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Advanced Sentiment Analysis Of Social Media For Trend Monitoring And Brand Management

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Abstract- Sentiment analysis involves understanding the emotions that underpin individuals' thoughts, which are communicated in the digital landscape through reviews and tweets. These sentiments can be classified as positive, negative, or neutral. This document will explore various methods to conduct sentiment analysis of tweets related to US Airlines, employing different machine learning algorithms and evaluating their accuracies. Effective sentiment analysis is invaluable for business analysts, enabling them to address challenges related to identifying areas for profit and loss. By leveraging sentiment analysis, analysts can pinpoint weak points indicated by negative sentiments for improvement initiatives. Conversely, they can also recognize strengths

highlighted by positive sentiments and strive to sustain these advantages consistently in the future.

Keywords—Sentiment Analysis, Social Media Mining Natural Language Processing (NLP)

I.INTRODUCTION

As we all know, social media is a huge part of our lives now. We use it to connect with friends and family, share our lives, and consume content.. People use it to share their thoughts and feelings about all sorts of topics. Because of this, social media posts are perfect for studying public opinions. In the world of natural language processing, there's a cool area called sentiment analysis. This helps us figure out if a piece of text is positive, negative, or neutral. This kind of analysis can really help businesses and even politics make better

As more people use social media, we're seeing tons of text data being created. This can be a challenge for data scientists but also a great chance to learn. There's a lot of slang, emojis, and abbreviations on social media, which makes it tricky to analyze everything by hand. This project wants to create a complete system for sentiment analysis that works with social media posts. We'll use current NLP tools and smart machine learning techniques to make it happen.

II. LITERATURE SURVEY

Sentimental analysis is a natural language process (NLP) technique that analysis the opinions, emotions and many other forms of reactions of an end user/person based on the

data which is obtained from any particular source. Sentimental analysis plays a crucial role in predicting behavior of an any particular person based on the inputs which are acquired from the public platforms as source or any other customized datasets which also includes tracking brand reputation. The system is built to deal with social media language. This can help with market research and public relations.

We collect data from different sources. This data includes various opinions from users about a situation. When collecting this data, it's key to look at different reactions from people. This helps us understand the overall sentiment with our model.

The literature review for a project on sentiment analysis of social media looks at some important research areas. This includes basic theories and new technology. This review highlights significant contributions to the field and identifies gaps that the project aims to address.

1. Basic Ideas and Models: -

At the initial stage, sentiment analysis looked as a text in a straightforward way. Bag of words models were used to understand opinion from the text. Pang and Lee are the two scientists who were tested ML models to declare the movie reviews, things changed later. Researchers started using more advanced tools like word embeddings and deep learning. This made it much better at figuring out the feelings behind the text.

- **Changes in NLP and Machine Learning: -** BERT and GPT have changed how we look at feelings in text. These methods work well with text because they handle sequences of data effectively.

- **Reviews and What's next:-**

It is difficult for the system to analyze new slang without any update. Next, the plan is to help AI get

better at understanding feelings. We want it to do more than just label things as good or bad.

In previous models the data has been collected from the social media to train and test the data to obtain the accuracy of the result based on the data set, however the accuracy might be varied based upon the data set which is used to train and test.

We want to get better at figuring out how people feel about airlines. To do this, we're looking at a dataset from Twitter. This dataset shows what people say about different airlines in their comments. People share their thoughts and experiences about flying. When we look at these comments, we can tell if most people think an airline is good or bad. Each person's opinion is based on their own travel experience.

It all comes down to what customers say. This will help us understand trends and make more informed decisions in the future.

III. METHODOLOGY

The project "sentimental analysis on social media" We used an advance Machine Learning(ML) techniques and Natural language processing(NLP). Our approach is based on supervised learning. We extracted features using different vectorizer. We used some techniques for model evaluation and training. This helps us figure out if the tweets are positive, negative, or neutral. This includes several key modules.

1.Data Collection Module: We used social media APIs for this project. Specifically, we grabbed data from the Twitter airline dataset, which includes posts, comments, and replies. Grab this dataset on Kaggle. Then, we split the data into two parts: one for training and the other for testing. This helps us train our model.

2.Data Preprocessing Module: processing text is all about getting it ready for analysis. here are some following nlp techniques used for preprocessing the data - Lowercasing: let's change all the text to lowercase. . This makes words like Abuse and abuse the same, which is helpful. Tokenization ,These can be just one word or a little group of words. This helps clean up the data.

