

|              |                                                                               |
|--------------|-------------------------------------------------------------------------------|
| Title        | 相手の状況を表す音による状況アウェアネス支援に関する研究                                                  |
| Author(s)    | 半場, 雄介                                                                        |
| Citation     |                                                                               |
| Issue Date   | 2006-03                                                                       |
| Type         | Thesis or Dissertation                                                        |
| Text version | author                                                                        |
| URL          | <a href="http://hdl.handle.net/10119/591">http://hdl.handle.net/10119/591</a> |
| Rights       |                                                                               |
| Description  | Supervisor:金井 秀明, 知識科学研究科, 修士                                                 |

# Research on Supporting Situation Awareness using Expressed Sound

Yusuke Hanba

School of Knowledge Science,  
Japan Advanced Institute of Science and Technology  
March 2006

**Keywords:** awareness, sound, Bayesian Network, RFID

The range where communications can be taken with an other person away has extended, by the diffusion of the portable terminal and e-mail. However, the problem of having a telephone call while taking it came to happen. The problem occurs from no understanding of other person's situation. Even if the other person is away, communications corresponding to other person's situation can be done if it can know other person's situation.

The author suggest system of supporting communication using awareness of other person's situation. User can know other person's situation by hearing the sound that express specific situation. There are ringtone of the telephone and doorbell as an example of the expression sound. If the expression sound can be enabled to know situation of other person, the expression sound becomes information for making a decision.

It needs to get situation of other person to aware other person's situation. The Bayesian Network is used to infer situation. In inferring situation, it was thought that user's situation depend on the place. User's place is detected by Active RFID (Radio Frequency Identification).

The system presumes the situation from user's place using the Bayesian Network. The receiver of Active RFID is set up in the place that depend particular action in the daily life. There are a desk and bed as an example of the place. When setting receivers up, the range to detect RFID tag is adjusted. In

doing so, it identifies the place where user with tag.

To verify effectiveness of the proposed system, three experiments were done. To evaluate situation presumption part, I compare the place that understood from situation presumption part with the place where user actually exists. In addition, how the situation depended on the place was examined.

From the result, the presumption of the place did not obtain the assumed accuracy. But, it has been understood that about 90 percent of the situation depended on the place.

To verify whether the situation is told using the expression sound, the examinee answered the situation that the sound showed after hearing the expression sound. From the result, there are some sounds that all examinees answered correctly. Therefore, it has been understood that the expression sound is able to tell the situation.

To tell reliability of the Bayesian Network using sound, I compare the method of combining the expression sound with noise sound with the method of changing volume of expression sound. The change by the different environment was examined. The environment was prepared for two kinds. One is an environment that is quiet and another one has daily life noise. From the result, in the environment that is quiet, the method of changing volume of expression sound was effective. In the environment has daily life noise, the method of combining the expression sound with noise was effective.