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Sentimental Analysis on Movie Review using NLP

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Abstract

Nowadays, e-learning-based teaching methodologies and online classes are gaining popularity, providing a virtual platform for online education from anywhere in the world. Social networks are widely distributed, generating different opinions on various perspectives of life through web messages. This textural information is highly valuable in performing sentiment analysis and opinion mining expressed through the text, providing students' feelings with statements showing agreement or disagreement in the comment sections to reveal their negative or positive sentiments towards learning. The primary aim of this paper is to design a new sentiment analysis model for e-learning platforms using natural language processing techniques. The researchers initially gathered standard text data on e-learning platforms with user reviews from benchmark resources, which were then subjected to pre-processing techniques to avoid unnecessary content for maximizing sentiment analysis performance. Word-to-vector conversion using the glove embedding scheme was carried out to obtain relevant data for sentiment analysis, followed by sentiment classification through Convolutional Neural Networks (CNN) with Gated Recurrent Units (GRU). Finally, hybrid deep learning was used to analyze sentiments in the field of e-learning, revealing promising results in sentiment analysis tasks.

Key Words: Sentiment Analysis, E-Learning Platform, Natural Language Processing, Convolutional Neural Networks, Gated Recurrent Unit.

1. INTRODUCTION

Sentiment analysis involves using Natural Language Processing (NLP), text analysis, and word semantics to extract subjective information from source materials. Its main purpose in a business context is to determine customers' attitudes toward brands in the public sphere. Sentiment analysis predicts the speaker or writer's stance on a topic or the overall polarity of a report. In this context, their judgment or evaluation may be emotionally charged. Sentiment analysis detects whether a piece of writing is positive, negative, or neutral in sentiment. Although humans are capable of impacting sentiment, analyzing large numbers of customer reviews individually is time-consuming, unreliable, and expensive in a business setting. Therefore, sentiment analysis is a more practical approach. For instance, it can be used to determine the success or failure of a movie like "Jai Bhim" released in 2021 in the Indian Tamil-language. Feedback data can be gathered from various social media platforms, movie review sites, and newspapers. Machine learning algorithms can evaluate the data sets, some of which contain clear-cut feedback in the form of a rating, movie type, or comments, indicating positive, negative, or neutral opinions. However, some feedback, such as "the movie is not bad," is challenging to interpret by machine learning algorithms because they are designed to associate positive words with "good" and negative words with "bad." As a result, algorithms must be improved to handle all kinds of feedback. Sentiment analysis is primarily used to analyze emotions, opinions, and attitudes, particularly with regards to business, production, or events, to determine the impact of those sentiments on business strategies, products, and services. It leverages the Natural Language Toolkit (NLTK) to access a suite of libraries and projects for symbolic and statistical NLP

in the Python programming language. In other words, sentiment analysis uses NLP, statistics, and machine learning algorithms to predict, identify, and classify sentiment data into word units. Opinion mining is essential, but its business significance is still in its infancy.

2. PROBLEM STATEMENT

As the project progresses, various natural language processing techniques will be employed to preprocess the corpus and extract meaningful features. These techniques include tokenization, stop word removal, stemming, and feature extraction using bag-of-words and n-grams. After feature extraction, several machine learning algorithms such as Naive Bayes, Support Vector Machines, and Random Forest will be used to build sentiment classifiers. The models will be trained and validated using cross-validation techniques to ensure the highest accuracy possible. Finally, the project aims to deploy a web-based sentiment analysis tool that users can interact with to receive instant sentiment analysis of movie reviews.

4. OBJECTIVES

- To determine the overall sentiment or opinion of the viewers towards a particular movie.
- To analyzing large sets of text data and determining whether each piece of text has positive or negative sentiments.

5. METHODOLOGY

5.1 SOFTWARE USED

- Python
- Flask
- VS code
- Pandas
- Numpy
- Seaborn

5.2 HARDWARE USED

- Diskspace-10gb or more
- Processor i5
- RAM 16gb

5.3 IMPLEMENTATION

1. First user needs to visit our official website of sentimental review analysis on any browser.
2. After that website homepage will be display to the user.

Accurate sentiment analysis of movie reviews has several potential benefits, such as helping directors understand audience reactions to their movies and assisting streaming platforms in recommending movies to users based on their expressed preferences. Therefore, the "Movie Review Sentiment Analysis" project has the potential to contribute to a better understanding of the role of sentiment analysis in the film industry. Platforms in recommending movies to users based on their expressed preferences. Therefore, the "Movie Review Sentiment Analysis" project has the potential to contribute to a better understanding of the role of sentiment analysis in the film industry.

3. PURPOSE

The purpose of sentential analysis on movie reviews is to gain insight into the overall sentiment of the review, and to identify key themes and opinions expressed by the reviewer.

