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Analysis of Text and Sentiment

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Abstract: *We wish to ascertain the overall sentiment of a given document, which is the goal of sentiment analysis, also known as opinion mining. Natural language processing and machine learning techniques can be used to extract a document's subjective content. Categorize it as positive, neutral, or negative based on its polarity. It is a very helpful analysis since it allows us to ascertain the general consensus regarding the sale of goods or forecast stock prices for a certain firm. For example, if most people have a positive opinion of a company, its stock prices may rise. Due to the complexity of the language (objectivity/subjectivity, negation, lexicon, and grammar), sentiment analysis is still far from being fully understood.*

Keywords: Sentiment Analysis, Machine learning, NLP, Dataset, Sentiment, Polaris.

I. INTRODUCTION

Sentiment analysis is an automated method for figuring out if a text indicates a favourable, unfavourable, or neutral attitude about a certain item or subject. Companies can use sentiment analysis to tag consumer data, such as survey replies, reviews, and support requests, without having to spend countless hours doing so. remarks on social media and tickets. Sentiment analysis aids businesses in a variety of ways, including brand reputation management on social media, customer feedback analysis, and more.

Sensitivity analysis, a subfield of natural language processing (NLP), has drawn a lot of interest lately thanks to its many fascinating applications across a wide range of industries and the study's commercial plan. There is an impression of the analysis procedure for figuring out whether "numbered" is positive, negative, or neutral. the evaluation of oral perception.

II. LITERATURE SURVEY

Title: Text Mining and Sentiment Analysis of Newspaper Headlines
Author: Arafat Hossain, Md. Karimuzzaman, Md. Moyazzem Hossain, Azizur Rahman.
Year: 2021

This paper aims to examine the pattern of words that appeared on the front page of a well-known daily English newspaper in Bangladesh, The Daily Star, in 2018 and 2019. The elucidation of that era's possible social and political context was also attempted using word patterns. The study employs three widely used and contemporary text mining techniques: word clouds, sentiment analysis, and cluster analysis.

Title: A survey on sentiment analysis methods, applications and challenges
Author: Mayur Wankhade, Annavarapu Chandra, Sekhara Rao, Chaitanya Kulkarni.
Year: 2022

This article discusses a complete overview of the method for completing this task as well as the applications of sentiment analysis. Then, it evaluates, compares, and investigates the approaches used to comprehensively understand their advantages and disadvantages. Finally, the challenges of sentiment analysis are examined in order to define future directions.

Title: Twitter Sentiment Analysis
Author: Aliza Sarlan, ChayanitNadam, ShuibBasri
Year: 2014

This paper reports on the design of sentiment analysis, extracting a vast amount of tweets. Prototyping is used in this development. Results classify customers' perspectives via tweets into positive and negative, which is represented in a pie chart and HTML page. However, the program has planned to develop on a web application system, but due to the

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limitation of Django which can be worked on a Linux server or LAMP, further, this approach needs to be done.

Title: Sentiment analysis using product review data

Author: Xing Fang & Justin Zhan

Year: 2015

In this paper, we aim to tackle the problem of sentiment polarity categorization, which is one of the fundamental problems of sentiment analysis. A general process for sentiment polarity categorization is proposed with detailed process descriptions. Data used in this study are online product reviews collected from Amazon.com. Experiments for both sentence-level categorization and review-level categorization are performed with promising outcomes. At last, we also give insight into our future work on sentiment analysis.

Title: Survey on User Emotion Analysis using Twitter Data

Author: Subramaniam.G, Ranjitha.M, Ashwini.R, Praveen Kumar Rajendran,

Year: 2017

With the reference to the paper survived, it is proposing a model to predict user emotion using Twitter data. The proposed model of a survey on Twitter data analysis will be implemented using HTML, and CSS as the front end and python framework as the back end to analyze the data. The tweets can be analyzed and characterized based on the emotions used by the social users. The Twitter data analysis updates the tweets information automatically by means of analyzing the Twitter data. It analysis each sentimental analysis which is enclosed on Twitter data. Our model will work based on Twitter media byanalyzing the data and interpreting the sentimental emotions to update the information on our website. this analysis on Twitter will be done automatically by means of inspecting the emotions on each tweet and updating information of trending data in a trending order automatically on our survey website. This above process is achieved with help of the tools which the main back-end process we are going to use in the process is a python framework to update the trending topics and information automatically on our website

III. SOFTWARE REQUIREMENT SPECIFICATION

The requirements are essential to developing a working system. The reason for the intention to be gathered from the following. The following requirements must be done.

