A Survey on Deep Learning Models for Aspect-based Sentiment Analysis

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Due to the development of Internet technology, nowadays, our society has entered the Internet era. People around the world can share their lives on the Internet easily. For both buyers and sellers in marketing, these contents (such as Weibo, comments, ¥dots) are the worthiest resources for not only satisfying costumers' requests but also exploring a new market or exploiting a new product.

However, it is challenging to monitor the enormous numbers of comments on the Websites manually. Additionally, different experts have different opinions, and that can easily cause biases in practical work. In recent years, there is a new research direction in Natural Language Processing (NLP) called Sentiment Analysis (or Opinion Mining), which can systematically and automatically analyze text with opinions.

This thesis first survey some related knowledge about sentiment analysis and fundamental concepts of deep learning models. Secondly, we investigate the word embedding and some deep learning models, such as Recurrent Neural Network and its variants, Convolutional Neural Network, Attention model, and Transformer. Finally, we analyze the performance of sentiment analysis using those above deep learning models and make our conclusion.

As the results showed, among these deep learning models, the Transformer-based sentiment analysis models have achieved the new state-of-the-art accuracy. It also shows the trends of development of NLP, which could contribute further research in this domain.

Keywords: sentiment analysis - word representation - deep leaning models.