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# Sentimental Analysis on Social Media

**Dakshata Patil[1], Vinod Kokitkar[2]**

MCA Student, Department of MCA , K.L.S. Gogte Institute of Technology, Belagavi, Affiliated to Visvesvaraya Technological University, Belagavi, Karnataka, India[1]

Assistant Professor, Department of MCA, K.L.S. Gogte Institute of Technology, Belagavi, Affiliated to Visvesvaraya Technological University, Belagavi, Karnataka, India[2]

**Abstract**: Sentiment analysis, also known as opinion mining, is an important part of natural language processing (NLP) that automatically detects the polarity of a text and classifies it as positive, negative or neutral. With the rise of user-generated content on the Internet, opinion polls have become extremely popular in recent years. Consumers increasingly rely on user reviews and online chats to make purchasing decisions, making sentiment analysis an important tool for businesses and marketers. This paper provides a comprehensive overview of sentiment analysis techniques, methods and challenges. By exploring techniques such as sentiment classification, feature-based classification, and addressing negative processing, the paper provides an overview of the current state of sentiment analysis research. The study highlights the importance of sentiment analysis in various fields, including marketing, forecasting customer preferences and financial research, facilitating the extraction and interpretation of subjective information from raw data sources.

**Keywords:** Sentiment analysis, opinion mining, natural language processing (NLP), user-generated content, sentiment classification, marketing.

## INTRODUCTION

Today, the internet age has changed the way people express their views and opinions. This is mostly done through blog posts, online forums, product review sites, social media etc. Today, millions of people use social networking sites like Facebook, Twitter, Instagram, YouTube, etc. to share their feelings, opinions and views. of their daily life. Through online communities, we get interactive media where consumers inform and influence others through forums. This article focuses on turning data generated through social media into actionable insights using various sentiment analysis techniques.

Sentiment analysis is a process that uses natural language processing (NLP) and computational techniques to identify, extract and quantify subjective information from text.The main goal of sentiment analysis is to automatically determine whether a text leaves a positive, negative, or neutral impression.

This technology is widely used to analyze opinions, sentiments and attitudes in messages, reviews, comments and other text data, providing valuable information to companies, researchers and policy makers. In today's digital age, the way people share their thoughts and feelings has changed. From blog posts and online forums to product review sites and social media platforms like Facebook, Twitter, Instagram and YouTube, millions share their opinions and daily experiences with a global audience. Online communities function as interactive spaces where consumers are empowered to inform and influence others through open forums.

## I. DESCRIPTION

Data collection for sentiment analysis involves accessing social media platforms such as Twitter or Facebook using official APIs or web capture. After the data is collected, preprocessing cleans it by removing noise such as emojis or punctuation. Tokenization then breaks the text into individual tags for analysis.

After tokenization, sentiment analysis algorithms such as Naive Bayes or CNN classify or lexicon approach the text as positive, negative or neutral using probabilistic or deep learning techniques. Sentiment scores are then assigned to indicate the intensity or polarity for nuanced insights. Sentiment analysis results are presented visually, often through charts, graphs, or dashboards, showing trends, patterns, or distributions across topics, time periods, or user demographics. Visualization facilitates interpretation and decision making for companies, researchers and decision makers.

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## II. OBJECTIVE

The objective of this publication is to provide a comprehensive overview of sentiment analysis, focusing on the field's methodologies, applications, and opportunities. Synthesizing current trends and best practices, the document aims to provide researchers, practitioners, and industry professionals with the knowledge and tools needed to effectively use sentiment analysis in a variety of fields, including marketing, customer relationship management, public opinion research, and social policy analysis.

## III. LITERATURE REVIEW

In a recent product lauch,Apple Inc.utilized sentiment analysis on Twitter to gauge public opinion. Over 500,000 tweets were collected using relevant hastags and keywords related to the new product.

- Data Insights:
- Preprocessing steps, including noise removal and tokenization , prepared the data for analysis.
- Sentiment analysis techniques such as lexicon-based approaches and machine learning models classified
- the tweets into positive,negative,neutral sentiments

- Key Findings:
- Positive sentiment (60%):Highlighted excitement about new features and overall satisfaction.
- Negative sentiment (25%):Focused on pricing concerns and minor technical issues.
- Neutral sentiment (15%) : Provided factual
- information without strong opinions.

- Impact:
- The insights allowed Apple to address negative feedback proactively,enhance marketing strategies
- Based on positive feedback and maintain a positive
- Brand image.Real-time monitoring of Twitter data
- enabled swift responses to emerging issues,
- demonstrating the value of sentiment analysis in improving customer satisfaction and product success.

## IV. METHODOLGY

There are various methodology for sentimental analysis.This paper focus on lexicon based approach in NLP.

- Natural Language Processing (NLP) is a subset of artificial intelligence and linguistics. It mainly focuses on human language-computer interaction, focuses on how to process or analyze the processing of large amounts of regional language data. Therefore the computer can"understand" the concept contained in the document. This technique is then able to abstractthe information contained in concrete documents and then classify them according to polarity. With the polarity created by technology, a review or writingcan be divided into positive, negative or neutral. Natural language processing and other techniques are used to analyze text,topic, entities and the sense of a sentence or class of sentences. Natural language processingchallenges include natural language understanding,speech recognition and natural language generation.

