

HCI and Aging: New Directions, New Principles

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Concerns regarding the impacts of stereotyped, deficit-based, and problem-oriented approaches to older adult users have propelled HCI to explore new understandings and ways of approaching aging as a subject in recent years. Meanwhile, older adults' relationships with digital technologies are also evolving, driven both by technological advancements and the destabilizing experience of the global pandemic. Now is an important time to take stock of these changes and their significance to the field of HCI and Aging. This workshop attends, therefore, to the need for collective reflection on where the field is now, how we got here, and where it is heading. In addition to highlighting emerging areas requiring research attention, the workshop will produce a snapshot in time to compare with several years hence as the field continues to evolve. The second part of the workshop responds to the need for a clear alternative to deficit based approaches to designing technologies for older adult users. We will pool the collective wisdom of the HCI and Aging community to generate a set of principles to guide research and development toward maximization of benefit and minimization of harm to older adult users/stakeholders.

Additional Key Words and Phrases: Older adults, aging, ageing, HCI, care, pandemic, co-design, bias, harm

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1 MOTIVATION & GOALS

HCI has long been interested in mitigating interactional difficulties arising from physical and/or cognitive decline that can accompany aging, but there is growing sentiment that a limited focus on age-related deficit perpetuates negative stereotypes of older adults while obscuring various other salient dimensions of people's complicated relationships with technology in their old age [13]. In 2019, the CHI workshop titled "HCI and Aging: Beyond Accessibility" [10] convened researchers and practitioners to consider what, besides accessibility, ought to be addressed to make digital technologies more valuable to older adult users. Discussion at the workshop arrived at a clear consensus that conflating

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53 concerns about ‘aging’ with concerns about ‘accessibility’ was harmful to older adults, as captured in the resulting
54 article co-authored by attendees [11]. This workshop picks up where the previous workshop left off: If the field no
55 longer locates its impetus in mitigating interactional difficulties arising from physical and/or cognitive decline, then
56 what is distinctive about older adults as a user group that means they need different considerations when designing
57 and evaluating interactive systems? And what is HCI’s relationship to age and aging becoming?

58
59 The first aim of the workshop is to explore how and why the field of HCI and Aging has changed in recent years in
60 order to identify emergent areas for research. Of particular interest are:
61

- 62 • *Advances in theorization.* Given the growing calls for HCI research to avoid treating older adults as a monolith,
63 is ‘older adult’ a meaningful category? How do we even know when age is a relevant characteristic in people’s
64 interactions with technologies? Can we learn from related fields such as sociology, psychology, and gerontology
65 to inform a more critical or theory-driven wave in HCI and Aging research? Or, indeed, can HCI offer new theory
66 that extends what is already known in these fields? Given the growing interest in lifecourse and intersectionality,
67 what do these perspectives do for the field, and where do they take our research? If age is socially constructed,
68 how might we critically examine technology’s role in that construction and how it manifests in different
69 cultures? And in considering the potential role of digital technologies in provision of care, should we move away
70 from transactional, hierarchical, and deficit-based views of care in favor of care as relational and reciprocal [19]?
71
- 72 • *Changes in the technology landscape.* How are older adults navigating an increasingly data-driven world? How
73 are they using this data in their everyday lives? How is data and IoT driving changes to the delivery of older
74 adult health and social care, and what are the impacts of these trends on older adult wellbeing [1]? For what
75 purposes are older adults using or rejecting voice technologies [5, 7], and how might such systems be designed
76 to be equitable [6]? How might algorithms and AI systems perpetuate ageism [9, 15, 16], and what can be done
77 to mitigate these effects? And with the shift towards a human-centered approach to data interaction [14] and
78 AI [8], how can we ensure the integration of older people’s perspectives and voices in these endeavors?
79
- 80 • *Insights from the pandemic.* Given that use of digital technologies increased significantly among older adults
81 during the COVID-19 pandemic [4, 20], what lessons should we as a field take from this? How did technology
82 influence the way older people managed their daily routines and maintained social relations during the pandemic
83 [3]? How has the pandemic perturbed technology relations for older adults? Which new practices have been
84 sustained once the world returned to normal, which haven’t, and what does that tell us about how to meet older
85 adults’ needs and wants? Have new experiences with technology positively or negatively influenced attitudes
86 to technology? How might all this inform approaches to the so-called ‘digital divide’ between young and old?
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91 These questions reflect the organizers’ own perspectives on exciting developments in the field, but this list is by no
92 means comprehensive. The workshop will produce a more thorough mapping of the current areas of interest to be able
93 to reflect on how and why the shape of HCI and Aging is changing.
94