3.Feature Extraction and Vectorization Module: Once we finish preprocessing, we turn the text into numbers. This part is feature extraction .Let's go over the main method we used.

- **Count Vectorizer:** It looks at each word in a

tweet and counts how many times each one shows up. This gives us a simple word count for every tweet.

4. Training a Model with SVM Algorithm and Multilingual Support module:

- **Training a Model:** We're using the SVM algorithm. It's a way to teach our computer to sort data. We split the data into two parts: training and testing. This helps us make good predictions for tweets. We're doing pretty well.
- **Multilingual Support:** To analyze feelings in different languages, here are some methods we can use:
- **Language Detection:** Figure out the language of each post automatically.
- **Translation Services:** Try using tools that can turn posts in other languages into English. We can also build models for important languages. You can create or adjust word lists for each language to make things more accurate.

5. Visualization and Reporting Module: We create

clear and simple visuals and reports to show how people feel about things. We use tools like Matplotlib and Seaborn to make graphs and charts that show sentiment trends.

6. System Integration and Testing Module:

This part makes sure all the modules work together smoothly and do their jobs well.

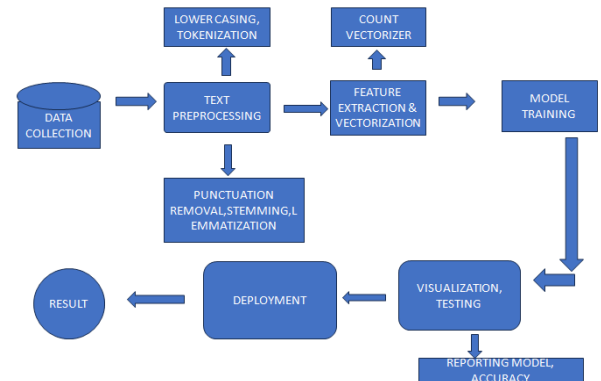
- **Integration Testing:** This checks that data flows correctly through the system.
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- **Performance testing :**Handles expected loads.
- **User Acceptance Testing:** This is done by the feedback provided by the end user .We used a pickle as the user interface.

7. Deployment and Maintenance Module: This part is about starting the system and making sure it runs well.

- **Stay updated:** use tools to see how the system is working and what users are up to. Gradio has been used for interface. It's a

handy tool for keeping up with social media trends and language changes.

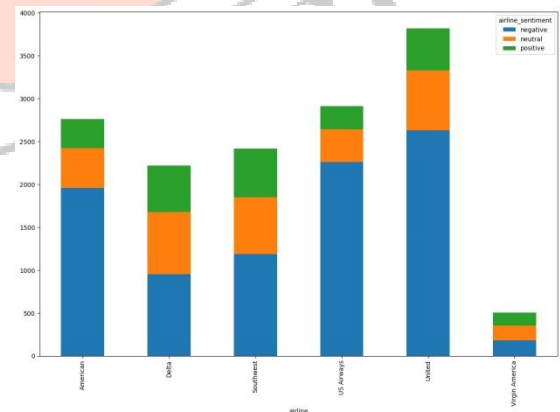
Fig. Architecture



IV. RESULT AND ANALYSIS

In this part, we look at Twitter data from six big airlines: US Airways, United, American, Southwest, Delta, and Virgin America. We focus on three main feelings: anger, positivity, and negativity.

By checking how customers feel, we can learn a lot about what people think of these airlines. We pay close attention to the concerns and issues raised by passengers who aren't happy. Here are the main things we found about how people feel about each airline.



Count of moods of each airlines:

