Chapter 4

IT-ASSIST: Towards Usable Applications for Elderly People

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ABSTRACT

IT-ASSIST is a twenty months research project which has the goal to give elderly people the opportunity to profit from digital media. Suffering from age related impairments concerning vision, hearing, or dexterity and bad hand-eye coordination are challenges when designing user interfaces for elderly people. Common approaches are trying to model systems for specific impairments. In this project, the authors follow the approach to set up interfaces and systems that can be used independent from personal impairments. Customization has adapted these systems to be in accordance with personnel impairments. Common applications like photo editing, digital mailing or internet browsing in a redesigned form provide social communication accordingly. In this article, a prototype of a customized user interface, its implementation, and results of user studies are presented and discussed.

INTRODUCTION

Increased expectation of life and decreasing birth-rates are leading to demographic changes (Franke, 2008). Growing parts of the population are elderly people, which suffer from personal impairments.

Due to such social changes the isolation of elderly people is increasing and commonly seen as a lack of interpersonal communication (Cacioppo, 2008). Modern technologies may help to defeat lonesomeness and regain lost social connections or even build a new social life. As we have seen from the “good old telephone” information technology...
promotes social communication. Beside very special item based communication like interacting bowls (van der Hoog, 2004; van der Hoog, 2004b) also often used modern media like email, chat or games counteract loneliness and support interpersonal affective communication, just as well. Successful examples are Skype, WIKIPEDIA, FLICKR and YouTube, which opened new ways for social interactions.

Previous generations are familiar with the concepts of television and telephone. Unfortunately television is not known to promote social communication. This is where we want to propose an approach that aims to increase interpersonal communication of elderly people. Basis is an internet connection and a personal computer which has been modified to function like a television and video telephony device. It is based on a flat-screen and an input device that fits the needs of the user. A remote control, a joystick, a touch pad or screen or speech recognition are just a few examples for such input devices.

Unfortunately many retirement homes provide no or only very limited access to personal computers or even the Internet. Some retirement homes which provide access to this technology usually have multipurpose rooms (e.g., library or room for events) in which a few personal computers are located. Due to age related impairments (vision, hearing or dexterity) many elderly people are not able to properly interact with the installed soft- and hardware. This problem is intensified by a low acceptance rate of personal computers and the refusal to see the advantages of new technologies (Stefan, 2008; Henn, 2008). Applications like email, video telephony, browsing of pictures and Internet or reminder functionality could support and enrich the daily life in retirement homes.

How well people use, apply and understand information systems depends on the complexity the user is confronted with. It depends on the level of training and the degree of operational demands as we know that from rule or knowledge based human computer interaction models (Johannsen, 1993; Bubb, 1993).

The goal of IT-ASSIST is to bring personal computers and customized Internet services in every apartment of retirement homes, in order to help residents, caregivers and physicians to ease communication and collaboration. Therefore a system is planned with a modular hardware platform and a simplified user interface specifically designed for elderly people. The user interface should allow easy access to frequently used functions and services. Experienced and interested users could tell about the opportunities and help to motivate skeptic users.

We want to facilitate a longer, healthier life in independence and dignity within the safe environment of the own home. Goal is to decrease the isolation of elderly people and motivate social activity. Easy accesses to information and communication technologies enable social cross-linkage and therefore lead to an increased quality of life. This should be valid not only in rural or sparsely populated areas but also in cities where familial support might not be present.

This paper summarizes initial interviews of residents in local retirement homes. It describes our first exemplary user interface. The user interface and a hardware platform were implemented and are described. This platform was again evaluated and created the basis of our future work.

**INITIAL INTERVIEWS**

In an initial study 15 people (10 female, 5 male, between 68 and 92 years old) of three different retirement homes participated. Interviews were conducted to get an understanding of the requirements and allow a better planning of the entire system. All participants were recruited as volunteers and had minor age related impairments. The duration of the interviews ranged from 30 minutes to 2 hours depending on the needs of the interviewees.
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