Opinion Mining for Business Reviews Classification Using Social Media Data.

Mansi Mahajan[1], Sanika Alhat[2], Sushma Kumari[3], Nisha Patil[4], S.V. Ghumaste [5]
1,2,3,4 Student, Department of Information Technology, MET's Institute of Engineering, Nashik, India
5 Professor, Department of Information Technology, MET's Institute of Engineering, Nashik, India

ABSTRACT

Social media are full of interesting data on human behavior and Sentiments. Opinion mining and Sentiment analysis provides insights into emotions in any kind of text and can be used for brand promotion and monitoring review analysis, also extracts sentiment from text using social media API to retrieve text data to see how people feel about his Product or services. Reviews and Posts in social media are turning out to be significant criteria in determining the quality. This paper presents an opinion mining approach to business reviews and post-classification using a large reviews dataset provided by Twitter, Facebook, and Yelp. In this work, proposed several techniques for automatic opinion mining, using various extraction methods and machine learning models. It is shown a comparative study on the effectiveness of the various methods for reviews sentiment classification.

Keywords: *opinion detection, API, sentiment mining, sentiment classification, text mining,*

I. INTRODUCTION

Opinion mining is an interesting area of research because of its application in various sources. This research is for understanding the people's opinions. Emotions play a very important role not only in personal life but in business as well. Billions of users vocalize their conception about numerous online services or results using the forum. The positive reaction of the humans relevant not only for companies to scan their client's fulfillment and keep track of competitors but is convenient for consumers who want to analysis a service or a result earlier to buying product.

Sentimental analysis is a uniquely powerful tool for businesses that are looking to measures, attitudes, feelings and emotions, regarding their brand, to date most sentimental analysis project have been conducted almost exclusively by companies and brands through the use of social media data, survey Responses and other hubs of user generated content.

By investing and analyzing customer sentiment these bands can get an inside look a consumer behavior, and ultimately, better serve their audience with product, services, and experience they offer. This system shows the outcomes of several machine learning techniques and algorithms for classifying Facebook, Twitter, and Yelp reviews using opinion mining and natural language processing techniques. Many user-generated reviews and ratings for restaurants, businesses, and service providers are classified as either positive or negative or neutral concerning the star ratings and reviews. We propose a cloud-based sentiment analysis system to automatically classify the sentiments (positive or negative, or neutral) using only the text reviews. This is very useful because it allows users' feedback to be expressed without manual human intervention. By analyzing the rating, it is very difficult to analyze why the user has rated the business as 1 or 5 stars. However, the text review contains a more quantitative and qualitative value for analyzing more than the rating itself. This proposed system presents the pre-processing steps required to achieve high accuracy in the classification task.

II. LITERATURE SURVEY

Past work regarding opinion mining classification using machine learning techniques in determining if the overall sentiment of a review is positive or negative used IMDB movie reviews as data. The authors use a unigram model and Naïve Bayes, and SVM to perform the opinion mining and achieve 81% accuracy. their outcomes beat the strategy dependent on human-labeled highlights [2].

Hu et al. perform the opinion mining of a document at a sentence level instead of the whole document and extract features on which opinions have been expressed, detecting opinion words by proposing a technique that uses WordNet lexical database. For each feature, the related sentence is included into negative or positive categories and computes a total count. The highlights are positioned by the recurrence of the appearance in the reviews. The authors provide a feature-based summary of reviews of online products [3].

Past work using sentiment analysis and the Yelp dataset reviews focused on predicting star rating using the text alone. The developers experiment with different machine learning algorithms such as Perceptron, Naïve Bayes, and SVM on a sample of millions of user reviews from the Yelp dataset. They use Opinion Lexicon for feature extraction and by doing some preprocessing such as removing stop words or stemming (i.e. removing the words to their root form). [4].

In [5] to perform opinion mining on words, the authors used a supervised learning algorithm based on similarities between words which considers the rating of previous reviews for capturing the representation of words vectors. On a dataset of more than 25k unique reviews from The Yelp dataset, the accuracy reported is more than 70%. Other work on opinion detection, and in review analysis using the YELP dataset, focuses on predicting a products' rating based on its only stars and reviews' text for removing the bias of the users. The developers create a bag of word representation of the top frequent words in all reviews or top frequent adjectives after Part-of Speech combined with Linear Regression, Support Vector Regression, and Decision Tree Regression.[6].

