**Sentiment Analysis**

**MINI PROJECT– I**

**SYNOPSIS**

**BACHELOR OF TECHNOLOGY**

**( SEMESTER – VI )**

COMPUTER SCIENCE & ENGINEERING

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**2022 – 2023**

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**1. Introduction**

Sentiment analysis can be defined as analyzing the positive or negative sentiment of the customer in text. The contextual analysis of identifying information helps businesses understand their customers’ social sentiment by monitoring online conversations.

As customers express their reviews and thoughts about the brand more openly than ever before, sentiment analysis has become a powerful tool to monitor and understand online conversations. Analyzing customer feedback and reviews automatically through survey responses or social media discussions allows you to learn what makes your customer happy or disappointed. Further, you can use this analysis to tailor your products and services to meet your customer’s needs and make your brand successful.

Recent advancements in machine learning and deep learning have increased the efficiency of sentiment analysis algorithms. You can creatively use advanced [artificial intelligence and machine learning](https://marutitech.com/artificial-intelligence-and-machine-learning/) tools for doing research and draw out the analysis.

For example, sentiment analysis can help you to automatically analyze 5000+ reviews about your brand by discovering whether your customer is happy or not satisfied by your pricing plans and customer services. Therefore, you can say that the application of sentiment is endless.

## Importance Of Sentiment Analysis

The most crucial advantage of sentiment analysis is that it enables you to understand the sentiment of your customers towards your brand. Your products and services can be improved, and you can make more informed decisions by automatically analyzing the customers’ feelings and opinions through social media conversations, reviews, surveys, and more.

According to the survey, 90% of the world’s data is unstructured. Especially in businesses, emails, tickets, chats, social media conversions, and documents are generated daily. Therefore, it is hard to analyze all this vast data in a timely and efficient manner.

## Objective and Scope of the Project

Since humans express their thoughts and feelings more openly than ever before, sentiment analysis is fast becoming an essential tool to monitor and understand sentiment in all types of data. Automatically analyzing customer feedback, such as opinions in survey responses and social media conversations, allows brands to learn what makes customers happy or frustrated, so that they can tailor products and services to meet their customers’ needs.

For example, using sentiment analysis to automatically analyze 4,000+ open-ended responses in your customer satisfaction surveys could help you discover why customers are happy or unhappy at each stage of the customer journey.

Maybe you want to track brand sentiment so you can detect disgruntled customers immediately and respond as soon as possible. Maybe you want to compare sentiment from one quarter to the next to see if you need to take action. Then you could dig deeper into your qualitative data to see why sentiment is falling or rising.

**The overall benefits of sentiment analysis include:**

Sorting Data at Scale :-

Can you imagine manually sorting through thousands of tweets, customer support conversations, or sureys? There’s just too much business data to process manually. Sentiment analysis helps businesses process huge amounts of unstructured data in an efficient and cost-effective way.

Real-Time Analysis :-

Sentiment analysis can identify critical issues in real-time, for example is a PR crisis on social media escalating? Is an angry customer about to churn? Sentiment analysis models can help you immediately identify these kinds of situations, so you can take action right away.

Consistent criteria :-

It’s estimated that people only agree around 60-65% of the time when determining the sentiment of a particular text. Tagging text by sentiment is highly subjective, influenced by personal experiences, thoughts, and beliefs.

By using a centralized sentiment analysis system, companies can apply the same criteria to all of their data, helping them improve accuracy and gain better insights.

The applications of sentiment analysis are endless. So, to help you understand how sentiment analysis could benefit your business, let’s take a look at some examples of texts that you could analyze using sentiment analysis.

Then, we’ll jump into a real-world example of how Chewy, a pet supplies company, was able to gain a much more nuanced (and useful!) understanding of their reviews through the application of sentiment analysis.

