

# SEARCH AND UTILIZATION OF EXPERIENCE RECORDING DATA CAPTURED BY WEARABLE SYSTEM

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## 1. INTRODUCTION

In recent times, computers, video cameras and microphones have been increasingly miniaturized and the capacity of hard disks has also grown. Given this background, it is possible to constantly record user's experiences. The recorded data is used for recalling memories[1], and it is expected as media which provides a novel communication style.

By continuously recording experiences, we never miss the split-second moment of an event, but the recorded data includes many useless parts for a user. A method, that users can easily search for specific experiences, is necessary. Especially, experiences which are shared among friends, are considered to be important for them, this research focuses on search for these experiences.

In Takahashi's research, users wear a camera, a microphone and an infrared ID tag, etc., and the proposed system summarizes and search experiences by detecting interactions among persons and objects[2]. It is not thought to use this system in daily life because the number of devices which users wear is large. Because all users' data is stored in one server, there is a possibility that users' experience data is watched and their privacy is violated. In Aizawa's research, experiences that users meet or talk to unspecified persons are detected by image and sound processing[3]. This method detect not only desired experiences but also many undesired ones because users meet or talk to many persons in daily life. A search method that users specify persons is necessary in the system design that considers users' load and privacy.

In this research, a system which detected experiences that users interacted with specific persons, was developed. In this system, each user always carries the device which emits ID like Bluetooth and has a server for storing their experience data. There is no problem that users' privacy is violated because their experience data is not watched without permission by having an individual server.

## 2. DETECTION OF INTERACTION

In this research, considering users' load, they wear only a camera and a microphone which is necessary to record movies which is the most important as experiences and the recorded data is transmitted from a camera and a microphone to a PC

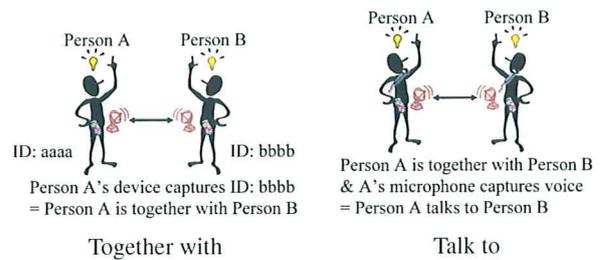


Fig. 1. Interaction

by wireless communication such as Bluetooth. In this recording system, radio wave status of devices in surrounding is periodically scanned, and received data is recorded with time stamp. In this paper, the data recorded by the recording system is called the experience data.

### 2.1. Definition of Interaction

In this system, the scene that the user is together with specific person and the scene that he/she talks to specific person are detected.

If a person A is together with a person B, the distance of A and B is constant  $R$  or less. The distance is calculated by RSSI(Received Signal Strength Indicator) of users' device, etc. However, it is necessary to know ID that is used by each user.

In the scene that a person A talks to a person B, it is thought that both A is together with B and utters(fig.1). It is detected whether A is together with B by the above-mentioned method, and the utterance is detected by processing sound data in experience data.

### 2.2. Data Management

In consideration of privacy, each user owns the server for storing the experience data. The users' device might have to be considered. Because one device is not permanently used from the cause of breakdown, etc. , it is assumed that ID that a certain user uses will be changed. It is necessary to develop the system that user can manage the history of device ID which he/she uses and other users can refer the history to search experiences.

### 3. PROPOSAL SYSTEM

The system that users search experiences and manage the history of device ID was developed.

Before the explanation of system, we consider why users search experience. Users search experiences to review, recall them and reuse their data, etc. The experience search is not users' purpose, but do something by using information obtained by search is their purpose. In this research, it is thought that the experience data is often used for diary(Blog). This system was developed as Web-base system so that users could make diary and open it to the public.

#### 3.1. Device ID Management

In this system, users manage the history of device ID by using database. In the table for the history of device ID, device ID is recorded with its date of use beginning and end.

The reference method of the other users' history of device ID is described. In this system, SQL account that can use SELECT query is made, the reference of the history is achieved by teaching the account information among friends each other. The experience search is achieved by referring the history of device ID and scanning the log of radio wave status of devices in surrounding.

#### 3.2. Diary

In this system, it is possible to make diary and open it to the public.

In this research, diaries on Web are thought as communication means and what users use for recalling memory. The various search methods of diary is implemented so that users find a specific diary and other users find a diary of interesting theme.

### 4. EXPERIMENT

The experiment for eight weeks was performed to confirm the utility of proposed system. The subjects are four men in twenties. They had a normal life and used normal Blog system for four weeks of the first half. They had a life with the experience recording system and used the proposed system for four weeks of the latter half.

#### 4.1. Result

The number of photo and movie that were used for one diary was investigated in four weeks of the first half and the latter half(fig.2). The numbers of photo and movie of three subjects were 0 in four weeks of the first half and the latter half, however the number of subject 4 was increased. This result indicates that the experience data is used for diary, the possibility that the function of experience search is needed to find the data is shown.

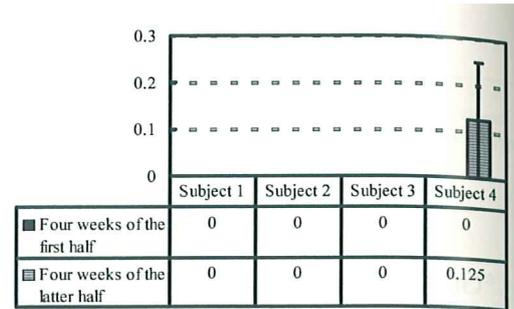


Fig. 2. The number of photo and movie per one diary

After the experiment, some questionnaires were implemented. Two subjects used the function of experience search, however the effectiveness of experience search was not shown in this questionnaire because the reason used was that they wanted to use it by way of trial. One subject used the function of diary search, however the reason used was that they wanted to use it by way of trial too. One subject reread his diary to recall memory.

It is thought that the search function is needed when the number of diary increases because the subject who reread his diary is different from the subject who used the function of diary search. We hope that a clear result of showing the effectiveness of this system will be obtained if the experiment which is longer than four weeks is performed.

### 5. CONCLUSION

In this paper, the experience search method for considering the users' load and privacy was proposed. In consideration of the situation that experiences were searched, the system of Web-base was developed. The effectiveness of this system was able to be shown by the experiment.

Future works include developing the architecture like SNS and improving the efficiency of reading other's diaries.

### 6. REFERENCES

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