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## HCI and Aging: Beyond Accessibility

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**ABSTRACT**

Despite improvements in the accessibility of digital technologies and growing numbers of tools designed specifically for older adults, adoption of such tools remains low for this demographic. This workshop aims to explore the contextual factors that contribute to reduced uptake among older adults in order to understand how to design digital technologies that will be appealing to and work for them, fitting with recent calls for more holistic approaches to designing for older adults. Going beyond standard accessibility considerations, and aiming to inform design of technologies for the general population rather than the design of senior-friendly variants of such tools, we will generate a set of principles for developing tools that older adults can and will use.

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## CCS CONCEPTS

• **Human-centered computing** → **Human computer interaction (HCI)**; *HCI theory, concepts and models*; • **Social and professional topics** → **Seniors**; **Seniors**;

## KEYWORDS

HCI, aging, older adults, technology adoption, design, accessibility, participatory methods,

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## BACKGROUND

There is a vast corpus of HCI research focusing on the challenges of designing technologies for and with older adults. All too often, this research is lumped in with accessibility research. Here at CHI'19, for example, authors could submit their work to the subcommittee titled “Accessibility and Aging”, a classification that would appear to align with the dominate view of aging as a process of decline that assistive technologies can help compensate for [10, 11]. This framing is evidenced by the abundance of work in the field of HCI and Aging that seeks to develop what might be called “senior-friendly” applications and devices—variants on common technologies that are typically characterized by their reduced functionality and superior accessibility [11]. Despite having been designed for (and often with) older adult end users, such variants frequently see limited uptake [12], which may suggest that they are not sufficiently useful to warrant the effort it takes to learn to use them, and/or that they somehow do not fit well into the lives of older adults [7].

It is true that older adults are more likely than younger adults to experience accessibility related challenges in using digital technologies as a natural consequence of the aging process, and that they are more likely to have multiple health related constraints. But accessibility issues are not necessarily the most salient factor in older adults' interactions with these technologies. Older adults are a highly diverse demographic, and chronological age is a poor predictor of one's physical health or cognitive function [4]. More importantly, to the extent that physical and cognitive decline do factor into older adults' lives, they do not represent the entirety of the older adult experience. What makes older adults uniquely interesting subjects for HCI research is partly their accessibility needs, perhaps; but also certain characteristics of their particular life stage, their long histories of learning and using different technologies, and their generational perspective(s) on the social context in which they live.

This workshop aims to facilitate discussion around the contextual milieu of older adulthood in order to identify a set of themes and principles for designing digital technologies that work for older adults. We know that older adults use fewer digital technologies than younger adults and use fewer functions within these technologies [5]—trends not explained by accessibility problems alone [6]. We also know that there is a growing expectation for digital proficiency, with fewer accommodations for individuals who cannot keep pace with rapid technological changes [3]. To help ensure that older adults are not disenfranchised by the digital technologies that permeate society, the HCI community will need to move beyond a focus on accessibility as the core design requirement for older adults and consider the myriad other factors that make learning and using digital technologies less appealing for this demographic. This workshop is motivated by a desire to understand what in particular will make digital technologies appealing for older adults, what methods might be effective in eliciting their design requirements, and how these requirements might be embedded into digital technologies for the general population so that older adults need not rely on limited functionality, senior-friendly variants of common applications and devices.

## ORGANIZERS

Within their various works, all of the organizers of this workshop have championed a holistic approach to designing for older adults. Bran Knowles, the main contact person for this workshop, has explored the factors that contribute to older adults' stated distrust of digital technologies. Her recent publications with co-author and co-organizer Vicki L. Hanson argue that concerns about the social impacts of technology are a significant contributor to reduced uptake of digital technologies, and that older adults use the language of distrust to justify their non-use [6, 7].

For her own part, Vicki L. Hanson (CHI Academy member) has worked in both the field of aging and the field of accessibility for over 20 years. She has found that older adults frequently say they are “too old” to use technology despite otherwise objecting to being characterized as “old”, suggesting that “something about how the technology is designing isn't working for them” (<https://tinyurl.com/yaq3usuo>).

Through her research on older adults' use of technology toolkits, Yvonne Rogers (CHI Academy member) has concluded that for older adults to find value in digital technologies they need to be designed in ways that support the full diversity of older adult life experiences, bodies, and skillsets [10]. More generally, Yvonne is interested in how new technology can engage older adults in helping envision the future while making an impact on society.