III. PROPOSED ARCHITECTURE

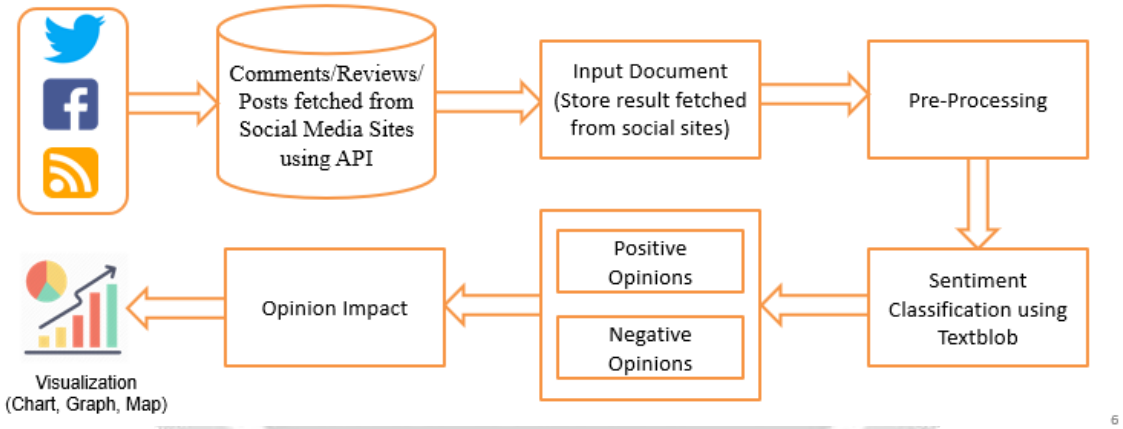

Figure 1 - System Architecture

In this paper, we mined tweets using Twitter's Search API and subsequently processed them for further analysis, which included Natural Language Processing (NLP) and Sentiment Analysis. Thereafter, we applied NLTK library to predict each tweet's sentiment. After predicting every tweet's sentiment, we mined historical stock data using Yahoo finance API. Then use linear regression for stock market prediction using sentiment score and stock price's change for each day and at the end we proposed our own trading strategy.

