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# Senior-Friendly Technologies: Interaction Design for Senior Users

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**Abstract**

The elderly represent a valid group of users who can potentially benefit greatly from engaging with technology, such as healthcare systems or playing digital games. Yet, less attention has been given to the significance of senior citizens as technology users, as compared to the common younger population. In an effort to fill in the gap, this workshop aims to investigate the design of technology for senior citizens. To provide for more focused, thus more productive discussion in this paper, we will use elderly mobile phone games as a case in point. The overarching objective is to understand what can help to make for better and more meaningful use of interactive applications and technology by the elderly, for instance, games on the mobile phone.

**Keywords**

Elderly, senior citizens, older users, technology, mobile phone, games, design, mobile game design

**ACM Classification Keywords**

H5.2. Information interfaces and presentation (e.g., HCI): User interfaces (User-centered design).

**General Terms**

Design, Human factors

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CHI 2010, April 10 – 15, 2010, Atlanta, Georgia, USA

ACM 978-1-60558-930-5/09/04.

### Introduction

As the post-war baby-boom generation ages, many countries worldwide, especially the economically developed, are facing a greying population [15]. In Singapore, senior citizens aged 65 and above are expected to make up 18.7% of the population in 2030, a tremendous increase from its 8.4% in 2005 [13]. Thus, the importance of the elderly group of users as a customer base can no longer be ignored. They are increasingly adopting technologies such as computers, the Internet and new electronic devices [5]. Especially mobile phones are rapidly becoming personal items for them, kept for emergency callings or as memory aids [9]. Yet, few games are currently being developed for this growing demographic. A number of commercial digital games tailored for older adult players, such as *Brain Age*, *Dr. Kawashima's Brain Training* and *Wii Fit*, are available on the Nintendo DS Lite, on the Wii and on the computer but very few games, if at all, are available for specifically seniors to play on the mobile phone.

While research suggests that older users use mobile phones only for simple functions like calling or sending messages [8], senior citizens can potentially engage in mobile game-playing activities with a wide range of benefits, including entertainment, socialization, relief from social isolation, mental exercising and a heightening of self-esteem [6, 7, 14].

### Issues

Studies such as Al Mahmud's [2] and Kurniawan's [9] have been conducted to explore seniors' use of mobile phones and to elicit the usability problems they encounter as well as their desired phone features. Previous efforts (for example [1, 2, 4, 7, 13]) have

looked at designing games in various formats and using different approaches for older users. However, little has been done to explore the requirements of the elderly exclusively for mobile phone games.

Mobile game design for senior players offers diverse avenues for research. While methods to design technology for children have been explored relatively significantly (participatory design, cooperative inquiry, bonded design, sticky note critiquing, etc) [3, 4, 5], strategies on how to involve seniors in technology design is still fuzzy. Abeele & Rompaey [1] and Mubin & al. [14] describe human-centered methodologies based on participatory design to bring seniors into the game design process as partners, but much space remains open for innovation and further investigation.

Moreover, the diminishing functional capacity of people as they grow older in terms of, for instance cognition, vision and hearing [3], is a major factor which impacts how technology and software should be designed for the elderly. In terms of games, more than for young or adolescent gamers, usability and design problems are major obstacles for senior players. Nevertheless, solid and tested design guidelines have yet to be proposed to inform developers interested in designing digital games for the elderly population.

From another perspective, interaction design for senior users has to account not only for the discrepancy in mental models of older people [5], but also for the motivations of seniors to use the technology. For instance, as emphasized by Ijsselsteijn & al. [7], we need to seriously look at seniors' needs and why they would play digital games so as to be able to provide them with 'meaningful play' [1]. Differing expectations

and ways of perceiving life will influence whether the elderly are actually willing to invest their time in playing mobile games. Thus, research into characteristics or contexts that will help us to understand how to encourage older adults to engage with technology like mobile games will prove to be more than valuable.

### Workshop Goals

This workshop aims to better understand the needs and contexts of the elderly, and how to design for them. We intend to investigate how methodologies and processes of interaction design, focusing on new and emerging technologies such as digital games whenever appropriate, should be adapted so as to motivate acceptance of technology by the elderly, bringing together designers, developers, academics and practitioners who are experienced in related fields. Three key themes have been identified for the workshop:

- Methodologies using older adults as informants in the design process
- User requirements or design considerations for interaction design for seniors
- Factors influencing the adoption and acceptance of technologies by the elderly

Topics for debate based on these key themes span design guidelines, methodological issues and contextual analysis. More specifically, some of the research questions to guide discussion are as follows:

- What kinds of technologies are relevant for the elderly to use?

- What design issues are pertinent when designing for a senior audience?
- How can the contexts and needs of the elderly influence interaction design for them?
- What methods and techniques should be used to design technology for older users?
- What factors motivate the use and acceptance of technology among the elderly population?

The workshop will also be the impetus for a call to submit position papers on the topic of interaction design for the elderly.

### Conclusion

Senior citizens represent a growing base of users that can potentially benefit from an engagement with technology such as mobile phone games. The aim of this workshop is to discuss about challenges designing technology for the senior audience by understanding how the design process can be adapted effectively, leading to an exploration of considerations and requirements for proper future targeted design and research work.

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