95 The second aim of the workshop is to address “the lack of understanding and stereotypical views about older people
96 by young researchers and developers” [17]. To this end, the workshop will engage researchers and practitioners in
97 conversation about what aspects of age matter, when, and why [2] in order to distill a set of principles for attending to
98 matters of age in HCI. We anticipate some of these principles speaking to recurrent challenges in doing HCI research
99 with and for older adults, for example, how to do research with a population that is constantly evolving as new cohorts
100 (with more experience with technology) age into ‘older adulthood’, how researchers might define appropriate selection
101 criteria for participatory research with this population, how to reach the ‘hard-to-reach’ and most digitally excluded
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105 older adults, how to do research with individuals with dementia [12], and how to bring older adults in to the digital
106 economy without engaging in practices of predatory inclusion. We anticipate other principles encapsulating key insights
107 or considerations about age that can inform research and practice beyond the HCI and Aging community, for example,
108 how to maximize benefits and minimize harm to older adult stakeholders (i.e. to both users and non-users of various
109 technologies), which generalizations about older adults are helpful and under what circumstances, how to meaningfully
110 include older adults in the design process, how to critically reflect on one's own negative stereotypes of aging, and
111 even what language to use or not use in referring to older adults. In developing this set of principles, we will reflect in
112 particular on what has been learned since 2015, when Vines et al. [18] proposed their influential set of recommendations
113 for HCI and Aging research.
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118 2 ORGANIZERS

119 All of the organizers have a strong track record of HCI and Aging research. Each has their own particular interest in
120 different facets of this topic, as represented by the questions motivating this workshop. Though not all of the organizers
121 have worked with each other in the past, the majority were involved, either as an organizer or participant, in the
122 successful 2019 CHI workshop [10] which this workshop builds from.
123

124 **Bran Knowles** is a Senior Lecturer in the School of Computing and Communications at Lancaster University. Her
125 research explores the ethics and impacts of socio-technical systems and people's attitudes to these systems, with a
126 particular focus on dis/trust. She is currently leading the DigiAge project, which explores what it means to design for
127 digital equity across the age spectrum.
128

129 **Aneesha Singh** is Associate Professor at the UCL Interaction Centre. She has a particular interest in adoption and
130 use of personal health and wellbeing technologies; but more generally, her research focuses on making technology
131 inclusive and ethical ways of conducting research with people, especially in sensitive contexts and with heightened
132 vulnerabilities. She co-leads the DigiAge project with Bran Knowles.
133

134 **Aloha Hufana Ambe** is a research fellow at the School of Computer Science, Queensland University of Technology
135 (QUT). Her research explores how to enhance human-machine relations, specifically, through older people's perspectives,
136 exploring how they might reimagine new forms of technologies in their life and future.
137

138 **Robin Brewer** is an Assistant Professor at the University of Michigan in the School of Information. Her research
139 explores how to center older adults when designing non-visual experiences, supporting care relationships across living
140 environments, and understanding online and offline engagement. She takes a cautious approach to technology design
141 and research with older adults, being mindful of accessibility, diverse perspectives, power dynamics in care work, and
142 non-use or critical refusal.
143

144 **Amanda Lazar** is an Assistant Professor at the University of Maryland in the College of Information Studies. She
145 studies the design of technology for older adults and people with dementia, with a focus on everyday and meaningful
146 activities. This work is infused with critical perspectives from other fields, activists, and HCI.
147

148 **Helen Petrie** is Professor Emerita of Human-Computer Interaction in the Department of Computer Science at the
149 University of York. She has degrees in both psychology and computer science. Her research focuses on the design and
150 evaluation of new technologies, particularly for people with disabilities and older people. She is particularly interested
151 in research methods for working with older adults and how to break down the monolithic category of "older adults".
152

153 **John Vines** is Chair of Design Informatics at the University of Edinburgh. His interests are broadly at the intersection
154 of research through design, participatory design and data-driven technologies. He has specific expertise on the design
155
156

157 of systems to support care and health in later life, and bringing together the sociology and critical study of ageing and
158 health with the field of human-computer interaction.

