A REVIEW OF SENTIMENT ANALYSIS ON SOCIAL MEDIA TEXTS

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CE - 2230234050100 2

Content

Introduction

Sentiment Analysis Defined: Analyzing the emotional tone in text data.

Why Social Media?

- Uncover public opinions, sentiments, and trends.

- Essential for businesses, brands, and individuals.

Purpose of the Presentation:

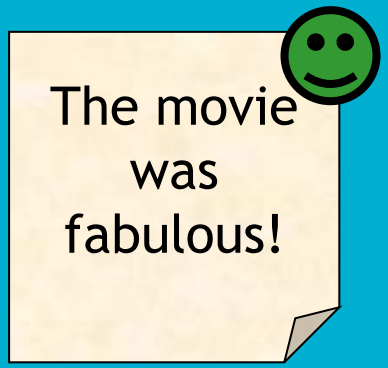
- Share insights from our sentiment analysis project.

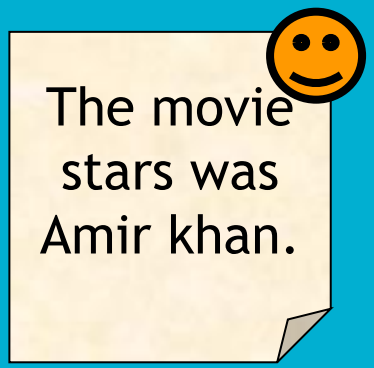
- Explore the impact of social media on sentiment.

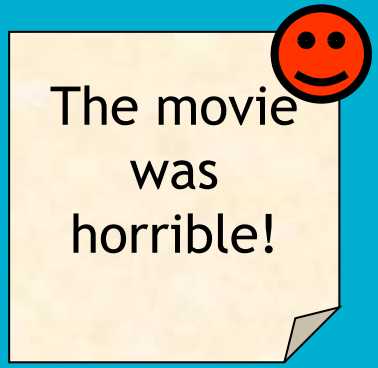
In the age of social media, understanding sentiment is like having a pulse on the world's collective mood.”

What is Sentiment Analysis?

- Sentiment analysis is the process of analyzing digital text to determine if the emotional tone of the message is positive, negative, or neutral.
- Identify the orientation of opinion in a piece of text
- Can be generalized to a wider set of emotions.







Sentiment analysis has many other names

- Opinion extraction
- Opinion mining
- Sentiment mining
- Subjectivity analysis

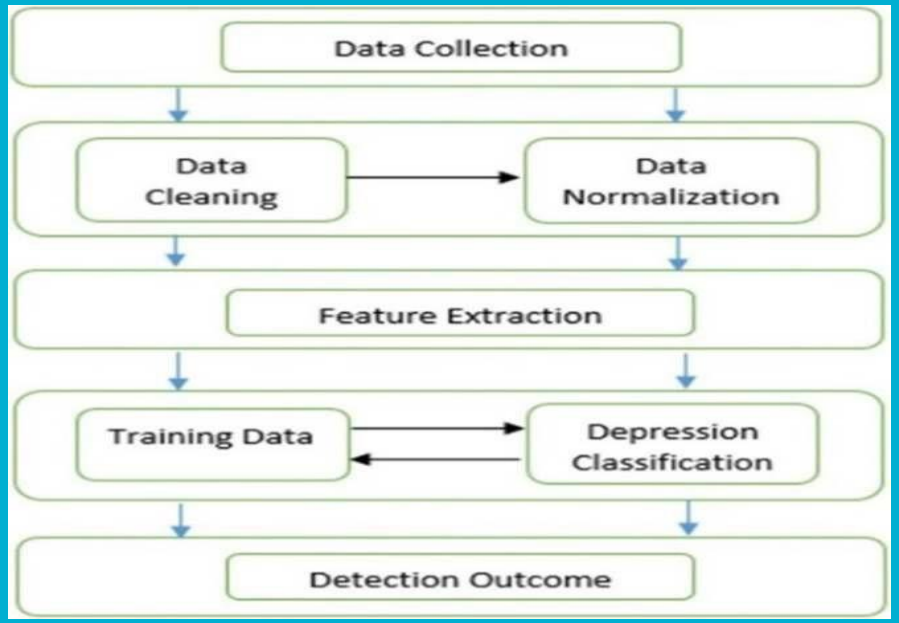
Why sentiment analysis?

- Movie: is this review positive or negative?
- Products: what do people think about the new iPhone?
- Public sentiment: how is consumer confidence? Is despair increasing?
- Politics: what do people think about this candidate or issue?
- Prediction: predict election outcomes or market trends from sentiment

Applications

- Review-related analysis
- Developing ‘hate mail filters’ analogous to ‘spam mail filters’
- Question-answering (Opinion-oriented questions may involve different treatment)

Sentiment Analysis Process



The main machine learning algorithms used are Naive Bayes, Support Vector Machines (SVM), Maximum Entropy (MaxEnt).

The main data pre-processing steps include URL and username filtering, slang removal, stopping words removal and stemming

Feature extraction includes :

1. Unigram
2. Bigram
3. POS tagging
4. NLTK

Data Filtering

1. Data Pre-processing :

-> Data preprocessing is a data mining technique which is used to transform the raw data in a useful and efficient format.

2. Filtering :

-> Url, Usernames , Duplicate And Repeated characters.

3. Social media Slang Removal :

-> 2gthr, SS, TTyl, BFF, LOL

4. Stop-words removal & Stemming :

-> With the use of NLTK

Results

The results obtained by data processing, analysis and visualization on a smaller portion of the data, i.e., using 60900 texts for training and 44000 tweets for tasting.

Naive Bayes baseline scaled up to 76.39 and SVM scaled up to 80.02 percent.

SVM was used on a feature set of a combination of Unigram, Bigram with stemming, giving an accuracy of 82.55. MaxEnt also performed well and gave an accuracy of 77.18 when stop-words was removed.

Conclusion

The results of this study demonstrate the effectiveness of sentiment analysis in classifying social media text.

This research has practical implications for businesses, marketers, and decision-makers. It underscores the importance of sentiment analysis in brand management, public opinion monitoring, and customer feedback analysis.

Reference

[1] Thanveer Shaik, Xiaohui Tao, Christopher Dann, Haoran Xie, Yan Li, Linda Galligan Sentiment analysis and opinion mining on educational data: A survey NLP 2 (2023) 100003

[2] Margarita Rodríguez-Ib´anez, Antonio Cas´anez-Ventura, F´elix Castej´on-Mateos, Pedro-Manuel Cuenca-Jim´enez A review on sentiment analysis from social media platforms 10 March 2023

[3] H. R. Chath, B. K. Chhatrala (Review Article) Sentiment Analysis of Online Product Reviews Using Modified Deep Learning Model Vol. 12, No. 1, 2023

[4] Socio-Affective Computing 5, Erik Cambria Dipankar Dasn Sivaji Bandyopadhyay Antonio Feraco Editors: A Practical Guide to Sentiment Analysis.

[5] Taherdoost, H.; Madanchian, M. Artificial Intelligence and Sentiment Analysis: A Review in Competitive Research. Computers 2023, 12, 37.

THANK YOU