POORNIMA
INSTITUTE OF ENGINEERING & TECHNOLOGY
Affiliated to RTU, Kota • Approved by AICTE & UGC under 2(f) • Accredited by NAAC and NBA
Department of Computer Engineering

Technical Seminar Synopsis

Guide Name: Dr. Madhav Sharma **Designation: Associate Professor**

Student Name: Ishu Kumar **Registration No.: PIET20CS080**

1. **Title: Sentiment Analysis**

2. **Objective:** The primary objective of a review paper on Sentiment Analysis is to provide a comprehensive and critical overview of the state-of-the-art in sentiment analysis research and applications within a specific domain or across multiple domains.

3. **Previous Work:**

S. No.	Title of Paper	Year of Publication	Author's	Author's identified Problem	Methodology	Author's contribution	Advantages	Disadvantages	Remarks
1	Sentiment Analysis of Amazon Food	2021	Sneha Choudhary, Charu Chhabra	Every one of these destinations gives a path to the analyst to form the remarks	Classification Algorithm, Logistic Regression, Decision Tree, Bernoulli	The main focus is to confirm unbiased results of sentiments, in order to reduce the	Achievement of thing-based merchandise/items selling sites, for	It does not solve the context based error.	The paper present a implemented way and a protected way

	Review Data			on the basis of the items and assign a remark to it.	Naive Bayes, Perceptron	time complexity, summarization of the results in the form of charts is done (Statistical Graphs).	example, Amazon, eBay and so on gets hampered by the nature of the surveys they have for their items. Every one of these destinations gives a path to the commentator to compose his/her remarks about the administration or item and give a rating for it.		through which it is fully detailed explanation of the title.
2	A Review on Sentiment Analysis using Machine Learning	**2023**	Dr. Sanjeev Kumar, Sumit Sindhu, Dr. Amandeep Noliya	The challenges in this paper in sentiment analysis include capturing sarcasm, emotion in text and dealing with long texts.	Sentiment Analysis using Lexical Analysis, Sentiment Analysis using Machine Learning, Sentiment Analysis using Deep Learning.	Multiple machine learning and deep learning techniques were evaluated in this paper for their performance on sentiment analysis. Deep learning has become an increasingly popular choice for sentiment analysis due to the advancements in hardware that have made it more accessible.	deep learning models may recognize textual patterns with greater accuracy than is practicable or even viable using more conventional machine learning techniques.	Emoji's are increasingly being used to express sentiment, but sentiment analysis models often struggle to interpret them correctly. This is because emoji's can have multiple meanings depending on the context in which they are used.	This Paper in which the content of title is included is fully theoretically described the methodology of the problem statement on which the authors have worked.

						As a result, deep learning models may recognize textual patterns with greater accuracy than is practicable or using more conventional machine learning techniques.			
3	Hate Speech Detection Network Using LSTM	**2023**	Chirag Lala, Pulkit Dwivedi	Many people also use Twitter to disseminate offensive material. It is very hard to manually weed out abusive comments from the hundreds of millions of tweets that are generated every day on Twitter. Therefore, these offensive tweets ought to be automatically filtered out.	In this study, we are developing an LSTM model for categorizing tweets as either containing hate content or not.	In this study, an LSTM model is used to categorize tweets as either hate statements or non-hate statements. First and foremost, the same dataset should be used to compare effective CNN and LSTM models against transformer-based models	The current work may be greatly improved. First and foremost, the same dataset should be used to compare effective CNN and LSTM models against transformer-based models. Then, attempts should be made to make similar models but with the feature of taking user or account information and history into consideration before	Emoji's are increasingly being used to express sentiment, but sentiment analysis models often struggle to interpret them correctly. This is because emoji's can have multiple meanings depending on the context in which they are used.	In this paper the problem title is described and implemented and fully explained the theory of the research and terminology.

							predicting the category. Models can be made to categorize hate statements further into different classes.		
4	A Study of Sentiment Analysis Task and It's Challenges	**2019**	Shubham V. Pandey, A. V. Deorankar	To optimize this time consuming task there is a need of an automated system which provides summarized result of user sentiments. Sentiment analysis is the field of study that analyzes people's sentiments or opinion from reviews or opinion text	We use aspect based sentiment analysis in which we generally use Data extraction and preprocessing, Sentiment detection, Feature extraction and reduction, Sentiment classification, Sentiment summarization	In this paper we have covered different levels of sentiment analysis and a detail discussion over aspect-based sentiment analysis is given. The important challenges to this research area like named entity recognition, sentiment polarity detection, subjectivity detection etc. have been described with suitable example.	Sentiment analysis is currently an active research area in data mining field. This study helps to answer the queries like what is sentiment analysis, how to perform it, and what challenges one has to face while developing a sentiment analysis system. We have used Stanford CoreNPL tools to visualize the result of some basic operation of NLP which can be used for sentiment analysis. As sentiment analysis involves machine	Sentiment analysis models can make errors when they do not take into account the context of the text. For example, the sentence "I'm so excited to go to the beach tomorrow!" could be interpreted as positive or negative depending on the context in which it is used. Sentiment analysis models can also make errors when they do not correctly identify negation. For example, the sentence "I don't hate this movie, but it's not very good" should be classified as negative, but many models would classify it as positive because they do not	This paper is fully explained by the mathematically and the other methods such as implementation and the visualization of the text processing through the algorithm. In this paper the steps to be performed and explained is fully clear.

