based difficulties. Yet, how do we design conversational user experiences? What makes a good conversation between digital assistants and older people? How do older people 'talk' to these technologies, and how should these technologies 'talk back' to them? [9]
5. *Co-existing along-side non-conversations*: There may be a need for non-conversational interactions, such as a wake-up alarm, a pill-time reminder, ordering extra milk, or a gentle nudge to go for an exercise. An interesting question might be how these might co-exist with conversational user experiences, and whether these should deliberately feel different than the conversational bits (e.g. using a different voice).

## Schedule

Time	Activity
10 minutes	Introduction of organizers and people attending the SIG; introduction of core topics of discussion.
10 minutes	Sharing of experience and challenges
05 minutes	Group formation for brainstorming
30 minutes	Session I: (i) Ethical considerations (ii) Current challenges (iii) Plausible approaches (iv) Outcomes (v) Plan of execution
25 minutes	Session II: (i) Group presentation (ii) Collective reflection and possible future collaboration.

## Conclusion

Older adults are statistically more likely to experience loneliness and isolation [3] and can benefit from the presence of a conversational digital assistant. Conversations bring out their emotions and apprehensions which often is concealed as they don't wish to reveal their challenges. However, the needs of all the older adults will not be the same. This SIG aims to discuss how researchers can take advantage of the ever-present digital assistants to motivate and guide the older adults who need help towards better mental well being while continuing to be a command-driven utilitarian tool.

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