

Text Sentiment Analysis and Classification Based on Large Language Models and Advanced Neural Network Techniques

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Abstract

Sentiment analysis may be used to examine consumer evaluations of a product or brand, movie reviews, and social media reviews. Sentiment analysis is a tool used to understand the attitudes, opinions, and sentiments expressed in online evaluations by identifying the emotional tone of words. Due to its capacity to evaluate and categorize users' feelings and opinions on a variety of subjects, sentiment analysis on social media networks has become incredibly popular in recent years. People's opinions and preferences about goods and services may now be widely known because to the enormous amount of comments generated on websites and social media. Sentiment analysis, or the identification of a text's sentiment, has been suggested as a clever remedy for this problem. Natural language processing (NLP) activities including as question answering, categorization, language translation, and the creation of synthetic texts have all seen impressive performance from large-language models (LLMs). With the use of two potent large language models and sophisticated neural network techniques, this study will present a sentiment analysis model for the movie review dataset that will categorize reviews according to their sentiment. Data preprocessing, data cleaning, feature extraction, data splitting, classification models, and model assessment procedures will all be employed in this system development. Using an IMDB dataset from Kaggle¹, the suggested model will be assessed using a variety of performance assessment measures, including the confusion matrix, F1 score, recall, sensitivity, specificity, accuracy, and precision in classification. This model is very adaptable and usable in a variety of applications since it can handle enormous amounts of data efficiently and can be adjusted to adapt to new domains with less training data.

¹ <https://www.kaggle.com/datasets/lakshmi25npathi/imdb-dataset-of-50k-movie-reviews>