1. Functional requirements
2. Non-Functional requirements
3. Environment requirements
   a. Software requirements
   b. Hardware requirements

3.1 Functional requirements

The software requirements of technical specification requirements for the form of software work. This is the first stage in the process required for analysis. He wrote most of the requirements of the software system. From this it follows, in particular, to which the special libraries, Sk-learn anything, and graciously, Numpy, and matplotlib SeaboNumPy.

3.2 Non-Functional Requirements

Process of functional steps

1. Problem define
2. Preparing data
3. Evaluating algorithms
4. Improving results
5. Prediction of the result

3.3 Environmental Requirements

A. Software Requirements

- Operating System: Windows
- Tool: Anaconda with Jupyter Notebook

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B. Hardware requirements

- Processor: i3
- Harddisk: min300 GB
- RAM: min 4 GB
- Frontend: GUI using python (Tkinter)
- Backend: Data analysis using python (Pandas, Numpy etc.)
- Library Packages: Pandas >Numpy>Sk-learn > Matplotlib > Seaborn Tkinter.

Here is an overview of what we are going to cover:

1. Installing the Python anaconda platform.
2. Loading the dataset.
3. Summarize the dataset.
4. Visualizing the dataset.
5. Evaluating some algorithms.
6. Making some predictions.

IV. ADVANTAGES AND DISADVANTAGES

4.1 Advantages

The advantages of sentiment analysis are endless and can be applied to any industry, from finance and retail to hospitality and technology. Below, we've listed some of the most popular ways that sentiment analysis is being used in business:

- Social Media Monitoring :
- Brand Monitoring
- Voice of the customer (VOC)
- Customer Service
- Market Research

A. Social Media Monitoring

Sentiment analysis is used in social media monitoring, allowing businesses to gain insights into customer's feel about certain topics, and detect urgent issues in real time before they spiral out of control.

B. Brand Monitoring

Brand monitoring offers a wealth of insights from conversations happening about your brand from all over the internet. Analyze news articles, blogs, forums, and more to gauge brand sentiment, and target certain demographics or regions, as desired.

C. Voice of the Customer (VOC)

Real-time analysis allows you to see shifts in VOC right away and understand the nuances of the customer experience over time beyond statistics and percentages.

D. Customer Service

Analyze customer support interactions to ensure your employees are following appropriate protocol. Increase efficiency, so customers aren't left waiting for support. Decrease churn rates; after all, it's less hassle to keep customers than acquire new ones

E. Market Research

Sentiment analysis empowers all kinds of market research and competitive analysis.

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4.2 Disadvantages

1. **Subjectivity and tone Determination:** if the tone sentence though looks positive is actually negative then it is can't analyze in the sentence.
2. **Irony and sarcasm:** Some words in articles are used sarcastically then it is difficult to check whether it is positive or negative sentiment.
3. **Neutral Tone:** if you have a list of some positive and negative words then what about others which are not positive or negative

V. CONCLUSION

The utilization of case studies and hypothetical scenarios explains how social media affects consumer decision-making and how information is disseminated through them. Based on the material that is currently available, the theoretical framework is created. Real-time data acquired is used to alter the quantitative research methodology.

By the organization. The data was collected, and the findings and conclusions are based on that data and numerous environmental circumstances.

The complex, social, technological, and cognitive phenomenon that appears in an increasingly networked digital world has a significant impact on the research problem. The concept is built on the presumption that diffusion is caused by physical, biological, and cognitive causes.

More than just a social analytic tool, sentiment analysis is versatile. But despite not receiving much attention, this topic is still being investigated.

VI. FUTURE SCOPE

The major research scope areas in sentiment analysis are:

1. To automate this process by showing the result in a desktop application.
2. To optimize the work to implement in an Artificial Intelligence environment.
3. Spam Detection Sentiment Analysis.
4. Sentiment Analysis on short Sentences like abbreviations.
5. Improving sentiment word identification algorithm.
6. Developing a fully automatic analyzing tool.
7. Effective Analysis of policy opinionated content.
8. Successful handling of bipolar sentiments.
9. Generation of highly content lexicon database.

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