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Study on a Method for Recognizing Dialogue Structures and Dialogue Acts

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In recent years, computers spread rapidly and are used in various situations of our everyday life. Situations that children and elderly persons need to use computers are increasing. In such situations, to enable such people to use computers is a problem. Especially, complexity of input operations of computers is a problem. Keyboards and Mouses used for input devices of computers take time until users become accustomed to input. Input by voice operations is considered as a method to operate computers easily. However, the ability of spoken dialogue systems to treat voice input is not sufficient.

A spoken dialogue system to recognize language acts from utterances of the partner exactly and properly reply based on the recognition result is meaningful to solve the above problem.

Takano et al. examined a recognition method of a dialogue act of each utterance of a dialogue. A dialogue act is a function of an utterance. Takano et al. presented a dialogue act recognition model to capture hierarchical structures of dialogues (called local dialogue structures) because a dialogue has a hierarchical discourse structure and a structure of dialogue is used to recognize dialogue acts. In the model, structures in dialogue are recognized like parsing by rewriting rules that correspond to patterns of local dialogue structures. However, there is generally ambiguous when rules are applied to recognize local dialogue structures.

We studied a method to solve the problem. The method selects a most suitable structure from structures recognized by the rules. It is similar to Japanese language morphological analysis based on the hidden Markov model. It weights local dialogue structures using some features. Having analyzed the corpora, we propose that discourse markers of the end of an utterance suggest that the utterance is an opening utterance of a local dialogue structure. This thesis presents a model to select most suitable structures by the Viterbi model after giving costs to local dialogue structures.

We did recognition experiments of dialogue acts and local dialogue structures. In the results, the recall of recognizing dialogue acts was 55.38% and the precision 58.70%, and the accuracy of recognizing local dialogue structures 19.14%. Though the current accuracy is low, we think the accuracy will be improved by computing semantic relevance between utterances.