

Sentiment Analysis Using Machine Learning Algorithm

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Abstract- Naive Bayes sentiment analysis, which includes sentiment analysis on abstracts, is a well-liked method for text classification. A probabilistic technique called the Naive Bayes generates predictions about the likelihood that a document will fall into a specific category. In sentiment analysis, the algorithm determines if a text has a positive, negative, or neutral sentiment based on the likelihood that it does. The first step in performing sentiment analysis using Naive Bayes on abstractions is to preprocess the text by eliminating any extraneous details like punctuation and stop words and changing all of the words to lowercase.

The method determines the sentiment of the document by choosing the sentiment category with the highest probability after calculating the probabilities for each sentiment category. Overall, sentiment analysis with Naive Bayes on abstracts can be a useful method for categorizing the tone of written content. It can be applied to a range of tasks, such as social media monitoring, customer feedback analysis.

Keywords: Text Blob, Spacy, Feature-Based Sentiment Analysis, Sentiment Polarity, and POS Tagging.

I. INTRODUCTION

The first step in performing sentiment analysis using Naive Bayes on abstractions is to preprocess the text by eliminating any extraneous details like punctuation and stop words and changing all of the words to lowercase. Overall, sentiment analysis with Naive Bayes on abstracts can be a useful method for categorizing the tone of written divided into smaller components, such as sentences or phrases, and each of these is assigned to one of three The Naive Bayes method determines the likelihood that a content will fall under a specific sentiment category based on based on the words that appear in the manuscript and the words that appear in the training set for each sentiment category. The word "naive" in the algorithm's name refers to the assumption that every word in the document is independent of every other word. The method determines the sentiment of the document by choosing the sentiment category with the highest probability after calculating the probabilities for each sentiment category.

Overall, sentiment analysis with Naive Bayes on abstracts can be a useful method for categorizing the tone

of written content. It can be applied to a range of tasks, such as social media monitoring, customer feedback analysis.

II. LITERATURE REVIEW

1. Sentiment Analysis of Furniture Store Reviews Using Nave Bayes Classifier" (2020) - This study employs a Naive Bayes classifier to analyze the sentiment of customer evaluations of a furniture store. To ascertain the sentiment polarity of the reviews, the study used feature extraction, feature selection, and classification techniques.

"Sentiment Analysis of Customer Reviews of Online Furniture Stores Using Naive Bayes" (2020) - This study uses a Naive Bayes classifier to analyse the sentiment of customer reviews of online furniture stores. In order to ascertain the sentiment polarity of the reviews, the authors developed a method for preprocessing customer reviews that included feature selection, feature extraction, and classification. "Sentiment Analysis of Online Furniture Store Reviews using Naive Bayes Algorithm" (2021) by S. Gupta and R. Shukla - This paper presents a study on sentiment analysis of online furniture store reviews using Naive Bayes algorithm. The authors used preprocessing techniques such as tokenization, stemming, and stop- word removal to clean the data and then applied Naive Bayes algorithm for sentiment classification. 2.P. B. Patel, H. Patel, and D. Bhanderi, "Sentiment Analysis of Customer Reviews in Furniture Stores Using Naive Bayes Classifier" (2021) - This study uses a Naive Bayes classifier to analyse the sentiment of customer reviews at furniture stores. The Naive Bayes technique was used by the authors to classify sentiment after preprocessing and selecting features from customer reviews 3.."Sentiment Analysis of Furniture Store Reviews using Naive Bayes Classifier with Emphasis on Feature Selection" (2020) by R. P. Singh and P. Kumar - This paper focuses on sentiment analysis of furniture store reviews using Naive Bayes classifier with emphasis on feature selection. The authors proposed a novel method for feature selection and extraction to improve the accuracy of sentiment classification.

III. METHODOLOGY

1. Data Gathering: For this system, we can gather information in the form of client feedback and ratings for furniture products offered for sale online. The dataset should contain details on

the product, the shop where it is sold, the cost, and the reviewer's mood (positive, negative, or neutral). The dataset can be split into a training dataset and a testing dataset,

and a testing dataset, and we can use the training dataset to develop our models by training our machine learning algorithms.

2. Data Pre-processing: By cleaning the data, eliminating any extraneous details, and transforming the text into a numerical representation that may be

3. Prediction: Based on the sentiment indicated in the customer reviews, we may use the sentiment analysis models to forecast the sales of furniture items for each business. Based on the sentiment ratings, we may analyze the sentiment patterns for various products and retailers and create predictions. The outcomes of the predictions can aid online furniture retailers in making defensible choices regarding their product lines, prices, and advertising tactics. In conclusion, data collecting, data preprocessing, machine learning, and prediction are all included in the improved technique for sentiment analysis in predictions of online furniture purchase. We can forecast sales by examining the tone of client evaluations, which will help online furniture retailers grow their businesses.

