

A Systematic Review - Sentiment Analysis Based on Movie Review

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Abstract: *The project “Sentiment Analysis Based on Movie Review” seeks to ascertain the sentimental tone of film reviews using a simple, user-friendly Python application. The system is developed using the Tkinter GUI library, allowing users to input a movie review and instantly receive sentiment feedback in an interactive interface.*

The analysis is founded on a lexicon-based methodology here predefined The provided text features lists that categorize words as either positive or negative. to evaluate the text. The program processes the user’s input by cleaning and comparing each word against these lists to determine how many favorable and negative

terms. Based on this comparison, the system classifies the sentiment as Positive, Negative, or Neutral and provides a clear, color-coded output for improved visualization.

This project demonstrates the integration of basic Natural Language Processing (NLP) techniques with a graphical user interface, providing a foundation for understanding sentiment classification. It highlights how Python can be used for text analysis and interactive application development. The model can further be enhanced by incorporating machine learning algorithms or large-scale datasets to improve accuracy and scalability for real-world applications.

Keywords: Sentiment Analysis, Movie Review, Natural Language Processing (NLP), Python, Tkinter, Lexicon-Based Approach, Text Classification

I. INTRODUCTION

In today’s digital era, people frequently express their opinions and experiences about movies on online platforms such as review sites, blogs, and social media. Analyzing these opinions manually is time-consuming and subjective, making automated sentiment analysis an essential tool for understanding audience feedback. A natural language processing method called sentiment analysis is used to recognize and categorize textual emotions, attitudes, and views as neutral, negative, or positive.

The project “Sentiment Analysis Based on Movie Review” is designed to analyze movie reviews and determine their overall sentiment using a simple and interactive graphical interface. The system is developed in Python using the Tkinter library, providing users with an easy-to-use environment to input and analyze their reviews. The program uses a lexicon-based method to identify the text’s attitude using predetermined lists of positive and negative words.

This mini project demonstrates how programming and natural language processing concepts can be combined to create practical applications. It serves as an introductory model for understanding text analysis and can be further enhanced with advanced NLP or machine learning algorithms for more accurate results.

Literature Survey:

Kaur et al. [1] presented a work on sentiment analysis that classified movie reviews using supervised machine learning methods. To assess their effectiveness in text classification, the authors contrasted models such Naive Bayes, Support



Vector Machine (SVM), and Decision Tree. The study found that because SVM could efficiently handle high-dimensional text input, it offered superior sentiment prediction accuracy.

Patel and Shah [2] proposed a lexicon-based approach for analyzing movie reviews. Their system utilized a predefined dictionary of positive and negative words to calculate sentiment polarity. This method required minimal training data and provided quick results, making it suitable for small-scale applications such as educational projects and prototypes.

Gupta et al. [3] created a hybrid model for better sentiment recognition by combining machine learning and lexicon-based techniques. According to the study, combining the two approaches improves classification accuracy and reduces the impact of ambiguous terms.

Rao and Mehta [4] focused on building a graphical user interface (GUI) for sentiment analysis using Python's Tkinter library. Their model provided a simple and interactive way for users to input reviews and visualize sentiment results. The system proved effective in educational environments where students could understand NLP concepts through practical implementation.

Singh et al. [5] investigated sentiment analysis on movie review datasets using deep learning models, such as Long Short-Term Memory (LSTM) networks. Their findings demonstrated that, while requiring more processing power and data preprocessing, deep learning models perform better than conventional methods when trained on sizable datasets.

Table1: Comparison of sentiment analysis approaches for movie reviews

Paper /Project	System Architecture	Cost	Ease of Implementation	Performance	User Experience	Limitations
Kaur et al. [1]	ML-based Sentiment Classification (Naive Bayes, SVM, Decision Tree)	Moderate	Moderate	High accuracy for medium-sized datasets	User- friendly for command -line interface	Requires feature extraction and training data
Patel & Shah [2]	Lexicon- based Sentiment Analysis	Low	Easy	Quick and efficient for small datasets	GUI can be added using Python	Limited accuracy on large or ambiguous datasets
Gupta et al. [3]	Hybrid Lexicon + ML Model	Moderate	Moderate	Improved accuracy by combining methods	Can be integrated with GUI	More complex to implement, requires preprocessing
Rao & Mehta [4]	GUI-based Sentiment Analyzer using Tkinter	Low	Easy	Good for educational and small- scale projects	Interactive and user- friendly	Limited scalability and dataset handling
Singh et al. [5]	Deep Learning- based Sentiment Analysis (LSTM)	High	Complex	Very high accuracy on large datasets	Can provide real-time analysis with proper setup	Requires large dataset and high computational resources
Your Project	Lexicon- based GUI Sentiment	Low	Easy	Effective for small- to-medium datasets	Interactive and color- coded feedback	Accuracy depends on word list



	Analyzer (Python Tkinter)					coverage, not suitable
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III. PROPOSED METHODOLOGY

Collecting the input data, in this case movie reviews, is the initial step in the sentiment analysis process. The system takes a string of text entered by the user in the form of a movie review, which is then cleaned and preprocessed for analysis. The text is cleaned by converting all words to lowercase and stripping any punctuation, ensuring uniformity in word comparison. This preprocessing step is essential to remove unnecessary characters and make the analysis more accurate.