							learning, we finally discussed the evaluation matrix, which is used to measure the performanc e of the system.	correctly identify the negation. Sentiment analysis models are typically trained on English data, but they need to be able to handle multilingual data in order to be used in real-world applications. This is a challenging task because the way that sentiment is expressed varies across languages.	
5	Interpretab le sentiment analysis based on sentiment words' syntax informatio n	**2020**	Qingqin g Zhao*, Huapin g Zhang, Jiyanyu n Shang	Deep learning is a black box model, its internal decision-making mechanis m is not transparen t to users and it can't reasonably explain the output of the model which brings great limitations to applicatio n of sentiment analysis	Interpretable sentiment analysis method, Interpretable model evaluation method, Interpretable model evaluation indicator.	In this paper, the position info. and syntax info. of sentiment words are integrated into neural network model for sentence level interpretable sentiment analysis. Since the self-attention layer adds the semantic info. knowledge, the self attention mechanism of the model is more accurate.	the self-attention layer adds the semantic info. knowledge, the self attention mechanism of the model is more accurate.	Sentiment analysis models can make errors when they do not take into account the context of the text. For example, the sentence "I'm so excited to go to the beach tomorrow!" could be interpreted as positive or negative depending on the context in which it is used. Sentiment analysis models can also make errors when they do not correctly identify	This paper is only theoretic ally and conceptu ally explained in which the mathema tica behind the solution and the visualizat ion of the methods through the diagram is explained here. In this paper the possibilit y of the accuracy

								negation. For example, the sentence "I don't hate this movie, but it's not very good" should be classified as negative, but many models would classify it as positive because they do not correctly identify the negation. Sentiment analysis models are typically trained on English data, but they need to be able to handle multilingual data in order to be used in real-world applications. This is a challenging task because the way that sentiment is expressed varies across languages. Emojis are increasingly being used to express sentiment, but sentiment analysis models often struggle to interpret them correctly. This is because emojis can have multiple meanings depending on	and other measure ment methods are also included.

								the context in which they are used.	

4. **Problem Identification & Definition:**
    a. **Context-dependent errors: Sentiment analysis models can make errors when they do not take into account the context of the text. For example, the sentence "I'm so excited to go to the beach tomorrow!" could be interpreted as positive or negative depending on the context in which it is used.**
    b. **Negation detection: Sentiment analysis models can also make errors when they do not correctly identify negation. For example, the sentence "I don't hate this movie, but it's not very good" should be classified as negative, but many models would classify it as positive because they do not correctly identify the negation.**
    c. **Emojis: Emojis are increasingly being used to express sentiment, but sentiment analysis models often struggle to interpret them correctly. This is because emojis can have multiple meanings depending on the context in which they are used.**

5. **Proposed Methodology:**
    a. **Context-dependent errors:**
        i. **Develop models that can learn to reason about context. This can be done by using techniques such as attention mechanisms and context embedding.**
        ii. **Use labeled data that includes context information. This will help the model to learn to associate words and phrases with their correct sentiment depending on the context in which they are used.**
    b. **Negation detection:**
        i. **Develop models that can correctly identify negation. This can be done by using techniques such as negation word lexicons and negation rules.**

ii. **Use labeled data that includes negation information. This will help the model to learn to identify negation in different contexts.**

c. **Emojis:**
   i. **Develop models that can interpret emojis correctly. This can be done by using techniques such as emoji lexicons and emoji embedding.**
   ii. **Use labeled data that includes emojis. This will help the model to learn to associate emojis with their correct sentiment.**

6. **Tools/Simulator Uses':**
   a. **Natural language Processing (NLP) Libraries**
   b. **Machine Learning Libraries**
   c. **Cloud Based sentiment analysis services**
   d. **Synthetic Text generation**
   e. **Bias Simulation tools**
7. **Conclusion:** The methodology and tools/simulators described above can be used to solve the problems in sentiment analysis that I mentioned in my previous responses. However, it is important to note that sentiment analysis is still a challenging task, and there is no single solution that will solve all of the problems. Therefore, it is important to use carefully curated and labeled data for training sentiment analysis models. Despite the challenges, sentiment analysis is a powerful tool that can be used for a wide range of applications. The methodology and tools/simulators described above can help to improve the accuracy and reliability of sentiment analysis models, making them more useful for real-world applications.

8. **References:**

   a. Twitter Second Quarter 2022 Results https: //s22.q4cdn.com/826641620/files/doc financials/2022/q2/Final Q2'22 Earnings Release.pdf

b. Anu J Nair et al, “Comparative study of Twitter Sentiment On COVID - 19 Tweets,” Proceedings of the Fifth International Conference on Computing Methodologies and Communication (ICCMC 2021),Apr. 2021. Pp 1773-1778.
c. Wang, Y., Huang, G., Li, J., Li, H., Zhou, Y. and Jiang, H., 2021. Refined global word embeddings based on sentiment concept for sentiment analysis. IEEE Access, 9, pp.37075-37085.
d. P. Dwivedi and A. Upadhyaya, ”A Novel Deep Learning Model for Accurate Prediction of Image Captions in Fashion Industry,” 2022 12th International Conference on Cloud Computing, Data Science & Engineering (Confluence), 2022, pp. 207-212, doi: 10.1109/Confluence52989.2022.9734171