

A Transformer and Recurrent Neural Network based Sentiment Analysis Method

Abstract

The dominant sequence transduction models are based on complex recurrent neural networks or Transformer models that include an encoder and a decoder. In recent years, language models are rising with attention mechanism proposed in Transformer before. The best performed language model also connect encoder and decoder with attention layers. The source of this research is based on BERT (Bidirectional Encoder Representation from Transformers), SHA-RNN (Single Headed-Attention with RNN), and attention mechanism from Transformer as the main axis. In previous work, Transformer works well whenever long range sequence is available, but they cannot be used to capture short dependency from a sequence. In this research, we present a general language model to improve the defect of capturing short-range sequence in Transformer. Our model replaces the attention layer in decoder from Transformer with SHA-RNN because doing so introduced many short-term dependencies between the source and the target sentence which make the optimization problem easier. The result of this research is developed for improving specific tasks well by applying to sentiment analysis, social media analysis, and disease spreading prediction.