Products Reviews and Sentimental Analysis System for Ecommerce Website

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Abstract:- Thought mining is a widely used topic in today's world; The internet contains a lot of valuable information used by different companies for different purposes. Our goal is to create a web application with machine learning models that can identify user reviews of specific products. It shows the advantages and disadvantages of checking reviews of products that are useful to users. In this application, when the user searches for a product, comment data is collected from the e-commerce site and transferred to the machine learning model, which is the Naive Bayes tool, to enable positive and negative emotions to be identified separately according to the extracted features. . from the model. We show users all the positive and negative polarities of the reviews for the products they are looking for, and we also clearly show how we arrived at the results. Therefore, these results can help users make decisions about products..

Keywords:- Data Analytics, Analysis, Product Sentiment, Ecommerce.

I. INTRODUCTION

The expansion of social media makes it ready to see the products as well as its reviews of it. Hence the need for analyzing sentiments (reviews) has emerged. ECommerce is taking dominance in this digitalized world through the accessibility of products within reach of clients.

Additionally, the e-Commerce website allows the people to convey what they think and feel. Actually, people are increasingly trusting on the experiences of other customers. Our judgments and purchasing decisions are influenced by the experiences of others and their feedback on products.

Reviews have become important because we always refer to others' opinions and research to benefit from their experiences. However, it is almost impossible for customers to read all of these comments; therefore emotional analysis is an important part of identifying them. Therefore, hypothesis analysis techniques have been developed to uncover and analyze the hypotheses involved in various product analyzes [2]. This article uses 2 cognitive analysis techniques (including NLP) to develop a cognitive model to help consumers make decisions based on the experiences of others. In addition, it will be beneficial for the company to develop its products by understanding the thoughts and feelings of its customers [1]

II. LITERATURE SURVEY/REVIEWS

In recent years, many empiricists have developed emotional models to describe products and separate them into positive and negative emotions. Ortigosa et al. [5] proposed a combination of conversational learning and machine learning in 2014. The results showed that sentiment analysis was reasonable and accurate (83.27%) when performed on Facebook. Parkhe and Biswas[6] focused on appearance-based video analysis theory to identify certain factors. These factors are attributed to many films, and generally speaking, things with high driving force usually cause serious complaints. It really relies on Naive Bayes, POS, SVM classifiers and dictionaries. The results showed that by assigning higher drivers to movies, movies, and movie performances, we achieved the highest accuracy of around 79.372% in movie reviews. Authors in [6] calculated the performance of different learning algorithms (LR, stochastic, gradient descent (SGD), NB and convolutional neural network (CNN)) using subtraction (such as bag-of-words), TF -. IDF, glove and word2vec. In the text [6], after subtraction In recent years, many empiricists have developed emotional models to describe products and separate them into positive and negative emotions. Ortigosa et al. [5] proposed a combination of conversational learning and machine learning in 2014. The results showed that sentiment analysis was reasonable and accurate (83.27%) when performed on Facebook. Parkhe and Biswas[6] focused on appearance-based video analysis theory to identify certain factors. These factors are attributed to many films, and generally speaking, things with high driving force usually cause serious complaints. Itreally relies on Naive Bayes, POS, SVM classifiers and dictionaries. The results showed that by assigning higher drivers to movies, movies, and movie performances, we achieved the highest accuracy of around 79.372% in movie reviews. Authors in [6] calculated the performance of different learning algorithms (LR, stochastic, gradient descent (SGD), NB and convolutional neural network (CNN)) using subtraction (such as bag-of-words), TF - IDF, glove and word2vec. In the text [6], after subtraction Product reviews are based on information and comments are taken into account. Sentences are then split into sentence vectors, which are then split into word vectors along with the meaning of each word from Senti Word Net. In [7], researchers examined online e-

commerce reviews for specific products such as books, cameras, and GPS, with approximately 2000 reviews (1000 positive and 1000 negative) in each file. In [8], blocked words were removed from all analyzed items and tokenized and stemmed in a preprocessing step.

➢ *Proposal System*

In this project, we explored that the sentiment analysis techniques are also achievable for application on product reviews form Online e-commerce.com. Within the study, different Natural Learning Processing algorithms are compared, trained and tested on a dataset containing product reviews from Online ecommerce website which are randomly selected from online e-commerce website by scrapping reviews. Online e-commerce websites has wide range of products, with that it also comprises of reviews, that provide a lot of information about the product on the web. This information comprises of emotions and 3 views about various product features and the manufacturers of these products. This configuration comprises of opinion and feedback is important to the companies developing these products as well as the companies that want to develop better rival products. Opinion polling is the process of analyzing all information, collecting opinions about products and services and classifying them as positive or negative (i.e. positive or negative). An important part of the analysis of a product is its digital scale and identification with the product. In this project, we will consider two vectors of inspection objects to finally decide the best classifier for inspection objects.

