



# Designing for Aging People

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**Abstract.** Most existing design practices either do not specifically target the needs of aging people, or only consider their needs from a negative perspective, often as design “problems” that need to be “solved”. However, with the ever-increasing aging world population, it is becoming even more important to better design for older people, taking their wants, needs, desires, and expectations into account as the underlying basis for design. Amongst other issues that need to be addressed, this also requires modifying current design practices, including commonly used design methodologies, to make them more effective for targeting aging user populations. Therefore, the aim of this workshop is to bring together researchers, designers, and developers interested in the design, development, evaluation, and deployment of digital products, technologies, tool, and services for aging people. The workshop will provide a venue for sharing experiences from different perspectives through presentations, discussions, and a hands-on design activity to provide innovative ideas for future directions in designing for aging people.

**Keywords:** Aging people · Older adults · Design for aging · Design without agism · Experience design for aging · Emotional design for aging

## 1 Introduction

It is a well-known fact that the world population is aging [8], with estimates predicting that, for instance, by 2040 over 21% of the population of the United States [10] will be over 65 years old. This is an increasing trend, with longer-term predictions putting the percentage of older population even higher. For example, it is estimated that by 2060, 25% of the population of the United States [9], and by 2070, 42% of the population of the European Union [4] will be over the age of 65 years.

As such, it is clearly important that the design of future products, tools, and services more directly take into consideration the needs, wants, requirements, and expectations of aging people. Furthermore, to make this more realistically possible and practically achievable, current design processes and practices also need to be modified and adapted to better accommodate designing for aging

user populations. As Dankl [3] points out, the reason “design [for aging] has not yet succeeded [is] because it does not address the most fundamental topic: persisting images of ageing based on models of deficiency.” These persistent negative images are perhaps the consequence of holding the attitude that “the person with a stigma is not quite human” [5], and as a result this is hindering serious changes being made in better designing for aging people.

This is particularly true for the design of digital technologies, tools and services, whose designers often have this misconception that older people are not, or have not been in the past, very technologically able. In reality, however, analysts not only point out that it is a misconception that “the 50+ are technologically challenged and unplugged”, but in fact, “aging consumers are tech savvy and eager for more” [6]. Similarly, statistics show that, for instance in 2017, one in every three people over 65 years old owned a tablet [2], and that the people in this age group have the highest rates of technology adoption. For example, smartphone adoption by older adults nearly quadrupled in the five years between 2011 and 2016 [1].

While such misconceptions are slowly changing due to the adoption of more innovative, multi-disciplinary, collaborative, and user-led approaches to design, much more progress still needs to be made to change the current mainstream design culture and practices. Furthermore, “to re-design ageing and to change persistent negative images requires the multidimensional inclusion of foresight, insight and engagement”, and must be promoted through the adaptation of new design methodologies and methods, such as critical and speculative design, which “offer essential tools for creating the widespread momentum required for design age” or “design anthropological methods [which] are vital to contextualising insights on ageing practices” [3].

Despite the importance of this urgent need for change, there are not many opportunities for design researchers and practitioners to meet and discuss their interests and ideas. This workshop aims to provide such a forum, enabling researchers and practitioners to share learnings and experiences related to design, development, evaluation, and deployment of tools and services for aging people.

This workshop follows on from a successful DEAP 2018 workshop [7], which was held as part of the IFIP International Conference on Entertainment Computing (IFIP-ICEC 2018). We have now broadened the scope of this workshop to include all aspects of designing for aging people.

## 2 Objectives

The aim of this workshop is to promote better design for aging people by taking their wants, needs, desires, and well-being into account as the underlying basis for design, and thus combat ageism in design. To achieve this, the workshop will bring together researchers, designers, and developers interested in the design, development, evaluation, and deployment of digital products, technologies, tool, and services for aging people.

Further to this, the workshop will also provide a venue for sharing experiences from different perspectives, to encourage collaboration across disciplines and professional boundaries between the workshop participants.

### 3 Contributions

To achieve the above objectives, design researchers and practitioners from related backgrounds were invited to submit their papers reporting their contributions to the topics of the workshop. Proposed topics of interest covered the processes of ideation, design, prototyping, development, evaluation, and deployment of digital products, technologies, tool, and services. Following a peer-review process involving the workshop Program Committee, 5 papers were selected for presentation at the workshop. The abstracts of the selected papers are given below.