- A lexicon-based approach in NLP uses a predetermined set of words with their associated values (eg opinion ratings, categories) to analyze text. Here is a brief description of the technology:

1) Extract the data
2) Edit the text. The task divides the text into single words.
3) 3)Finish deleting the word. These words have no significant meaning and should not be used in the analysis. Examples of endings are a, an, la, li, dum etc.
4) Remove punctuation (in some cases)
5) Running the preprocessed text from the sentiment dictionary should give a number/measure of the derived opinion.

  

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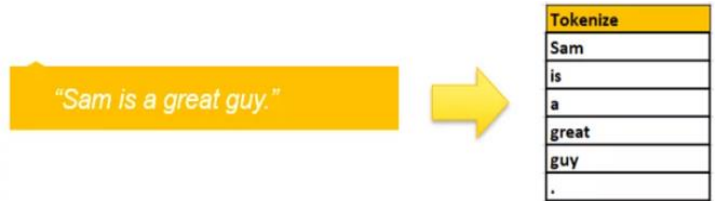
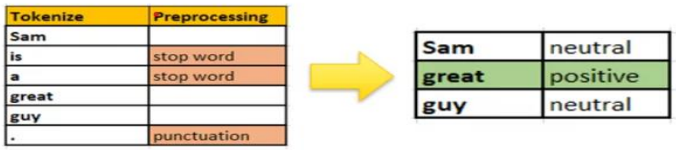
Consider problem instance: Sam is a great guy

- Tokenize

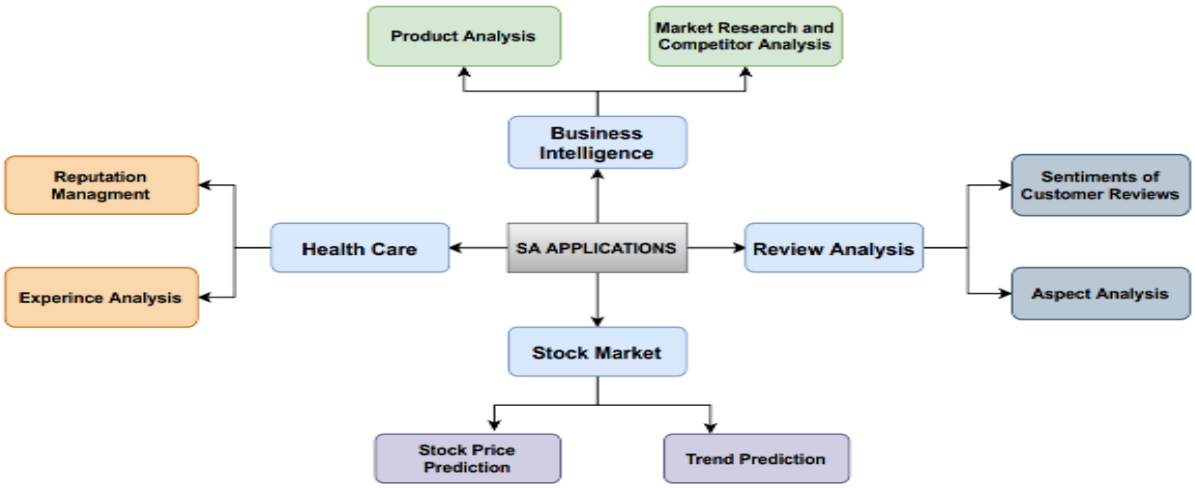



- Remove stop words and punctuations




- Running a lexicon on the preprocessed data returns a positive sentiment score due to the presence of the positive word "great".


## V. APPLICATIONS OF AI




fig(a) sentiment analysis used in various sectors

1) It helps to gauge public opinion about products, services and brands, which helps in market research.
2) It allows companies to analyze customer feedback on social media, reviews and forums to improve products and services.
3) It allows brands to monitor their image, identify potential problems and take proactive steps to maintain a positive image.

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4) It helps identify emerging risks or negative trends early, allowing organizations to mitigate potential losses.
5) Used to analyze market sentiment, predict market movements and make investment decisions.

## VI. CONCLUSION

In conclusion, this paper provides a comprehensive and nuanced study of sentiment analysis and highlights its important role in deriving subjective insights from social media and other online platforms. It focuses on the lexicon-based approach to sentiment analysis and provides a detailed introduction to its methods. The process begins with data collection, which ensures a robust and representative data set. This is followed by careful data pre-processing, which is crucial to remove noise and improve the quality of the analysis. The sentiment evaluation step is then performed using lexicon-based techniques that rely on the sentiment expressed in the data and interpret it based on predefined sentiment dictionaries. The study highlights the critical importance of data pre-processing and emphasizes that effective pre-processing steps such as removing irrelevant information, normalizing text and handling linguistic nuances are necessary to obtain reliable and accurate set analysis results.

The paper uses the case study of Apple Inc. to demonstrate practical applications of sentiment analysis to gauge public opinion, inform marketing strategies and improve brand perception through social media and online review analysis. It also discusses current rapid developments and advanced techniques in sentiment analysis research, and explores future directions such as integrating machine learning with vocabulary-based methods, developing more nuanced sentiment lexicons, and expanding applications to politics, healthcare, and finance. It highlights the importance of careful data processing and provides insights into current practice and future trends, making an important contribution to sentiment analysis research.

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