Anne Marie Piper has shown that older adults can find value in online participation through blogging as meaningful engagement in retirement [1] and as a way to push back against issues of ageism [8]. Her work argues for designing technologies to support late-life development and self-expression, focusing on what technologies can contribute to the broader lived experience of older

adulthood. Her current work focuses on designing technologies for intersectional identities, such as being both an older person and identifying as having a disability [2], and viewing technology design as a way of understanding complex lived experiences rather than “solving problems” of aging [9].

Jenny Waycott has explored the reasons why older adults choose not to use digital technologies, and has identified a multiplicity of contextual (i.e. life) factors that can be in tension with use of any given tool, and as such she has advocated a more critical perspective on what technological interventions are aiming to achieve for older adult users [12]. She is about to undertake a 4-year fellowship entitled “Emerging Technologies for Enrichment in Old Age: A Critical Perspective” (<https://tinyurl.com/y8f5y3o3>), which will explore older adult users’ experiences of technologies designed to promote social and emotional enrichment, and how such technologies actually achieve their intended benefits.

And through his experiences in developing mobile technologies for older adults, Nigel Davies, along with co-organizer Bran Knowles, has identified high level architectural and systems issues in designing for older adults that transcend traditional UI (i.e. accessibility) considerations. His work (publication forthcoming) points to the importance of themes such as trust, data ownership, and adoption, as well as system-level considerations including on-demand interaction and supporting disconnected operation.

The organizers also bring a wealth of expertise in methods for conducting research with older adults, including ethnographic (interviews, focus groups, observations) and co-design approaches. Their work has demonstrated that older adults engage enthusiastically in co-creating digital technologies [10, 12], but that merely involving older adults in the design process does not guarantee that older adults will eagerly adopt the technological outputs of this process (publication forthcoming). Given the apparent challenges in eliciting design insights from engagements with older adults, the organizers believe there is significant value in researchers in this field coming together for this workshop to discuss their own respective insights towards identifying cross-cutting themes and principles of good design.

Provisional themes for the workshop are drawn from the organizers’ experience—e.g. factors that make technology appealing for older adults; how people find and make value in older adulthood; social impacts of digital technology in relation to values; engaging and empowering older adults as equal participants in society; systems design considerations for older adult users. These themes will be adapted according to participants’ experience and interests, as determined by their workshop submissions and discussions that unfold during the course of the workshop.

## WEBSITE

Details about the workshop, including key dates, are available via the workshop website at <http://mobileage.scc-brutha.lancs.ac.uk>. This website will act as a repository for participants’ submissions in the weeks

leading up to the workshop, and participants are encouraged to familiarize themselves with the other attendees prior to the day of the workshop.

### PRE-WORKSHOP PLANS

Individuals wishing to attend the workshop are invited to submit a 2–4 page position paper in the form of a Q&A answering the following questions:

- What contextual factors make older adults unique?
- Why do you think aging is an interesting area to research?
- What themes have you explored in your work?
- What research methods have you used to engage older adults in the design process or otherwise elicit relevant design criteria?
- What aspects of aging, or what challenges in aging research, will continue to be relevant in decades to come, and why?
- How will applications of the future differ from today for older adults?
- What are you hoping to get out of attending this workshop?
- Is there anything else you would like to tell us?

Each prospective attendee will need to submit his or her *own* Q&A, and authors are expected to use the template provided at <https://tinyurl.com/y8nmdxdc>, which includes further details. These answers will be used as the basis for inclusion in the workshop, as organizers will select 15–20 participants whose answers indicate a potential to contribute to a dynamic group discussion. Answers will further be used as the basis for sorting participants into panels. For each participant, organizers will select an answer that they felt was most interesting, and panels will be formed of participants whose most interesting answers relate to one another in some way. To help organizers group participants and tailor specific questions for each panelist, authors may be asked to expand one or more of their Q&A answers between acceptance and the week preceding the workshop.

The workshop organizers will also complete a Q&A in advance of the workshop. These will also be made available on the workshop website for attendees to read in preparation for their participation.

### WORKSHOP STRUCTURE

The one-day workshop will be structured as follows:

**9:00–9:45: Organizers panel.** The workshop will begin with an organizers panel, moderated by Yvonne Rogers. Yvonne will introduce the workshop and provide opening statements that offer an overview of some of the key issues in the field of HCI and Aging. She will then direct questions to each of the other organizers, followed by a summation.