159 **Jenny Waycott** is an Associate Professor in the School of Computing and Information Systems at the University
160 of Melbourne, where she leads the “design for ageing” research theme in the Human-Computer Interaction research
161 group. Her research uses qualitative and participatory methods to understand how older adults and aged care providers
162 use technology to foster social and emotional connectedness in later life in order to improve how we design and deploy
163 technologies for social benefit in complex settings such as aged care, where an empathetic approach is critical to ensure
164 new technologies add value without causing harm.
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167 3 WORKSHOP PLANS 168

169 The workshop will occur over two consecutive mornings to alleviate time zone difficulties for remote attendees.
170 Attendees will be given the option of registering for a single day (day 1 or day 2) or both days. [Note to reviewers: If
171 this is not allowed, we can make it a single day.]
172

173 Our website (<https://digiage.io/cheworkshop/>) will provide details about the workshop, including its organizers, the
174 aims, activities, and schedule; how to participate, including accessibility information; how to submit; and how to access
175 the workshop proceedings. These proceedings will be published as a collection via <https://ceur-ws.org>, and will be
176 made available to participants two weeks prior to the workshop so that they might familiarize themselves with the
177 authors and their positions.
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180 3.1 Pre-Workshop Plans 181

182 Anyone interested in attending must submit a position paper which does one of the following:
183

- 184 • highlights a new area of interest or change in the field of HCI and Aging research and tracks its origin and
185 evolution;
- 186 • proposes a new area of concern/interest and explains its significance to the field of HCI and Aging;
- 187 • proposes one or more principles in this area.
188

189 We will use submissions that respond to the above three areas as a starting point for workshop activities which, on the
190 day, will be developed into new directions (Day 1) and principles (Day 2).
191

192 Each paper will be reviewed by two organizers, and a maximum of 50 will be selected for inclusion. A smaller number
193 (18–24) will be invited to present their position on a panel. At least one author for all accepted papers must be registered
194 for a minimum of one day of the workshop, either in-person or remote. Authors invited to speak on a panel will be
195 given priority for in-person attendance (capped at 30, including organizers).
196

197 In preparing for the workshop, attendees will be encouraged to peruse the accepted position papers and interact with
198 each other via Discord. All participants will be asked to introduce themselves to the group by answering the questions:
199 1) What do you think is the most exciting development in HCI and Aging? 2) What is the most important principle to
200 guide HCI and Aging research?
201

202 3.2 Hybrid Plans 203

204 Remote attendees will be able to join conversation using a combination of tools. Aneesha Singh, our Remote Chair, will
205 moderate the remote discussions. Keynotes and panels will be livestreamed via Zoom, and all participants can pose
206 questions through Discord. Group discussions will be facilitated through Zoom breakout rooms for remote attendees,
207
208

209 and all participants will be working collaboratively using a shared Padlet. While this is accessible, we will make
210 adjustments if needed based on any additional accessibility needs of attendees.

211 If fewer than 5 attendees intend to join in-person, the workshop will convert to a fully virtual format.

212 Given our aim of addressing stereotypical views of older adults held by younger researchers and developers, and
213 the difficulty some of these individuals might have in writing a position paper on the topic, we see value in creating
214 other opportunities to participate. After completing our selection process for authors of position papers, we will fill
215 any remaining spaces at the workshop by opening up applications from early career researchers and developers. This
216 lightweight process will involve answering questions about why they would like to be included and what, if any, support
217 they feel they need in doing HCI research relating to older adults.
218
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220 221 **3.3 Asynchronous Engagement**

222 In case of technical or accessibility issues, keynotes, panels, and group discussions will be recorded and added to the
223 workshop's password protected archives on our website. Participants will be given an access code to view materials
224 from each of the days they are registered, and the Padlet will remain open for two weeks after the workshop to allow
225 time for further contributions.
226
227

228 229 **4 WORKSHOP ACTIVITIES**

230 Day 1 will focus on identifying new directions for HCI and Aging research; Day 2 will focus on articulating new
231 principles for the field. Both days will follow the same structure:
232
233

234 **9:00–9:15: Organizers' introduction.** Bran Knowles (Day 1) and Aneesha Singh (Day 2) will introduce the
235 structure and the aim of the day.