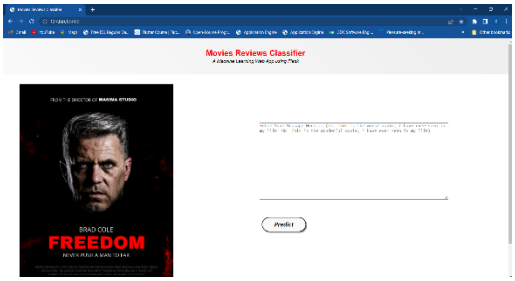

Fig.1 Website Home Page

3. User will be follow all the steps of our home page.
4. Then, if user have to find any particular response (example :- Positive and Negative) about any movie review. In that case our website help user to analyze proper response on any review .

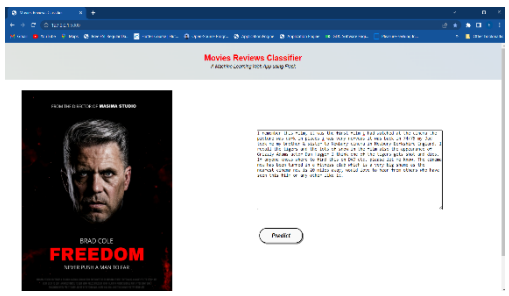

Fig.2 User Enter Review

5. Next, user have to enter review on any movies. After entering a particular review website algorithm will be generates a response for user whether review will be positive or negative on the basis of response generated.

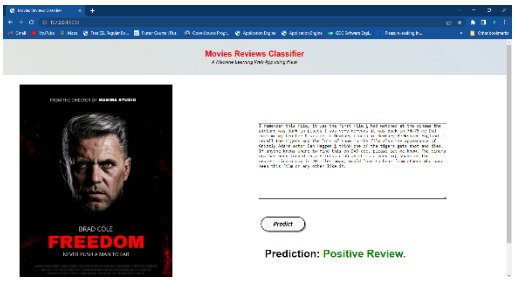

Fig.3 Shows Positive Review

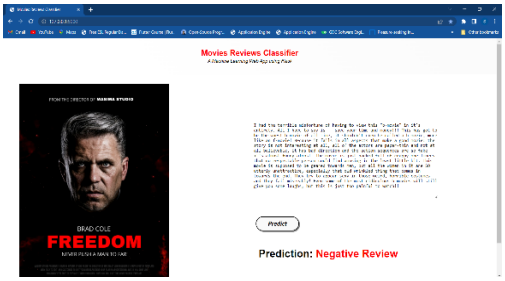

Fig.4 Shows Negative Review

6. On the basis of response generated on any particular review user was helped to distinguish between number of movie whether it is good or bad.