**9:45–11:45: Participant panels (x4).** Participants will be grouped into panels where they will be given the opportunity to briefly introduce themselves, expand on an answer they provided in their Q&A as prompted by the moderator, and take part in a group discussion with fellow panelists and other attendees.

**11:45–12:00: Coffee break.**

**12:00–12:30: Theme building (individual, whole group).** Based on the morning's discussions, participants will identify emerging cross-cutting themes (e.g. a problem, a challenge). This activity will begin with an individual Post-It generation and group Post-It organization exercise, culminating in a set of potential themes. To focus group work in the afternoon, a subset of these themes will be chosen for further discussion by a show of hands. (Final decisions can be made after lunch following further discussion.)

**12:30–14:00: Lunch.** Group discussions will continue over a meal.

**14:00–15:00: Theme exploration (small groups).** Participants will choose a theme they are most interested in delving deeper into, and small groups will self-organize around these themes. Each table will discuss a theme and produce a list of strategies for addressing this theme. This activity should culminate in each group generating a number of general principles for designing technology that older adults will want to use.

**15:00–15:30: Reporting back.** Each group will present the key points that emerged from their discussion and answer audience questions. Meanwhile, one of the organizers will take notes in real time and project them for the audience to see.

**15:30–16:00: Coffee break.**

**16:00–17:15: Identifying key takeaways (whole group).** Referring to the real time notes, the organizers will do a rapid summary of the ideas that have emerged from the day. The group will then discuss what appear to be the most important and/or novel insights from these discussions and identify a set of points to be made in the post-workshop write-up. Subgroups will self-organize to delve deeper into particular insights that require further elaboration.

**17:15–17:30: Next steps and summation.** The organizers will close the day with a summary of what has been accomplished in the workshop, and what steps will be taken to maximize its impact.

## POST-WORKSHOP PLANS

The organizers aim to produce a publication that presents new principles for designing technology that older adults will use. The venue will be determined according to the number of principles that are generated: a shorter list might result in an article for *Communications of the ACM*; a longer list might result in a paper for *ACM's Transactions on Human-Computer Interaction*. Workshop participants will be acknowledged for their contribution to this publication. Participants are also strongly encouraged

to publish the results of their discussions with members of their small groups, or with others they have connected with through the workshop, and the organizers will work with participants wishing to do so to avoid overlap between these various publications and to provide support as required. Drawing from participants' answers to the Q&A form question "What are you hoping to get out of attending this workshop," organizers will also seek to identify pathways to additional outputs that may benefit participants directly, in particular those pathways that may have impact beyond the CHI community.

Participants will be asked to report any resulting publications or other workshop outcomes and will be invited to remain on our mailinglist so that the organizers can send relevant updates. A list of the participants and their Q&A responses will remain on the workshop website indefinitely unless the organizers are asked to remove them.

### CALL FOR PARTICIPATION

This workshop aims to explore the contextual factors that contribute to reduced uptake of digital technologies among older adults in order to generate a set of principles for developing tools that older adults can and will use.

The workshop will consist of an expert panel by the workshop organizers, a series of panels by the participants during which they will present their perspectives on designing technologies for older adults, and group activities. Further details about the workshop and its organizers can be found on the workshop website at <http://mobileage.scc-brutha.lancs.ac.uk>.

To attend, participants are invited to submit a position paper in the form of a Q&A, *each individually* completing the template provided at <https://tinyurl.com/y8nmdxdc>. Organizers will accept between 15 and 20 people, using these submissions to assess individuals' potential to contribute to dynamic discussion around HCI and Aging research.

Responses should be submitted to Bran Knowles at [b.h.knowles1@lancaster.ac.uk](mailto:b.h.knowles1@lancaster.ac.uk) on or before **12 February 2019** using the subject line "CHI Aging Workshop Submission." Participants will be notified of acceptance by **1 March 2019**. Note that authors of accepted position papers are expected to attend the workshop, and all participants must register for both the workshop and for at least one day of the conference.

Organizers: Bran Knowles (Lancaster University), Vicki L. Hanson (The Association for Computing Machinery), Yvonne Rogers (University College London), Anne Marie Piper (Northwestern University), Jenny Waycott (The University of Melbourne), and Nigel Davies (Lancaster University).

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