III. METHODOLOGY

➢ *Model Requirements are based on Products before Data Analysis as Shown in Figure 1.*
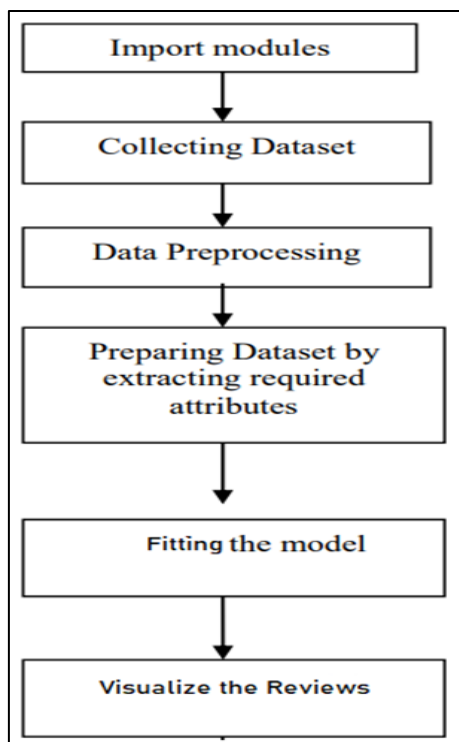

Fig 1 System Architecture

Import modules - Import any modules or libraries required for the success of the build, it works well for any system. Some modules or libraries required to run the model on any system or computer are BeautifulSoup (bs4), nltk, pandas, textblob etc. However, developing or changing these models after an update or library update may cause confusion for users or customers. Therefore, the model will be delivered via cloud computing so that local customers do not have to do this work.

Collect Dataset - When the user wants to identify the desired item, he passes the item name and this name is used to collect the data and perform the analysis. Product review information is collected from online e-commerce sites and stored in Excel files, and then various algorithms are used. Metadata includes: details, date, total rating, price rating, product image, star rating. Ratings range from 0 to 5 stars; -1 indicates a negative rating from the original html archive. First of all, the file is in HTML format. Using the BeautifulSoup script, data is extracted from HTML format and stored in CSV format. Perform data cleansing on the CSV file to remove blank lines and invalid data.

Data preprocessing - The next step is text preprocessing, which is an important step to improve data quality in NLP. This study uses a preliminary step to analyze an online e- commerce dataset. All frequent punctuation marks and stop words [3] that do not affect the meaning have been removed, including "-, /, :, ?, the, a". It was also added to the front of the language by replacing all letters with numbers [7] instead of mixing uppercase and lowercase letters; for example, "Good" and "GrEat" were changed to "good" and "good". During pre/cleaning, empty cells [4] and words are removed. Additionally, analysis is tokenized, which is the process of splitting a sentence into a single word level called "tokens" [7]. In general, each token can be distinguished or distinguished from other tokens by a space symbol; Therefore, the tokenization process relies on the token field to separate the message [8]. All tokens are then returned to their base or dictionary through the lemmatization process. Each review in the literature is classified as positive, negative, or neutral based on its review [1]. Approximately 60% of the data is split into training, approximately 20% into validation, and approximately 20% into testing.

Organizing data by extracting desired features - Natural Language Processing (NLP) enables powerful computers to interpret human language. First, the data files are converted into a digital format suitable for machine learning models. In this project, bag of words [4], time frequency - inverse document frequency is used. 5 Classification is used in research theory to divide data into binary classification (such as "positive" and "negative") and triple classification (such as "good", "negative" and "neutral"), and accordingly the opinion analysis process is completed. Classification is the process of separating data into different groups. There are two main methods used for sentiment classification of customer reviews: dictionary and machine learning [3] [5]. The dictionary-based [6] method predicts the polarity of the review text based on words

written with polarity or polarity scores. Machine learning, on the other hand, is divided into two: unsupervised learning and supervised learning. This work incorporates supervised machine learning, which is widely used in cognitive science to develop classification models of emotions. First, it will collect training data in order to create a training model. Then, the feature set is extracted from the training data and applied using Naive Bayes (NB), Logistic Regression (LR), Random Forest (RF), etc. sent to classification models. After a training phase using text, the classifier can be used to predict the thinking pattern for new objects.

Mounting Models - Availability of customer reviews extends to many products and services. Customer reviews generally come in two forms: review text and star ratings. In this study, we use customer reviews to identify positive, negative, or neutral reviews. Review online e-commerce datasets that have been discarded and retrieved instantly, and then think about emotional analysis. These reviews are published publicly by online e-commerce sites. Online reviews include more than 400,000 customer reviews from e-commerce sites. In particular, it contains more than 410,000 reviews and many features categorized as follows:

- *Information about Products (Brand Names, Product Names, Prices, Ratings).*
- *Information Regarding Comments.*

Visual Review - Python is a very popular language used in this project with libraries for data manipulation, visualization, preprocessing and machine learning modeling. Since the resources available on the local host are limited, cloud computing will be used to perform the application faster and increase the number of public announcements. This section presents the results of the proposed model. Positive, negative and neutral observations produced by the NLP model are presented to the user. This allows the user or customer to decide on the purchase. If they want to buy the product, they can do so by clicking the link on the website. Additionally, if they do not want to purchase the product, they can find suggestions for similar products in the recommendations section.

Recommendation is an algorithm, often associated with machine learning, that uses data to suggest or recommend products, services, or items to users. The approval model used in our project approves products based on five categories: popularity-based, value-based, analytics-based, review-based, and based on all metrics.

IV. CONCLUSION

Sentiment analysis is a necessary and frequently used method to extract information from the data of e-commerce sites, and understanding what customers think about their products and services has become one of the most important methods for people and companies. While e- commerce portals produce a lot of information every day in the form of reports, comments, tweets and reviews, people's opinions are also expressed through comments, ratings and testimonials. In this research paper, sentiment analysis has

been applied to online e-commerce product reviews using multiple classifications with multiple selection criteria to achieve the best results and performance. The various models developed so far focus on specific customers or companies or businesses and are not accessible to users of other companies; Our model is public to enable any user, customer or organization to use the standard. Also the project uses NLTK with textblob and spacy. The Textblob model achieved results with 56% accuracy in both multivariate classification and binary classification. On the other hand, NLTK with Textblob and spacy integration also gives very good results with 60% accuracy. Random forest with bag-of-words model achieves good performance with 69% accuracy.

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