6. FLOW CHART

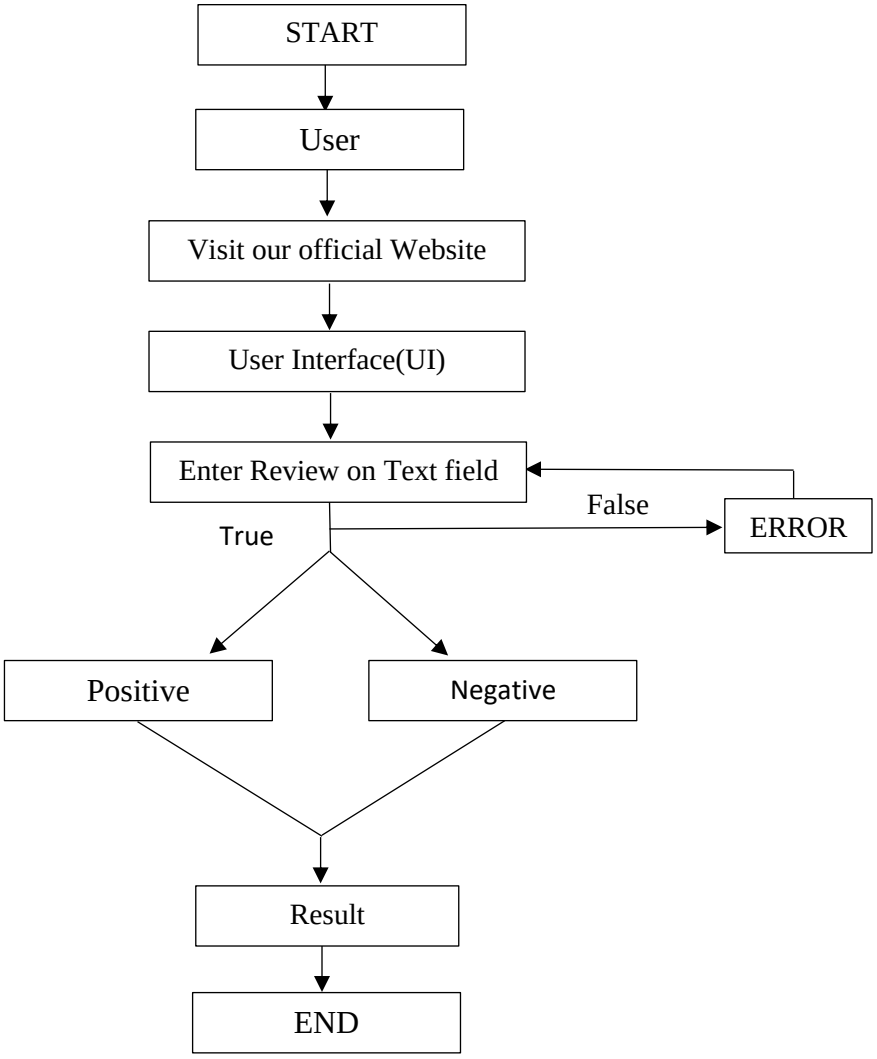

Fig. 5 Flow Chart of Sentimental Analysis on Movies Reviews

7. RESULT ANALYSIS

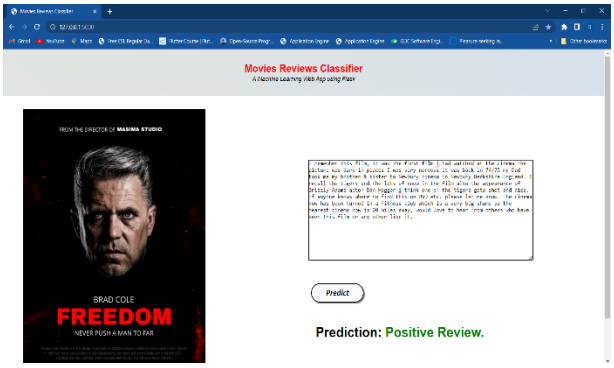

Fig. 6 Positive Review

- A positive review may praise a film for its exceptional acting, stunning cinematography, or gripping storyline.
- While a negative review may criticize the film's poor pacing, weak character development, or lack of originality.

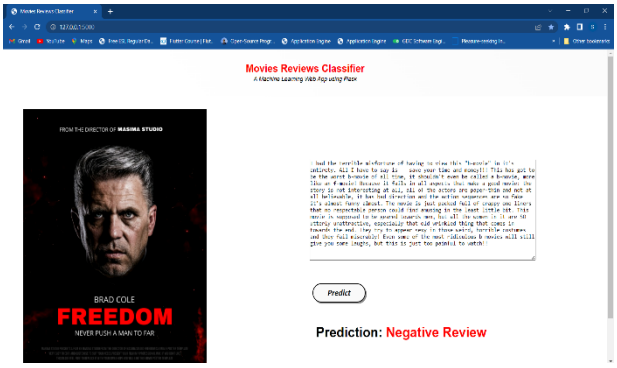

Fig. 7 Negative Review

- In this way, reviews help users to determine whether a particular movie is worth their time and money.

8. FUTURE SCOPE

This specified research on the sentiment analysis of IMDB movie reviews using natural processing language and machine learning has interpreted important information to conduct sentiment analysis. Future researchers are likely to acquire high benefits such as sufficient information of "natural processing language" in movie review generation. In addition to that, future researchers can also determine the recommendations to accelerate the authenticity of their data. A Comparative data analysis has been regarded to be important for the upcoming researchers to understand the accentuation of results in terms of betterment achieved in IMDB movie rating solutions. Readers from technical backgrounds can also use this research to generate valid ideas on applications of machine learning processes applicable in IMDB movie rating solutions. The management of studios also can have effective ideas on the acquisition of functioning of "NPL" for the classification of data accurately.

9. ADVANTAGES

1. One advantage of sentimental analysis is that it can provide a quantifiable measure of audience reactions to a movie. This can help in predicting the success or failure of a movie. For example, a sentimental analysis of movie reviews of the movie "Joker" showed that the majority of the reviews were positive, which was consistent with the significant success of the movie at the box office.
2. Another advantage of sentimental analysis is that it can help in identifying the key factors contributing to audience reactions. This can be helpful for filmmakers in making decisions about improving the quality of future movies. For example, in a sentimental analysis of the movie "Avengers: Endgame," it was found that the performance of Robert Downey Jr. was particularly praised by the audience, which suggests that he is a key factor contributing to the success of the movie.
3. Sentimental analysis can also be used to identify fake or biased reviews. With the increasing popularity of online movie reviews, some individuals may write fake reviews or use bots to increase negative opinions of a movie. Sentiment analysis can help in identifying these fake reviews and removing them from the analysis. For example, the sentimental analysis of the movie "Star Wars: The Rise of Skywalker" showed that there was a large number of fake reviews that were negatively biased.

10. CONCLUSION

In conclusion, sentimental analysis using the Naive Bayesian Classifier can be an effective tool for analyzing movie reviews. It can provide quantifiable measures of audience reactions, identify key factors contributing to reactions, and identify fake or biased reviews. This tool can be of particular importance to movie studios, directors, and producers in understanding the success or failure of a movie and identifying areas for improvement.

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