#### **Keep on Using IT: Gracefully Adaptive User Interfaces for Digital Seniors.** *by: Olof Torgersson and Alexandra Weilenmann*

“By studying how older adults who have been using ICT for a long time make use of technology today, i.e. digital seniors, we aim to contribute to knowledge regarding this growing user group. Over time, the digital senior will represent the typical older ICT user to design for. With a few exceptions, this topic has not been explored much earlier. In our ongoing studies, we examine what specific age-related problems that these digital seniors encounter, as their physical and cognitive capacities decline. In this workshop paper, we present the idea of a solution to designing for digital seniors: gracefully adaptive user interfaces. The idea of gracefully adaptive user interfaces presents a new approach to how one can design ICT that will enable older users to keep on doing what they are accustomed to as long as possible. A gracefully adaptive user interface can be seen as a form of reversed multi-layered design: the system starts out with a full set of features and adopts to the user’s skills and abilities by simplifying presentation and features over time. What sets gracefully adaptive user interfaces apart from other approaches to adapting the user interface to the individual, is the strong focus on the specific question of how to create systems that adapts to age-related problems encountered by digital seniors in a disciplined and structured manner. By investigating the concept of gracefully adaptive user interfaces our research will go beyond state of the art in the areas of adaptive and adaptable user interfaces.”

#### **Breaking Interaction Barriers: Monitoring Elderly in Natural Settings Exploiting Everyday Objects.** *by: Marina Buzzi*

“The European population is aging steadily. As a consequence neurodegenerative pathologies are becoming widespread, impacting heavily on social costs, so it is important to support independent living as long as possible, especially in the healthy elderly. This paper proposes an idea for advancing current monitoring technologies by breaking down the current paradigm and exploiting augmented everyday objects. Monitoring and behavior analysis can be exploited as triggers for motivating behavior changes in an elderly person. Thanks to progress in Internet of Things (IoT) and Artificial Intelligence (AI) one scenario is described to illustrate the proposed design concept. With a collaborative multidisciplinary effort, this view could be fast become a reality.”

**A Value-Sensitive Toolkit: Bringing Values into the Design Process When Designing for the Elderly.** *by: Mert Oktay and Hanna-Liisa Pender*

“This paper gives an overview of developing a design toolkit for designers that would encourage them to keep the human values on the forefront, despite all the other constraints that need to be faced when designing new technologies. The toolkit was validated and refined in a series of workshops with designers and design students. The outcome of the work is a toolkit prototype that includes tools like design fiction, bootlegging and value review. It is intended to be used to compliment a human centred design process after user research to scaffold ideation and tackle design challenges related to aging in place and smart habitats for elderly.”

**A Storytelling-Based Approach to Designing for the Needs of Ageing People.** *by: Elena Comincioli and Masood Masoodian*

“Identifying users’ needs is the basis of many design methodologies centred around a problem-solution approach. Ageist views of designers and older adult users themselves, however, negatively affect the use of existing methods for identifying their needs. In this paper, we describe an alternative approach to designing for older adults’ needs based on storytelling. We introduce a method which uses a set of visual cards to allow older adult participants to tell their stories in co-design workshops. These stories can then be used to identify their needs.”

**The Sailboat Exercise as a Method for User Understanding and Requirements Gathering.** *by: Paula Alexandra Silva*

“To design digital products and services that truly empower end-users requires that design and development teams involve end-users early and throughout the design process. However, regardless of the wealth of methods available to Human-Computer Interaction designers, to identify tools that are both intuitive to use and allow for the active engagement of end-users, namely through co-design activities, is hardly ever easy. To identify a simple and straightforward method can be challenging especially when the end-user group are older adults. This paper proposes an adaptation of an exercise, traditionally used in agile retrospectives – the sailboat exercise – here modified and tailored to be used as a co-design generative tool for user understanding and requirements gathering. In short, the method leverages the analogy of a sailboat, and its surrounding factors, and combines it with a set of prompt questions, to create a shared understanding between the end-users and the members of the design team and to support identification of users’ goals, desires, challenges and frustrations.”

## 4 Workshop Structure

This workshop is structured to be engaging, practical, hands-on, and participatory in its approach. It will include plenty of time for interactions, discussions and exchanges of ideas – leading to concrete outcomes for its participants. The workshop will achieve this through the inclusion of:

- Short presentations of the accepted papers.
- A follow-up interactive session to allow further discussions.
- A collaborative design activity to trial novel approaches to design ideation.
- Creation of a short video for the INTERACT conference to showcase the experience of taking part in this collaborative design activity.
- Concluding discussions and planning of future directions and outcomes.

## 5 Expected Outcomes

The accepted workshop papers will be published in the adjunct conference proceedings of INTERACT 2019. In addition, through a planned discussion session at the workshop, we will investigate potential future outcomes. These may include a special issue of an international journal and/or a co-authored report for dissemination of the workshop findings. We will also use the workshop website<sup>1</sup> for publicizing its aims and objectives, as well as disseminating its outcomes.

