
Allegra, How Do We Prevent Ageism in CUIs?

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Abstract

Older adults are increasingly becoming target users of conversational user interfaces (CUIs) for essential services, such as those for staying socially connected. However, we do not fully understand the interplay between design considerations and the integration of CUIs into older adults' social fabric. CUIs risk marginalizing the very group of people that could stand to benefit from using them if their design does not adequately meet older adults' needs, much in the same way that design of technology for older adults has in the past. In this paper, we present a preliminary discussion of how CUI design might avoid contributing to the ageist narrative that has prevailed in the design of technology for older adults. We ground our discussion in considerations that have been made in the design industry. In doing so, we argue that ageism is a key factor of digital design marginalization in the inclusive design of CUIs.

Author Keywords

Older adults; ageism; digital design marginalization; inclusive design; conversational user interfaces

CSS Concepts

• **Human-centered computing~Human computer interaction (HCI)**; HCI design and evaluation methods; *Interaction design*;

Introduction

Conversational user interfaces (CUIs) are increasingly being employed in devices and services where older adults (those aged 65+) are users or key stakeholders. Commercially available CUI-based services have been designed to, among other tasks, help older adults consume news [2], connect with loved ones, and contact government representatives [1]. Recently, Amazon launched the Alexa Together service to help older adults stay connected to their caregivers and receive support through fall detection, activity alerts and emergency services [19]. It is clear that CUIs are no longer considered to be merely gimmicks and that earnest efforts are being made to design CUI technologies to help older adults stay connected to the rest of society and effect change in their lives.

Yet, there remains a gap in the research on the interplay between barriers in CUI design with the social well-being of users. To start, we do not yet fully understand older adults' perceptions and barriers to CUI use, how CUIs should communicate with older adults, and how anthropomorphism impacts older adults' experiences with CUIs [10]. With the growing use of CUIs for essential services for older adults, we must be equipped to design CUIs in ways that do not result in the same design-based marginalization effects as have been experienced before when services had been digitized [6,8,11].

The goal of this paper is to contribute to our understanding of ways to prevent CUI-mediated digital design marginalization [11] of older adults. When it comes to designing technology for older adults, one factor that the industry has recently deliberated is the impact of design on ageism. In this paper, we discuss

some of the design industry's considerations on ageism and relate them to the design of CUI. We present these points to highlight some potential considerations for the inclusive design of CUIs, namely, those based on ageism as a digital design marginalization factor.

Design Considerations for Ageism

The term ageism was coined by Robert Butler in 1969 and is used to describe discrimination against people based on their age [3]. This term can apply to discrimination against younger or older people; in this paper, we will focus on that of the latter. Ageism can be institutional (baked into laws, rules, social norms, policies and practices of institutions), interpersonal (arising in interactions between two or more individuals), or self-directed (where ageism is internalized and turned towards oneself) [15]. Ageism is linked to many negative outcomes including shorter lifespans, poorer physical and mental health, slower recovery from disease, cognitive decline, and social isolation and loneliness [15]. In this paper, we frame current discussions in the design industry of ageism in terms of potential considerations for CUI design moving forward.

CUI Design Considerations based on Industry Focus

The reinforcement of ageism has been presented in the industry as an issue for designing for diversity [16]. One set of causes that have been presented [16] for resulting in ageism in design has been the supporting a frailty narrative, features the design equivalent of 'elderspeak', has been centred around a design outcome for health and medical needs, focused on functionality, and needs to consider strategies to reduce ageism. Further details on these reasons for

ageism in design, as well as some prompting questions for CUI design, are as follows:

- **Frailty Narrative:** It has been suggested that many existing designs for older adults have reinforced negative stereotypes [16]. Examples include mobility-limiting exosuits used to help people empathize with older adults to street signs (that have been recalled) with silhouettes of older adults that are hunched over while crossing the street. Not only do such designs reinforce the narrative of older adults as being frail, but also the perspective that all older adults are this way, when in fact older adults do not form a homogenous group. Common designs are for older adults living with dementia and residing in long-term care homes, when the majority of older adults do not fall into either of these categories (e.g., 11.3% of those aged 65+ in the USA live with Alzheimer's [18], 7.1% in Canada [4] and the UK [17]). The issue of treating older adults as a homogenous group has been previously raised in HCI as well [14].

Meanwhile, CUIs as of yet have not been as clear focused on a frailty narrative – reviews of the literature do not indicate that CUI design has a focus on studies focused on CUIs for Alzheimer's or dementia, for example [13]. Instead, CUIs have been used for other benefits for older adults such as helping with shopping and developing social skills. Could CUIs be the next frontier of designing for an ageing (rather than a frailty) narrative? The discussions about frailty narratives presents some additional questions for CUI design: in what ways do our CUI designs (whether or not they are intended for older adults) reinforce a frailty narrative? What

portion of older adults have been under-spoken for when it comes to CUI design? How might we give them a voice?

