

ニューラルネットワーク言語モデルを用いた

含意文生成システム

Entailment Generation with Neural Language Model

分野名	知識情報システム学分野	氏名	趙 曉梅
Department	Knowledge and Information Systems	Name	ZHAO XIAOMEI

Textual entailment needs semantic judgment between two sentences and is a good task to measure text understanding. If we realize entailment generation, we can apply it to summarization that keeps semantics between an original text and a generated text.

However, various entailments can be generated from a premise sentence. Even if they are almost the same as the premise sentences, they are appropriate from the viewpoint of an entailment task. For example, the entailment *"He went to borrow books."* is created by deleting some words from the premise sentence *"He went to the library again to borrow books."*, but another entailment *"This is not his first visit to the library."* is created by different words with a low similarity.

The purpose of this paper is to generate entailment which have a low similarity with the premise sentence. For entailment generation, I used the Sequence-to-Sequence model with Attention mechanism, which is often used in tasks of natural language process. Moreover, in order to limit the similarity between premise sentences and entailments, I applied a similarity loss function to entailment generation task. The loss is based on the similarity between the premise sentences and predicted entailments.

In experiments, we use the corpus of Stanford Natural Language Inference (SNLI). SNLI corpus is a collection of 570k human-written

English sentence pairs manually labeled for balanced classification with the label "entailment", "contradiction", and "neutral". In this experiment, to discuss entailment generation, I extracted pairs of sentences representing entailment meanings from SNLI as the dataset. The proposed method and the baseline method are trained 10 epochs with train data, and entailments are generated using test data.

In evaluation experiments, I analyzed SNLI dataset. I found that premise sentences and entailment sentences are shared with many same words. Hence, training data affects the final prediction strongly and entailment tends to share many words with a premise sentence.

By discussing the predicted entailments, I found that there was no significant difference between the baseline and the proposed method from the viewpoint of average sentence similarity. However, the number of entailments with the highest similarity, over 0.9, increases and the proposed method can generate entailments with various words.

In the future, I will focus on reducing the average similarity. Especially, I will increase the epochs of train, and improve the similarity loss function.