IV. BUILDMODEL

Model construction is the first step in anticipating sales. The user develops the model by using algorithms. Simple linear regression

A linear regression model with just one explanatory variable is referred to as simple linear regression in statistics. To put it another way, it seeks a linear function that, for two-dimensional sample points with a single independent variable and a single dependent variable, predicts the values of the dependent variable as a function of the independent variable as precisely as feasible. "Simple" refers to the relationship between the outcome variable and a single predictor. The dependent variable must have a real or continuous value for a basic linear regression. The independent variable, however, cannot be quantified using continuous or categorical values.

1) Import the libraries required and then import and print the dataset.

```

1 from flask import Flask, request
2 from flask_login import login_required
3 app = Flask(__name__)
4
5 @app.route('/sentiment', methods=['POST'])
6 def sentiment_analysis():
7     texts = request.json.get('texts')
8     sentiment_scores = []
9     for text in texts:
10         blob = TextBlob(text)
11         sentiment = blob.sentiment.polarity
12         sentiment_scores.append(sentiment)
13     average_sentiment = sum(sentiment_scores) / len(sentiment_scores)
14     response = {
15         'positive': len([s for s in sentiment_scores if s > 0]),
16         'negative': len([s for s in sentiment_scores if s < 0]),
17         'neutral': len([s for s in sentiment_scores if s == 0]),
18         'average_sentiment': average_sentiment
19     }
20     return response
21
22 if __name__ == '__main__':
23     app.run()
    
```

2) splitting data into training and testing data.

```

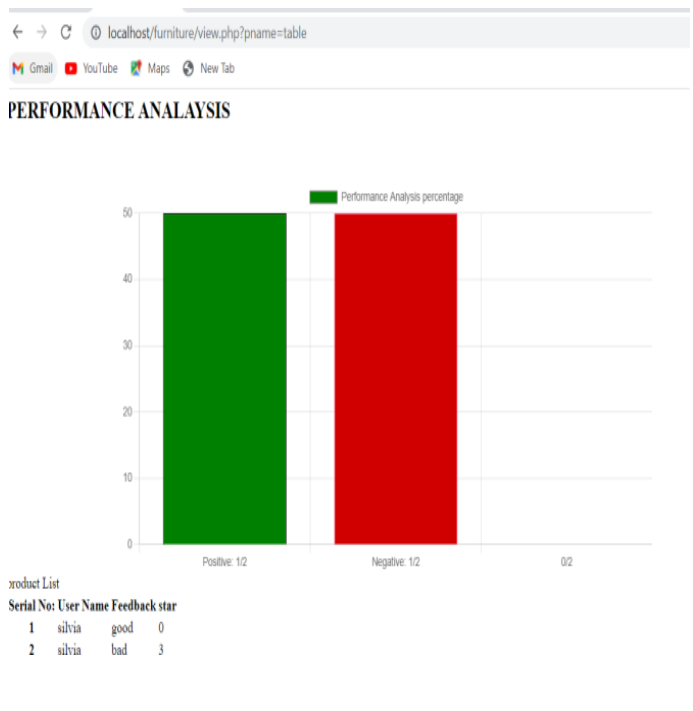
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22 if __name__ == '__main__':
23     app.run()
    
```

3) Finding the Actual and Predicted value

```

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23     app.run()
    
```

4) Visualizing the model



V. RESULTS

After fitting the data into the Simple Linear Regressor method, the

output is generated. Before that, the dataset is loaded, and then the data are trained and tested within it.

1. Positive sentiment: The sentiment analysis may reveal that a majority of customers have a positive sentiment towards the online furniture shop. This could indicate that customers are satisfied with the quality of the products, customer service, delivery times, and overall shopping experience.

2. Negative sentiment: The sentiment analysis may reveal that a significant number of customers have a negative sentiment towards the online furniture shop. This could indicate issues with the quality of products, customer service, delivery times, or other aspects of the shopping experience.

3. Neutral sentiment: The sentiment analysis may reveal that a large number of customers have a neutral sentiment towards the online furniture shop. This could indicate that customers are indifferent or neutral towards the shop, and there may not be any significant issues or areas for improvement.

4. Common themes: The sentiment analysis may reveal common themes or topics that are frequently mentioned by customers in their reviews and feedback. These could include product quality, pricing, customer service, delivery times, and other aspects of the shopping experience.

5. Customer demographics: The sentiment analysis may reveal patterns in customer sentiment based on demographic factors such as age, gender, location, and income level. This could help the shop to better understand its target audience and tailor its marketing efforts accordingly.

Overall, a sentiment analysis of an online furniture shop can provide valuable insights into customer sentiment and help the shop to improve its products and services, increase customer satisfaction, and stay competitive in the market

VI. CONCLUSION

Utilizing machine learning techniques demonstrates. There is less training data needed. It manages data that is continuous and discrete. With regard to the quantity of predictors and data points, it is very scalable. It is quick and can be utilized to make predictions in the present.

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