

MEMORY AIDS FOR OLDER PEOPLE

Joy Goodman, Steve Brewster, Phil Gray

Department of Computing Science

University of Glasgow

GLASGOW G12 8QQ

joy, stephen, pdg@dcs.gla.ac.uk

<http://www.dcs.gla.ac.uk/utopia>

ABSTRACT

Memory loss and dementia affect a significant number of people. This number is growing as the proportion of older people in developed countries increases. Memory aids can improve the quality of life of these people, increasing independence and sense of control. Such aids can be made more useful by the incorporation of information about the context, for example, location. However, research in this area has so far been limited and there has been little consideration of interface factors. This paper discusses the possibilities and challenges within the context of the Utopia project, which investigates technology and older people.

Keywords

Older People, Memory, Context-Aware, Handhelds

1. INTRODUCTION

It is estimated that about one person in five over the age of 80 has dementia, as well as significant proportions of people between the ages of 65 and 80 [1]. Dementia affects cognitive abilities such as memory and planning ability. Its symptoms, even in early stages, can cause many problems and severely limit a person's independence. In later stages they can prevent the person from carrying out basic activities of daily living [1]. In addition, many older people suffer from decreases in short-term memory efficiency and in prospective memory (the ability to remember to remember) [2]. These changes can also be worrying and debilitating. These observations are concerning in themselves, but are even more pertinent when the fact is taken into account that the population of the developed world is aging.

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However, it is possible to off-set these problems to some extent through the use of computers and associated technology. These aids to memory can increase independence and the feeling of being in control of one's life. They can be improved and made more useful by employing recent advances in hand-held and context-aware technology, which utilises information about the environment, such as location, to tailor applications. These allow more pertinent information to be provided, and enable support outside the home as well as in secure environments.

The Utopia project (Usable Technologies for Older People: Inclusive and Appropriate) is investigating computer-based technology and older people. As part of this, we are interested in how such memory aids can help and how they can be made more usable.

2. RELATED WORK

Traditionally computerised memory aids for those with memory loss are reminder systems, delivering reminders of events, appointments and tasks on the basis of time. Such aids can be very useful and successful systems have been developed. In particular, NeuroPage [3] is a successful reminder system based on pagers that was designed for those with brain injuries. This work is currently being expanded by the Memojog project to take advantage of the advances in mobile phone and hand-held computer technology [4].

There has also been some work on associating reminders and information with location, but not for people with memory loss. Examples include the ComMotion [5] and Memory Glasses [6] projects.

Computers have also been put to good use to guide a user through an unfamiliar environment. Such navigation systems make use of positioning technology to identify the user's current location and geographical information systems to work out what steps are needed to get from there to the user's goal. For example, MoBIC [7] guides blind users.

However, although such location-aware systems can be very useful, they are not designed for people with memory impairments. Little has been done in this area, although there are a few exceptions such as the Activity Compass project [8] which hopes to develop a

handheld device which learns its user's daily routines and prompts him or her on that basis. It may also guide the user using arrows. However this work is still in initial stages.

3. POSSIBILITIES AND REQUIREMENTS

GATHERING

There are many possibilities for work in this area. Devices and applications exist that utilise context information to make reminder systems more useful, as mentioned above. However they have, on the most part, not taken the specific needs of people with memory impairments into consideration, either in the choice of facilities they offer or in the user interface. Existing work using location information for people with memory loss is limited, and therefore many other possibilities await exploration.

We have been conducting requirements gathering to identify some of these possibilities, using one-to-one interviews and focus groups. By talking to both healthy older people and those in the early stages of dementia, we have sought to understand some of the problems that such people face and from these to identify ways in which technology, particularly location-aware technology can help.

From this work, it is obvious, even at this early stage, that there are many needs that are not yet met. In particular, travel on public transport and navigation on foot present obstacles. Location is an important factor in these activities and so they are well suited to context-aware support. Location information can also be useful in situations where location isn't a fundamental feature. For example, it is not helpful to be reminded of an appointment 10 minutes in advance if you are 40 minutes travel away from it, or to be reminded to buy bread when you are miles from any shops. Systems which take current location into consideration would make reminders more useful.

4. CONCLUSIONS

We have investigated and identified several promising ideas for ways in which location-aware devices can help those with memory impairments, particularly older people and those with dementia. We hope to use some of these ideas to develop such a device. As we do so, we will strive to take the user group into consideration in the interface design. Through

interaction with potential users, we hope to identify how such devices can be made more usable, as well as developing a device that can help this user group to gain greater independence.

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