

A Comparative Study of LSTM Models on Sentiment Analysis

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Ritabrata Roy Choudhury ; Soumik Dey ; Prithwineel Paul [All Authors](#)

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Abstract:
In this paper, we conduct a comparative analysis of LSTM (Long Short-Term Memory) architectures, including GPU LSTM and Convolutional LSTM, for sentiment analysis tasks on an e-commerce dataset. The evaluation is based on precision, recall, and F1-score metrics for classifying positive and negative sentiments in product reviews. Both GPU LSTM and Convolutional LSTM models demonstrate strong performance in classifying positive sentiments. Moreover, these models achieve high precision, recall, and *F1*-score. However, they struggle with negative sentiment classification, exhibiting zero precision, recall, and F1-score for this class. Overall, both models achieve an accuracy of 0.97, indicating their effectiveness in sentiment analysis tasks. Furthermore, our study underscores the importance of further research to enhance the ability of the LSTM model to classify negative sentiments in e-commerce datasets accurately.

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Convolutional Neural Networks (CNNs) and Recurrent Neural Networks (RNNs). The hybrid approach allows the model to effectively capture both local and global information within the text, leading to improved sentiment classification accuracy. Zhong in [17] introduced a novel microblog fine-grained sentiment analysis model that effectively combines multiple features and leverages graph convolutional neural networks.

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