

Evaluation of Japanese Dialogue Processing Method Based on Similarity Measure Using $tf \cdot AoI$

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Abstract. In this paper, we propose a Japanese dialogue processing method based on a similarity measure using $tf \cdot AoI$ (*term frequency* \times *Amount of Information*). Keywords are specially used in a spoken dialogue system because a user utterance includes an erroneous recognition, filler and a noise. However, when a system uses keywords for robustness, it is difficult to realize detailed differences. Therefore, our method calculates similarity between two sentences without deleting any word from an input sentence, and we use a weight which multiplies term frequency and amount of information ($tf \cdot AoI$). We use 173 open data sets which are collected from 12,095 sentences in SLDB. The experimental result using our method has a correct response rate of 67.1%. We confirmed that correct response rate of our method was 11.6 points higher than that of the matching rate measure between an input sentence and a comparison sentence. Furthermore that of our method was 7.0 points higher than that of $tf \cdot iaf$.

1 Introduction

Recently, Information Extraction, Information Retrieval and Summarization attract attention in NLP. In these researches, sentences or words are classified into information types by a similarity measure. Similarity measures are used not only for classification problems but also for comparison of documents. Therefore it is applicable also to a dialogue processing system. From such a background, similarity measures are recognized to be indispensable technology in the applicable field of NLP.

A similarity measure is used as a criterion for comparing either words or sentences. When we calculate similarity between two sentences, the same sentences which consist of perfect matching become the highest similarity. However, two sentences which have high matching rate are not necessarily similar. Each domain should select an expression of a similarity measure. In Information Retrieval, some similarity measure expressions have been proposed such as Boolean