
Augmenting the Home to Remember – Initial User Perceptions

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Abstract

In today's world, there are increasingly many things to remember. Often the information is linked to physical world objects – for instance usage instructions, personal histories, access codes or expiring guarantee dates. Mobile augmented reality (MAR) can provide a design approach, where we can utilize our everyday surroundings and attach information to the items without seemingly modifying their outlook. In this paper, we explore selected MAR scenarios from the augmented human memory point of view. We evaluated these scenarios in a online survey with 19 participants.

Author Keywords

Augmented reality; mobile augmented reality; reminders; memory aids; user perceptions.

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction

In the past five years, augmented reality applications have reached the level where several commercial applications are widely available. Examples of existing applications are Layar [6] and Wikitude [7], with which the user can browse the physical world by holding up

their smart phone and looking through it to view the landscape overlaid with digital information. This magic lens approach, where the mobile phone functions as a device providing a window to the augmented world [3] is a common approach for mobile augmented reality, and useful due to the high adoption rate of mobile phones.

Augmented reality (AR) research has explored various application areas, such as books [1], toys [2], and maps [4]. In our research we were interested in the concept of utilizing AR as a memory aid, focusing on the home domain. Current MAR applications utilizing markerless augmented reality applications [6,7] have focused on commercial applications and city contexts, whereas use in the domestic context is so far unexplored. In this paper, we present our preliminary work where we assess three different use scenarios for augmented memory with an MAR application.

Augmented Memory Use Scenarios

In our earlier research, we conducted a user study where we collected different augmented reality application ideas from 12 participating households [5]. Out of 167 concept ideas brainstormed, 27 related to reminding. Based on the study, we developed scenarios of three different use cases, which are presented below.

Our first use scenario presented an MAR application used for remembering common passwords that are easily forgotten and hard to access. For example looking at a Wi-Fi router with the MAR application would reveal the password and ID of the Wi-Fi connection (Figure 1).



Figure 1. MAR Application for revealing hidden passwords and other information in home-environments.

For the second scenario we proposed an MAR application used for discovering stories and saving the common history of household objects. The application could be used to save information about an important object, for example the history behind it (Figure 2).



Figure 2. MAR Application for discovering stories and the history behind household objects.



Figure 3. MAR Application for accessing stored information on a common surface used for notes and pictures.

Thirdly we defined a use scenario where an MAR application is used for accessing stored and archived physical information on a common surface, for example a refrigerator door. Here, the refrigerator door serves as an access point to the archive of previous notes and pictures (Figure 3).

Online Survey

To gain initial insights into our scenarios we created an online survey. Each scenario was presented to the survey participants, and they were invited to comment on the usefulness and leave free form comments on any related issues that came to mind. Participants were also asked about their current usage of smartphone based digital reminders, e.g. notes applications and calendars. Additionally the participants were asked about their use of physical objects as memory aids, for example tying a piece of thread around a finger or placing an empty coffee jar on the kitchen table.

The study invitation was distributed via a study participant mailing list and social media. A small lottery prize was offered as an incentive to participate.

In total there were 19 participants in the survey, 8 being female. The participant's age distribution was rather wide (8 less than 30 years, 7 in the range 30-49 years and 4 older than 50 years). All but 3 were either students or working in an academic role.

Initial user perceptions

Related to our first scenario, security concerns and resistance to the mobile device becoming a mandatory trusted device were raised by 6/19 respondents, for example "Security poses some limits to where user name and password can be stored. It wouldn't be nice if all the eggs were stolen from the same basket ☹" (respondent #19).

In response to our scenario that proposed the use of AR to view memories related to objects, 5/19 participants described the loss of human interaction through storytelling as a negative side effect. Here we received comments for example, "If we go to this direction people will stop communicating with each other about everyday objects." (respondent #16). One participant questioned the longevity of digital data "Information related to concrete objects should be stored in a concrete form, so it will survive for the next generations" (respondent #2).

Scenario 3 raised comments about the material properties of paper notes and drawings that would be lost with such a solution. For example the tangibility of children's artwork, and the glanceability and purposefully temporary nature of post-it notes. Overall

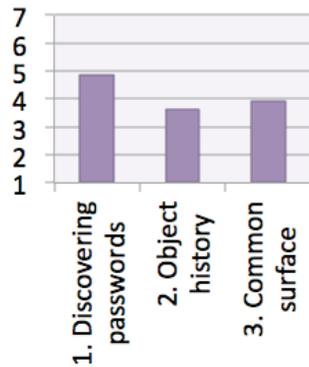


Figure 4. Participant feedback on the usefulness of each presented scenario. 1=Not at all useful, 7=Really useful

6/19 participants expressed opinions in this direction. For example participant #10 commenting, “When I remove something from the fridge door it no longer has a function, so why on earth would I save it in digital format?” (participant #10).

The participants’ perception of the usefulness of each presented scenario is shown in Figure 4. The scenario related to discovering passwords appears to be the most favorably received, although the significance of this has not been determined.

The majority of respondents (68%) currently used reminder apps on their smartphones. Over half of the respondents (10/19) used written paper notes of some kind as memory aids. The use of other physical items as memory joggers was rare, with only 4/19 participants mentioning e.g. placing an empty food packet on the table as a reminder to buy food.

Discussion and Conclusions

One common issue that was revealed across all of the presented scenarios was that the ease of updating AR based reminders was considered as lower than that of traditional paper note style reminders. As this modification and deletion is a key aspect for many reminders it should be addressed in the design of future memory assistance solutions.

Although the participants’ subjective opinions of the usefulness of the AR based memory aids measured by the Likert scale question was on the positive side, the vast majority of descriptive feedback given was negative. Rather than making their life easier,

participants considered that the solutions would add complexity to their lives without delivering sufficient tangible value.

In general participants perceived the AR based memory concepts to be replacements for existing methods, rather than supplementing them, or providing tools for tasks where no tools currently exist, as was our design intent. In this respect, and considering possible future work, we need to reflect on the influence of our approach of presenting the concept scenarios to the participants.

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