- **Elder Design:** Elderspeak [7] refers to the way in which people may talk to older adults in an exaggerated manner. This behaviour is believed to embody a stereotype that older adults have reduced cognitive abilities, and may reinforce dependency and depression in older adults [9]. The design equivalent of elderspeak has been coined 'elder design', with examples being the making products designed for frailty and the use of large buttons. This approach risks reinforcing for older adults that ageing is "stupid" and the negative stereotypes associated with ageing.

When it comes to CUIs, it is still not known how CUIs should talk with older adults [10]. Current CUIs communicate with older adults in the same way they do with people in other age groups [10], although more research needs to be conducted to find out how to further improve conversations across populations [5]. The aspect of elder design raises some questions for CUI design, such as: what is the CUI equivalent of designing huge buttons? How might we design CUI to avoid 'elder design'?

- **Design Outcome for Health and Medical Needs:** Design for older adults has been considered in the industry to be driven largely by the health, caregiving, and medical sectors [16]. The stakeholders in these areas are largely concerned and in contact with the portion of older adults that are frail. Since the industry focus is on health,

medical, and caregiving, many products for older adults focus on aid, monitoring, and the facilities to support these activities. As a result, the focus of design has been centred around accessibility, functionality, and control. These products contribute to the frailty narrative, and only represent a select group of people who need those products.

When it comes to older adults, CUIs have been explored for a number of functions related to health (including encouraging exercise, preparing for doctor's visits, and conducting telehealth visits) and caregiving [13], and perhaps underexplored in terms of their uses for other benefits. At this stage, some questions for the CUI community to consider may be: To what degree has CUI design been driven by the needs of the health and medical sectors? What are other sectors for which older adults remain underserved?

- **Focus on Functionality:** The benefits of existing guidelines for the improved design of products for older adults and that which could help to reduce ageism has been acknowledged in the design industry [16]. These guidelines include accessible design, universal design, design for all, and inclusive design. However, these guidelines have been criticized for being focused on functionality [16].

When we turn to designing for CUIs, we may ask: what other aspects could we design for besides functionality? Current work suggests that sociotechnical considerations [12] such as digital design marginalization [11] may be worth pursuing.

- **Terminology used for designing for ageing:** It has been raised in the industry that stark differences arise when comparing the terminology around design between older adults and that for children. On one hand, designing for older adults concerns user experience, functionality, disability, pity, protection, dependence, and how technology can help them [16]. Meanwhile, designing for children speaks to designing for the human condition, fit, ability, empathy, security interdependence, and a focus on how social elements can help them. The discrepancy is believed to speak to a difference between designing for ageing compared to designing for dignity, and there have been calls in the industry to further consider ways to design products for older adults for dignity.

As far as we are aware, no investigations have been made on the language used by CUI designers when it comes to design for older adults. For CUI design, this may raise questions of: what terminology have we been using when designing CUIs, and that which might contribute to ageism?

- **Strategies to Reduce Ageism:** To help guide discussions about how to reduce ageism in design, the industry has consulted The Global Report on Ageism issued by the World Health Organization (WHO) [15]. The WHO has suggested policy and law, educational interventions, and intergenerational contact interventions [15] as strategies for reducing ageism worldwide across all sectors.

With regards to CUI design, the degree to which ageism is addressed in design classrooms and the ways in which to teach about it is under-addressed.

On the other hand, CUI research has a promising track record of participatory approaches to design, where older adults are included in the design process [13]; such approaches may be one way to increase intergenerational contact interventions to reduce ageism in design. Overall, in terms of CUI design, some potential considerations are raised, including: What strategies might help with reducing ageism in CUI design? Are there any changes in policy and law, educational interventions, or intergenerational contact interventions that can be useful to implement in CUI design for helping to prevent ageism and digital design marginalization?

Conclusion

In this paper, we referred to industry discussions of ageism in general design as a springboard of ideas for potential CUI design considerations. The design industry has been remarked as reinforcing a frailty narrative that marginalizes older adults. Specifically, design for older adults has been criticized for featuring the design equivalent of 'elderspeak', being centred around a design outcome for health and medical needs, focusing on functionality, and needing to consider strategies to reduce ageism. This paper aims to take these lessons and apply them to CUI design so as to spark discussions of sociotechnical factors of marginalization to be considered when designing CUIs. If unaddressed, these factors risk further marginalizing older adults who would otherwise stand to benefit from using products designed for them.

CUIs designed specifically for use by older adults are growing in number and popularity. It will be essential for CUIs to not make the same mistake as other technologies before them. In this paper, we discussed

from the perspective of CUIs the lessons learned from the design industry. These centred around how ageist narratives created by designers impact how older adults see themselves and on how designers see them. Through this, we may start to understand how we might design CUIs to help change and shape the narrative on ageing for the better.

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