## 6 Workshop Organizers

**Prof. Masood Masoodian** leads the Aalto Visual Communication Design (AVCD) research group at Aalto University, Finland. He has a Ph.D. from the University of Waikato, New Zealand. His research interests include visualization, interactive media, and interaction design, with particular interest in designing interactive visualizations to provide effective means of understating information by ordinary people in areas such as health, energy, and sustainability. He is also actively involved in research related to different aspect of designing for older adults, including emotional design for entertainment, health and well-being. Prof. Masoodian has served as the program chair, program committee member, and reviewer for many international conferences and journals. He has also been a co-organizer of several international conferences and workshops.

**Dr. Paula Alexandra Silva** is a Human-Computer Interaction (HCI) researcher and practitioner whose passion is to understand how to leverage technology to create a better future for us all. She has earned her Ph.D. in Computer Science from the University of Lancaster, United Kingdom. Since finishing her Ph.D. she focuses on designing applications for older adults with a view to improve their overall health and well-being and enable their active participation in society. She is also a passionate teacher who strives to create exceptional learning experiences for her students. She is currently a Research Fellow in the University of Aveiro. Before she held appointments as lecturer at a number of universities, as Postdoc Fellow at the University of Hawai'i and as Senior Scientist at Fraunhofer Portugal, where she managed the Human-Computer Interaction area and group.

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<sup>1</sup> <http://avcd.aalto.fi/deap2019/>.

## 7 Program Committee

Sergi Bermúdez i Badia (*Universidade da Madeira, Portugal*), Leah Burns (*Aalto University, Finland*), Elena Comincioli (*Aalto University, Finland*), Dohee Lee (*Aalto University, Finland*), Eugène Loos (*University of Amsterdam, The Netherlands*), Masood Masoodian (*Aalto University, Finland*), Óscar Mealha (*Universidade de Aveiro, Portugal*), Francisco Nunes (*Fraunhofer - AICOS, Portugal*), Thomas Rist (*University of Applied Sciences Augsburg, Germany*), Rita Santos (*Universidade de Aveiro, Portugal*), Paula Alexandra Silva (*Universidade de Aveiro, Portugal*), Telmo Silva (*Universidade de Aveiro, Portugal*), Ana Vasconcelos (*Fraunhofer – AICOS, Portugal*), Ana Veloso (*Universidade de Aveiro, Portugal*).

## References

1. Anderson, M., Perrin, A.: Tech adoption climbs among older adults (2017). <http://www.pewinternet.org/2017/05/17/tech-adoption-climbs-among-older-adults/>. Accessed June 2019
2. Anderson, M., Perrin, A.: Technology use among seniors (2017). <http://www.pewinternet.org/2017/05/17/technology-use-among-seniors/>. Accessed June 2019
3. Dankl, K.: Design age: towards a participatory transformation of images of ageing. *Des. Stud.* **48**, 30–42 (2017). <https://doi.org/10.1016/j.destud.2016.10.004>
4. European Union: The 2018 ageing report (2017). [https://ec.europa.eu/info/sites/info/files/economy-finance/ip065\\_en.pdf](https://ec.europa.eu/info/sites/info/files/economy-finance/ip065_en.pdf). Accessed June 2019
5. Goffman, E.: *Stigma: Notes on the Management of Spoiled Identity*, reissue edn. Touchstone, New York (1986)
6. Irving, P., Chatterjee, A.: The longevity economy: from the elderly, a new source of economic growth (2013). <http://www.milkeninstitute.org/publications/view/687>. Accessed June 2019
7. Silva, P.A., Masoodian, M.: Designing entertainment for the aging population. In: Clua, E., Roque, L., Lugmayr, A., Tuomi, P. (eds.) *ICEC 2018*. LNCS, vol. 11112, pp. 345–348. Springer, Cham (2018). [https://doi.org/10.1007/978-3-319-99426-0\\_42](https://doi.org/10.1007/978-3-319-99426-0_42)
8. United Nations Department of Economic and Social Affairs Population Division: World population ageing (2015). [http://www.un.org/en/development/desa/population/publications/pdf/ageing/WPA2015\\_Report.pdf](http://www.un.org/en/development/desa/population/publications/pdf/ageing/WPA2015_Report.pdf). Accessed June 2019
9. United States Census Bureau: Facts for features: Older Americans month: May 2016 (2016). <https://www.census.gov/newsroom/facts-for-features/2016/cb16-ff08.html>. Accessed June 2019
10. United States Department of Health and Human Services: 2017 profile of older Americans (2018). <https://www.acl.gov/aging-and-disability-in-america/data-and-research/profile-older-americans>. Accessed June 2019