236 **9:15–9:30: Keynote.** Robin N. Brewer (Day 1) and John Vines (Day 2) will deliver a short talk to orient participants
237 to the workshop themes.

238 **9:30–11:00: Participant panels (x3).** Participants will be grouped into panels of 3-4 authors based on emerging
239 themes among the submissions. Speakers will be given the opportunity to present their position, answer specific
240 questions, and discuss with fellow panelists.
241

242 **11:00–11:15: Coffee break.**

243 **11:15–12:00: New Directions / New Principles (small group discussions).** Reflecting on the morning's panel
244 and introductory responses already gathered through Discord, participants will work in small groups to identify
245 new directions (Day 1) and new principles (Day 2). Groups will be formed of all in-person or all remote attendees.
246 Padlet will be used to create a structure for capturing ideas from each group.
247

248 **12:00–12:20: Feedback and consolidation (whole group).** Groups will then summarize their conversations
249 for the whole group, and organizers will capture the new directions / new principles, forming the outline for
250 outputs to follow the workshop.
251

252 **12:20–12:30: Conclusions and next steps (organizers).** The organizers will wrap up proceedings by discussing
253 key takeaways from the day and detailing the next steps for the group, including any plans for sustaining and
254 growing the community.
255
256

257 **Group lunch:** At the end of Day 1, in-person participants will be invited to join a workshop lunch to carry on
258 discussion (cost not included in registration fee).
259
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5 POST-WORKSHOP PLANS

Ideas from the workshop will be distilled into two outputs.

- (1) Building from the discussion on Day 1, we will submit an article to *interactions* that explores the changing landscape of HCI and Aging research and highlights emergent areas. Attendees will be invited to join as co-authors or as signatories on this submission.
- (2) Building from the discussion on Day 2, we will create a statement on principles for HCI and Aging. Intended as a resource to inform researchers and developers about older adults and how to mitigate harm to this user/stakeholder group, we will name and describe a maximum of 10 key principles and how to apply them. Attendees are invited to collaborate on the drafting of this document, and/or may sign on as signatories. Our intention is to submit this as a Viewpoints article in *Communications of the ACM*; but if unsuccessful, it will be housed on the workshop website and actively promoted via social media.

The organizers plan to repeat this workshop in 5 years in order to track changes in the landscape of HCI and Aging research, and to update principles in light of any new developments in the field.

The organizers also aim to publish a special issue of a journal in an HCI venue, with submissions open to both attendees and non-attendees. After the workshop, the organizers will meet to discuss the scope of the special issue and target venue.

6 CALL FOR PARTICIPATION

A growing appreciation of the heterogeneity of older adults has motivated deep reflection on why aging matters to HCI. This workshop aims to promote discussion on the current state of the field of HCI and Aging, emergent areas of interest, and the implications of these changes for computing best practice.

The workshop will be conducted in hybrid format across two mornings (9:00-12:30 PST). Participants are strongly encouraged to participate in both of these sessions, either in person or remotely. Day 1 will focus on new directions for HCI and Aging research, and Day 2 will focus on elaborating new principles to guide research and development.

Researchers and practitioners wishing to attend should submit a position paper which can add to discussion on either day by: i) highlighting a new area of interest or change in the field of HCI and Aging research and tracking its origin and evolution; ii) proposing a new area of concern/interest and explaining its significance to the field of HCI and Aging; or iii) proposing one or more principles to guide HCI and Aging research. Position papers should be a maximum of 4 pages (excluding references, using the CHI Extended Abstract format), and be submitted through the workshop's submission site (<https://digiage.io/chiworkshop/>). Accepted position papers will be published as a collection via <https://ceur-ws.org>. An author of each accepted paper must register for one or both days of the workshop and at least one day of the CHI conference.

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