

Nice2CU: Managing a Person’s Augmented Memory

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Abstract

In this paper, we propose a feasible wearable system named Nice2CU to manage a person’s augmented memory. For managing a person’s augmented memory, an “easy registration” method and an “automatic update” method are necessary. We have designed a prototype system using a “Card and Mirror” interface.

1 Introduction

We have designed a prototype system named Nice2CU (Nice to Communicate among Users). A main issue of this study is how to manage person’s information in the real world. We have proposed an easy registration method and an automatic update method. The aim of these methods is to enable the system to give a wearer the latest information of a target person who stands in front of the wearer. Realizing these methods, we also have defined a data set named a Personal Profile Set (PPS) composed of a certification data and a profile data. The easy registration method allows the wearer to identify the target person. The update method is an automatic update that can send the latest PPS to an entire group of wearers registering the target person.

An implementation of the above methods can be achieved by a “Card (for registering) and Mirror (for updating)” interface. The “Card and Mirror” system is one of wearable systems for augment-able reality [5]. The system employs an RFID business card and a magic mirror interface. The system provides the wearer with a direct referring operation and an indirect referring operation to refer to the target person’s information. In the direct referring operation, the system employs a face recognition technique similar to [1, 3] while the wearer directly meets the target person. In the indirect referring operation, the wearer can indirectly refer to the target person’s information via the card.

2 Nice2CU

The aim of Nice2CU is to annotate a wearer’s view with information about a person who stands in front of the wearer. The Nice2CU enables the wearer to manage and refer to the information of the target person in the real world. Information about a person for augmenting wearer’s memory is defined as the following four types:

PROFILE includes a current information set about the person. (e.g. person’s face, name, sex, birthday, blood type, birthplace, current address, and affiliation.)

EXPERIENCE contains an event memorized by a certain person, and includes the context of what happens in the event that was experienced together by a recipient and a target person.

MESSAGE includes temporary memorandum like a “post-it” for delivering the message to the target person. For instance, the recipient suddenly remember that he/she wants to repay money to the target person when the recipient accidentally runs into this target person.

HUMAN RELATIONS consists of the above elements: PROFILES, EXPERIENCES, and MESSAGE. For example, the target person was the recipient former boss when you were in college.

An Easy Registration and An Automatic Update

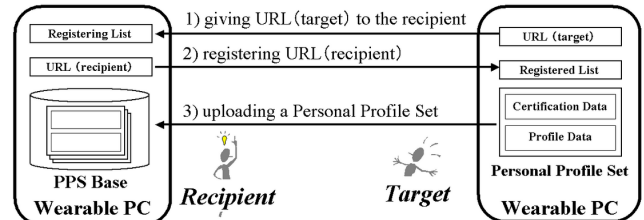


Figure 1: Registration of a PPS

Figure 1 illustrates a registration procedure of the target person. A Personal Profile Set (PPS) is composed of a certification data and a profile data. The certification data is used for identifying the target who stands in front of the recipient. The profile data is a list of the target’s profiles.

In the Nice2CU system, there are three steps for the registration procedure of the PPS: 1) The target gives the recipient a target’s own URL(target), which shows the address of the target’s system. The recipient then registers the URL(target). 2) In order to request the target’s PPS, the recipient’s system sends the target’s system its own URL(recipient). The target’s system then registers the URL(recipient) in a registered list to update a registering recipient’s PPS base. 3) The target’s system uploads the PPS to the recipient’s system.

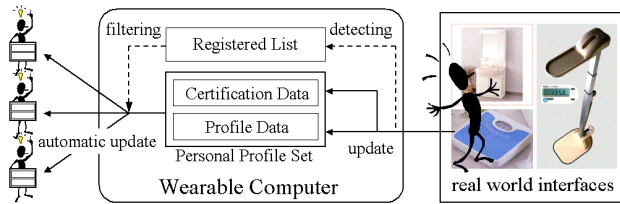


Figure 2: Automatic update of a PPS

Figure 2 illustrates a general update method of PPS. This method uses a real-world interface method. The Nice2CU system automatically sends the entire group of registered recipients the target person's PPS when the certification data or the profile data is updated. This method provides the system with an indirect referring operation to identify the target person who stands in front of the wearer. For example, the system recognizes the target person who meets after a long separation using the latest certification data that consists of image data set for recognizing his/her face.

An Example with a “Card and Mirror” Interface



Figure 3: A case of “Nice to meet you”

Figure 3 shows an actual case of saying “Nice to meet you” and exchanging a business card. Such case is normally seen in business situation in Japan, and represents a simple reciprocal self-disclosure. This case is realized by using a Card interface for easy registration. A business card is attached/implanted with an RFID tag. The RFID tag records the URL of the target person. By using the card, the recipient can access the PPS of the target person.

To implement an automatic update, the system employs a Mirror interface. A camera is set at the back of a magic mirror. The target person update his/her own PPS everytime he/she stands in front of the mirror. His/her system sends his/her latest PPS to the entire group of registered recipients. The recipient's system can recognize the face of the target person using his/her latest information of the certification data.

In the Nice2CU system, three types of equipment are essential: wearable equipment, the RFID card interface, and the magic mirror interface. The wearable equipment is composed of an RFID tag reader, a wearable camera, and a head-mounted display.



Figure 4: Associating experiences with a person

In addition to the Card and Mirror interface, the Nice2CU system employs the Ubiquitous Memories system that associates video data with a real world object [4]. Figure 4 depicts how the wearer can use the experiences of a certain person. The wearer can associate video data recorded as episodic augmented memory with a certain person by an indirect referring operation, touching the Card.

3 Concluding Remarks

In this paper we have proposed the Card and Mirror prototype system of the Nice2CU. We also have discussed the easy registration method and the automatic update method.

The obvious shortcoming of this study includes how to reject illegal access from an RFID business card. This privacy issue is one of important problems for realizing an applicable wearable system. On the other hand, we are planning to conduct a method for analyzing human relations from a dynamically updated PPS network. Especially, we are investigating a method to measure closeness between persons in the real world. Hamasaki et.al. have proposed a match-making method based on www bookmarks to find better friends [2]. We believe that the Nice2CU supports not only a recollection of person's information but also a matchmaking of a new friend using the analysis of human relations.

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