



DESCRIPTION OF TASK DEPENDENT KNOWLEDGE FOR SPEECH UNDERSTANDING SYSTEM

Tetsunori Kobayashi* and Katsuhiko Shirai**

ABSTRACT

A man-machine interface system which produce commands to a machine through interactive speech conversation has been proposed.

To improve the accuracy of the speech understanding and to realize natural conversation, it is necessary to make effective use of the task-dependent knowledge. It is easy to achieve the purpose if we adopt the task-dependent algorithm. In this case, however, the system lose the flexibility for the change of target machine.

We attempt to construct task-independent algorithm by separating task-dependent knowledge from linguistic knowledge and conversation control strategy. This approach holds down the cost of the system modification which is required when the target machine is changed. This paper describes the method of the description of task-dependent knowledge and the algorithm of the system which utilizes the knowledge.

There are two main properties to be represented as task dependent knowledge. One is the state where each command to be used (i.e. command mode information) and the other is the meaning of the each command. In this system, former information is described by script, which is used to predict sentences to be spoken in a situation. The later information is described by frame based on the case grammar, whose slots represent deep case of the corresponding command operands and have constraint conditions representing the required attribute. These information are used to reduce the search space for speech recognition. Moreover, a generalized conversation control strategy is described by production rule. Thus, a man-machine speech interface system whose algorithm is independent of task is realized.

* Dept. of Electrical Engineering, Hosei Univ. 3-7-2 Kajino-cho, Koganei-shi, Tokyo 184, JAPAN 0423-81-5341 ext.251

** Dept. of Electrical Engineering, Waseda Univ. 3-4-1 Okubo, Shinjuku-ku, Tokyo 160, JAPAN 03-209-3211 ext. 3163