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ABSTRACT

Aspect-based Sentiment Analysis is a text mining method that extracts aspects (sub-topics) from online social data and evaluates sentiment level or polarity of each aspect. One of the major problems faced by the aspect-based sentiment analysis is that words may present different sentiments for various aspects as the sentiment word may be directly influenced by the considered knowledge domain and it's had multi-sentiment relation also this relation discontinuous. To address this problem, this thesis presents a hybrid ontology-XLNet sentiment analysis classification approach for sentence-level aspects.

The main objective of the proposed approach allows discovering user social data considering the extracted in-depth inference about sentiment depending on the context. Thus, in this thesis, we investigate the contribution of utilizing the lexicalized ontology to improve the aspect-based sentiment analysis performance through extracting the indirect relationships in user social data. The XLNet model is utilized for extracting the neighboring contextual meaning and concatenating it with each embeddings word to produce a more comprehensive context and enhance feature extraction. In the proposed approach, Bidirectional Long Short-Term Memory (Bi-LSTM) networks are used for classifying the aspects in online user reviews.

Various experiments considering Adverse Drug Reactions (ADRs) discovery are conducted on six drug-related social data real-world datasets to evaluate the performance of the proposed approach using several measures.

Obtained experimental results show that the proposed approach outperformed other tested state-of-the-art related approaches through improving feature extraction of unstructured social media text and accordingly improving the overall accuracy of sentiment classification. A significant accuracy of 98% and F-measure of 96.4% are achieved by the proposed ADRs aspect-based sentiment analysis approach.

The summary not more than 500 words