**3. Literature Review**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Sr. No** | **Author** | **Methodology** | **Year** | **Abstract** |
| **1.** | S. E. Saad and J. Yang, IEEE Access, vol. 7, pp. 163677-163685, | "Twitter Sentiment Analysis Based on Ordinal Regression," | 2019 | They have aimed for giving a complete tweet sentiment analysis on the basis of ordinal regression with machine learning algorithms. The suggested model included pre-processing tweets as first step and with the feature extraction model, an effective feature was generated. |
| **2.** | Y. Fang, H. Tan and J. Zhang,. | ss," "Multi-Strategy Sentiment Analysis of Consumer Reviews Based on Semantic Fuzziness," | 2018 | They have suggested multi-strategy sentiment analysis models using the semantic fuzziness for resolving the issues. The outcomes have demonstrated that the proposed model has attained high efficiency |
| **3.** | M. Afzaal, M. Usman and A. Fong, | "Tourism Mobile App With Aspect-Based Sentiment Classification Framework for Tourist Reviews," | 2019 | They have recommended a novel approach of aspect-based sentiment classification, which recognized the features in a precise manner and attained the best classification accuracy. Moreover, the scheme was developed as a mobile application, which assisted the tourists in identifying the best hotel in the town, and the proposed model was analyzed using the real-world data sets | |
| **4.** | A. Feizollah, S. Ainin, N. B. Anuar, N. A. B. Abdullah and M. Hazim. | "Halal Products on Twitter: Data Extraction and Sentiment Analysis Using Stack of Deep Learning Algorithms," | 2019 | They have concentrated on tweets related to two halal products such as halal cosmetics and halal tourism. By utilizing Twitter search function, Twitter information was extracted, and a new model was employed for data filtering. Later, with the help of deep learning models, a test was performed for computing and evaluating the tweets. Moreover, for enhancing the accuracy and building prediction methods, RNN, CNN, and LSTM were employed. | |
| **5.** | AkshiKumar, KathiravanSrinivasan, ChengWen-Huang, and Albert Y.Zomaya. | , "Hybrid context enriched deep learning model for fine-grained sentiment analysis in textual and visual semiotic modality social data", | 2020 | They have presented a hybrid deep learning approach named ConVNet-SVMBoVW that dealt with the real-time data for predicting the fine-grained sentiment. In order to measure the hybrid polarity, an aggregation model was developed. Moreover, SVM was used for training the BoVW to forecast the sentiment of visual content. | |

**4. Methodology**

Algorithm :-

Input a text and check whether the sentiment is positive, negative or neutral.

Prerequisites:

Book1.csv: It is an excel file written in csv format where positive and negative words and its corresponding values are stored.

We set the value of positive words +1 and negative word -1. It is our main database file.

Input file: It is an input file which is used for sentiment analysis where some texts are stored.

Data structure: Here we use arraylist named Filebean which have two attributes key and values. We use two arraylists. For

database file named as ‘filecontent’ and for input file named as ‘wordlist’.

1) Step-1: Read the contents of file store it into the Filebean.

Step-1.1: Read the contents of the file.

Step-1.2: For each line split the line with the delimiter “,” and store in the Filebean.

2) Step-2: Read the contents of the input file and store it in the Filebean ‘wordlist’. Here we consider three cases: -

Step-2.1: Remove the ‘.’ And ‘,’ by replacing with the blank character.

Step-2.2: Split the word using space and store the word into the wordlist. If there is space that means, there is more than

one word.

Step-2.3: If the file contains one word so we store it directly into the wordlist.

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3) Step-3: compare between the contents of two arraylist filecontent and arraylist.

Step-3.1: check whether the two keys/words are equal or not.

If equal, then add the value of the key of the filecontent together.

Step-3.2: If the sum is less than zero then the result is positive.

If the sum is equal to zero then the result is neutral otherwise, if the sum is greater than zero the result is negative.

**5. Hardware Required**

• DEVICE :- Dell latitude E5470

• RAM:- 8 GB

• STORAGE :- 256 GB SSD

• OS :- WINDOWS 10

## 6. Software Required

1. **Development**

* VS code
* Python

1. **Libraries**

* Flask – developing web application using python.
* Sklearn -
* Requests
* NLTK
* RE
* vaderSentiment

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| --- | --- | --- | --- |
| **Sr. No.** | **Particulars** | **Cost** | **Remark** |
| 1 | Operating system | 4000 | (Windows XP,7,8,9,10,11) |
| 2 | Development | 8000 | Includes laptops, software’s etc. |
| 3 | Deployment and Hosting | 10000 | Server and domain name |
| 4 | Total Cost | 22000 | Approximately |

**7. Estimation**

**8. Project Timeline**

**1** **February 2022 to 15 February 2022**

Domain & Title of Project

**15 Feb 2022 to 22 Feb. 2022**

Requirement Analysis and Information Gathering

(Data Collection)

**22 Feb. 2022 to 15 March. 2022**

Design, Development and testing

**15 March 2022 to 30 March 2022**

Documentation & Demonstration

## 9.References

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* https://monkeylearn.com/sentiment-analysis/
* <http://ignousupport.blogspot.com/p/sentiment-analysis-project.html?m=1>

**Research Paper :**

* [1] Chen Mosha,”Combining Dependency Parsing with Shallow Semantic Analysis for Chinese Opinion-Element Relation Identification”, IEE E, 2010, pp.299-305.
* [2] Yuanbin Wu, Qi Zhang, Xuanjing Huang, Lide Wu,”Phra se Dependency Parsing for Opinion Mining”, EMNLP '09 Proceedings of the 2009 Conference on Empirical Methods in Natural Language Processing, 2009, Volume 3
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* [5] Loren Terveen et al, 1997, PHOAKS: A system for sharing recommendations, Communications of the Association for Computing Machinery (CACM), 40(3):59–62