IV. RESULT

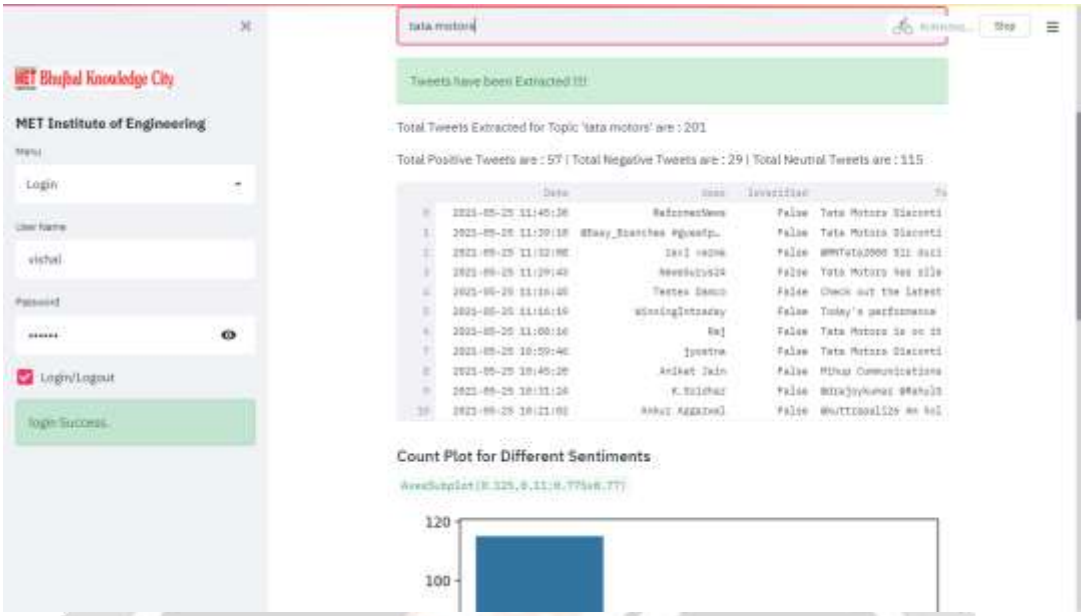

Figure 2 - Fetched Data

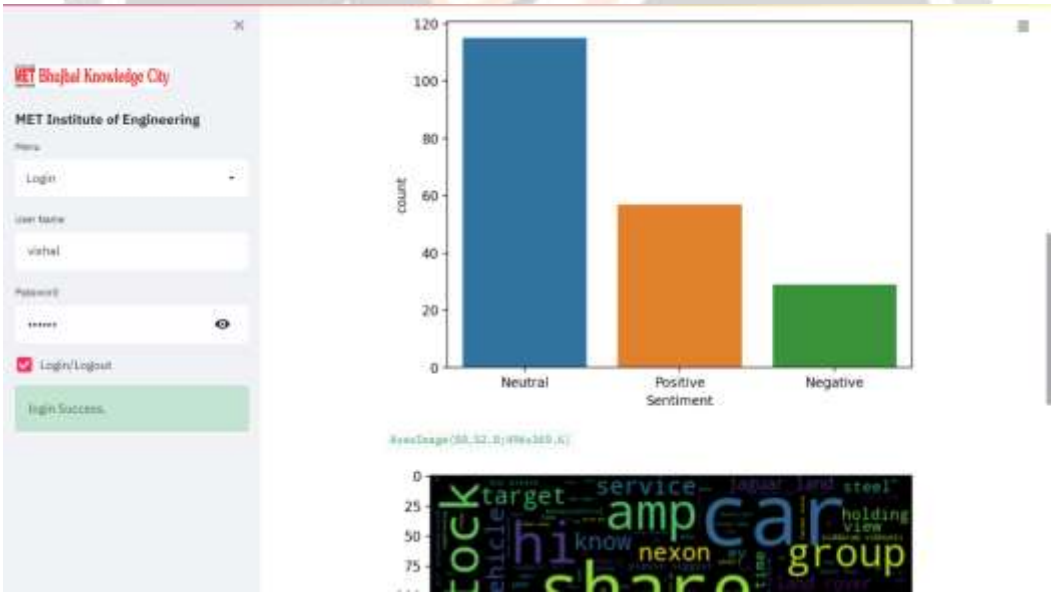

Figure 3 - Result

V. CONCLUSION

Opinion mining can be applied to many aspects of business, from brand analysis and product analysis to customer support and market research. By integrating it into the current framework and review, leading brands (not to mention entire cities) can move faster and more accurately in useful directions. Overview excavation is not just an interesting high-tech idea, and it will soon become an indispensable tool for modern enterprises. Ultimately, opinion

mining allows us to gather new insights, better understand our customers, and effectively empower our teams so that they can do better and more productively

VI. REFERENCES

[1] Product Quality Assessment using Opinion Mining in Persian Online Shopping Fatemeh HosseinzadehBendarkheili; Rezvan MohammadiBaghmolaei; Ali Ahmadi 2019 27th Iranian Conference on Electrical Engineering (ICEE) Year: 2019 | Conference Paper | Publisher: IEEE

[2] News Comments Modeling for Opinion Mining: The Case of Senegalese Online Press Lamine Faty; Marie Ndiaye; Edouard Ngor Sarr; Ousmane Sall; Sény Ndiaye Mbaye; Tony Tona Landu; Babiga Birregah; Mamadou Bousso 2020 International Conference on Advances in Computing and Communication Engineering (ICACCE) Year: 2020 | Conference Paper | Publisher: IEEE

[3] Chinese Explanatory Opinion Relationship Recognition Based on Improved Target Attention Mechanism Xue Cao; Chenghao Zhu; Chengguo Lv 2020 3rd International Conference on Advanced Electronic Materials, Computers, and Software Engineering (AEMCSE) Year: 2020 | Conference Paper | Publisher: IEEE

[4] Opinion Mining Using Live Twitter Data Andleeb Aslam; Usman Qamar; Reda Ayesha Khan; Pakizah Saqib; Aleena Ahmad; Aiman Qadeer 2019 IEEE International Conference on Computational Science and Engineering (CSE) and IEEE International Conference on Embedded and Ubiquitous Computing (EUC) Year: 2019 | Conference Paper | Publisher: IEEE

[5] An Opinion Mining for Indian Premier League Using Machine Learning Techniques Arti; Kamanksha Prasad Dubey; Sanjy Agrawal 2019 4th International Conference on Internet of Things: Smart Innovation and Usages (IoT-SIU) Year: 2019 | Conference Paper | Publisher: IEEE

[6] The Essential of Sentiment Analysis and Opinion Mining in Social Media: Introduction and Survey of the Recent Approaches and Techniques Hoong-Cheng Soong; Norazira Binti A Jalil; Ramesh Kumar Ayyasamy; Rehan Akbar 2019 IEEE 9th Symposium on Computer Applications & Industrial Electronics (ISCAIE) Year: 2019 | Conference Paper | Publisher: IEEE

[7] Mining User Opinion Influences on Twitter Social Network: Find that Friend who Leads your Opinion Using Bayesian Method and a New Emotional PageRank Algorithm Armielle Noulapeu Ngaffo; Walid El Ayeb; Zied Choukair 2019 15th International Wireless Communications & Mobile Computing Conference (IWCMC) Year: 2019 | Conference Paper | Publisher: IEEE