

ABSTRACT

Aspect Based Sentiment Analysis of FABSA (Feedback Aspect Based Sentiment Analysis)

Dataset using BERT Embeddings and Bidirectional Long Short Term Memory

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Aspect-Based Sentiment Analysis (ABSA) offers a fine-grained approach to the understanding of opinions by identifying sentiments associated with specific aspects within a given text. However, existing models often struggle to capture both contextual meaning and sequential dependencies of information within a sentence. This becomes a problem when working with real-world data, where user reviews can vary a lot in complex wording and structure. This research explores the implementation of a hybrid deep learning model that combines BERT (Bidirectional Encoder Representations from Transformers) embeddings with a Bidirectional Long Short-Term Memory (BiLSTM) network to perform ABSA on the Feedback Aspect Based Sentiment Analysis (FABSA) dataset. The dataset consists of 10574 annotated user reviews that span 10 different domains and 12 unique aspect categories. The proposed model is evaluated on two core subtasks: Aspect Category Detection (ACD) and Aspect Category Sentiment Classification (ACSC) with the performance metrics of precision, recall, F1-score and accuracy.

Experimental results demonstrate that the BERT-BiLSTM model outperforms the baseline BERT model, particularly in terms of recall and F1-score, indicating improved capability in capturing a wider range of aspect categories while maintaining high classification accuracy. Evaluated using cross validation, the model achieved an average ACD F1-Score of 0.75 and an average ACSC Accuracy of 0.93. Overall, this study confirms that integrating sequential modeling into transformer-based architectures enhances the performance of ABSA systems, offering a more effective approach for analyzing feedback across multiple domains from the FABSA dataset.

Keywords : Aspect-Based Sentiment Analysis, BERT, LSTM, BiLSTM, Aspect Detection, Sentiment Classification, Natural Language Processing, Deep Learning