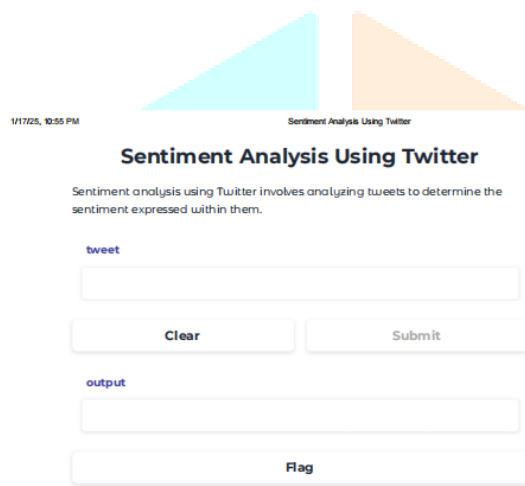
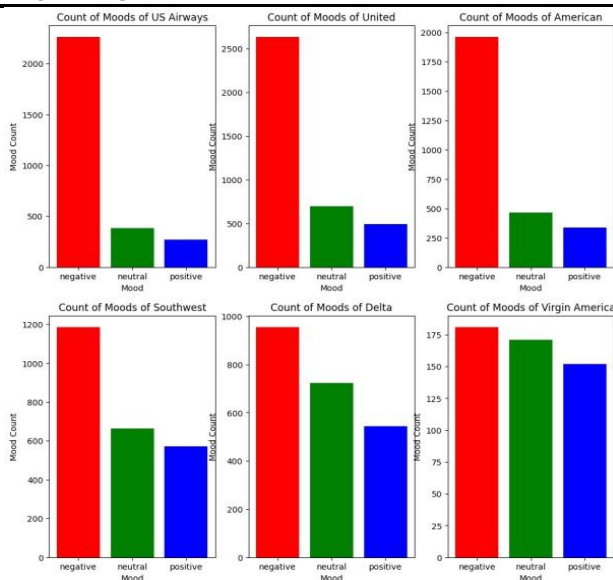


Fig. App Interface

CONCLUSION

Sentimental analysis shows us how people feel based on their comments. It uses computer programs and a type of learning called machine learning to find the emotions in writing. It collects the data from the social media or any other platform as source.

Then, you train the computer with this data. It learns to tell if a piece of text is happy, sad, or something else. There's a handy tool called Gradio that makes it really simple. Just type in a comment, and it will let you know if it's good or bad.

Everyone has their own opinions. What one person might love, another person might hate. So, the score is not fixed; it shows personal feelings. This can be helpful for businesses, writers, or anyone interested in what people really think

REFERENCES

1. Pang, B. & Lee, L. (2008). Opinion Mining and Sentiment Analysis. Now Publishers.
2. Jurafsky, D. & Martin, J. H. (2008). Speech and Language Processing. Pearson.
3. Manning, C. D., Raghavan, P. & Schütze, H. (2008). Intro to Information Retrieval. Cambridge Press.
4. Pang, B., Lee, L. & Vaithyanathan, S. (2002). Thumbs Up? Classifying Sentiment with Machine Learning. ACL Proceedings.
5. Turney, P. D. (2002). Thumbs Up or Thumbs Down? Classifying Reviews. ACL Proceedings.
6. Liu, B. & Zhang, L. (2012). Opinion Mining and Sentiment Analysis Overview. Springer.
7. Hu, M. & Liu, B. (2004). Mining and Summarizing Customer Reviews. KDD Proceedings.
8. Hutto, C. J. & Gilbert, E. (2014). VADER: Simple Sentiment Analysis for Social Media. ICWSM Proceedings.
9. Goldberg, Y. (2017). Neural Network Methods for Language Processing. Morgan & Claypool.
10. Vaswani, A. et al. (2017). Attention Is All You Need. NeurIPS Proceedings.
11. Devlin, J. et al. (2019). BERT: Training a Language Model. NAACL Proceedings.
12. Liu, Y. et al. (2019). RoBERTa: A Better Approach to BERT. arXiv preprint.
13. Zhang, H. et al. (2020). Overview of Transformer Models in Language Processing. Journal of AI Research.
14. Ghosh, S., Sarkar, P. & Veale, T. (2019). Detecting Sarcasm in Text: An Overview. ACM Computing Surveys.
15. Baziotis, C. et al. (2017). Deep LSTM for Sentiment Analysis. SemEval Proceedings.
16. Agarwal, A. et al. (2011). Sentiment Analysis of Twitter Data. ACL-HLT Proceedings.
17. Mozetič, I. et al. (2016). Multilingual Twitter Sentiment Classification. PLOS ONE.

18. Mitchell, M. et al. (2019). Model Cards for Reporting Models. FAT* Proceedings.
19. Binns, R. (2018). Fairness in Machine Learning. ACM FAT* Proceedings.
20. Brown, T. et al. (2020). Language Models Are Few-Shot Learners (GPT-3). NeurIPS Proceedings.
21. Lewis, M. et al. (2020). BART: A Sequence-to-Sequence Model for Language Tasks. ACL Proceedings.
22. Pang, A., Gupta, R. & Li, B. (2020). Social Media Sentiment Analysis for Business and Governance. Journal of Business Research.

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