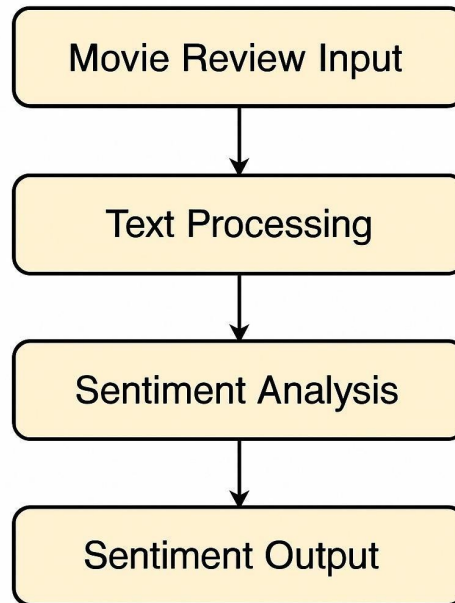


Figure1: Block Diagram of Proposed System

Sentiment analysis is performed based on the lexicon of predefined positive and negative words. The sentiment of a review is determined by counting the occurrences of positive and negative words in the input text. Two lists of words are maintained: positive_words and negative terms. These lists include terms that are frequently used to express both good and negative emotions. Each word in the review is compared to the lists of good and negative words after the text has been cleaned. For both positive and negative categories, the number of matches is tallied. Every word in the review is examined to see if it is included in the favorable or bad lists. The positive count is the number of matches that contain positive words, and the negative count is the number of matches that contain negative terms. Following the determination of the positive and negative word counts, the review's attitude is divided into three groups: Neutral, Negative, or Positive. The review is categorized as favorable if there are more positive words than negative ones. The review is categorized as negative if the number of negative words exceeds the number of positive terms. The review is categorized as neutral if the numbers of positive and negative words are equal. A graphical user interface (GUI) created using the Tkinter package incorporates the sentiment analysis. The graphical user interface (GUI) offers a straightforward, user-friendly platform for consumers to submit their movie reviews and see the outcomes. Users can enter their movie review in a text box, and when they click a button, the review is analyzed. The system evaluates the sentiment of the review when it is clicked. The sentiment (positive, negative, or neutral) is highlighted in various colors for visual clarity while the results are dynamically displayed on the same screen. Green with a smiling face emoji (😊) represents positive sentiment, red with a sad face emoji (😞) represents negative sentiment, and orange with a neutral face emoji (😐) represents neutral sentiment. In addition to a sentiment label indicating whether the review is generally good, negative, or neutral, the final output includes the counts of positive and negative terms.



Accuracy and user experience are the two primary factors used to assess the suggested sentiment analysis method. The accuracy gauges the system's capacity to accurately categorize a review's emotion using the pre-established word lists. The user experience evaluates the GUI's responsiveness and ease of use for quick feedback and simple interaction. The system works well for simple reviews using the specified lexicon, but by including more sophisticated methods like machine learning models or natural language processing (NLP) to handle complicated language and nuanced attitudes, its performance could be significantly improved.

To improve the methodology, several future enhancements could be implemented. One such improvement would be expanding the size and diversity of the positive and negative word lists, which would improve the accuracy of sentiment classification, especially for reviews with more complex or specialized vocabulary. Another enhancement would be the integration of machine learning algorithms, such as Naive Bayes or Support Vector Machines, for better classification, particularly in handling ambiguous or sarcastic reviews. Additionally, instead of a simple positive, negative, or neutral classification, sentiment could be scored on a continuous scale (e.g., -1 to +1) to provide more granularity.

IV. CONCLUSION

Using predetermined word lists, a simple yet powerful sentiment analysis system was created for this project to categorize movie reviews as favorable, negative, or neutral.

By utilizing a simple lexicon-based approach, the system successfully analyzes user-provided text, counts the occurrences of sentiment-related words, and assigns a sentiment label accordingly. The integration of a user-friendly GUI using Tkinter ensures a seamless interaction for users, providing real-time feedback on the sentiment of their reviews.

Although the system performs well for general sentiment classification, it might be made even more accurate by adding more complex methods like machine learning algorithms or natural language processing (NLP) to the word lists.

The future work outlined in the methodology, including the potential for continuous sentiment scoring and the inclusion of advanced models, could address the limitations of the current approach, such as handling complex, ambiguous, or sarcastic language.

All things considered, this experiment shows how sentiment analysis can offer insightful information about public opinion, especially when it comes to movie reviews. Such methods could be used more widely in domains where sentiment is crucial to decision-making, such as market research, social media monitoring, and customer feedback analysis, by enhancing and perfecting the approach.

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