

Analysis of Fake News in a Twitter Data Set for a Food Review

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Abstract-The current day and age of the internet is characterised by the widespread dissemination of ideas and opinions among users through various forms of social media, including microblogging sites, personal blogs, and reviews. The reviews come from a variety of individuals and include topics such as a particular product, business, brand, person, forums, companies, brands, movies, etc. An important component of text mining is known as sentiment analysis. people's opinions were analysed and the resulting tweets were categorised as either positive, negative, or neutral. In this paper, work data will be collected from Twitter's API, and the sentiment of tweets and reviews of published papers will be identified by searching for particular keywords. After that, the polarity of tweets will be evaluated based on the percentage of tweets that are classified as being positive. Negative. Having done so, the data were then input into a supervised model for the purpose of evaluating additional data sets. Methods and technologies related to machine learning are used. Machine learning classifiers such as Naive Bayes (NB), Maximum Entropy, Random Forest (RF), and Support vector machine SVM classifiers are used for testing and training of the data sets, as well as evaluating the Polarity of sentiment of each tweet based on this analysis. These classifiers are used for testing and training of the data sets. Demonstrate that the end product gives us a performance of classifiers that has the maximum accuracy by evaluating the parameters. Utilizing machine learning classifiers such as RF, DTs, and SVM, as well as increasing the amount of tweets, accuracy of feature evaluation will be performed. Using the same process in subsequent studies may allow for the addition of more characteristics that may be used to improve the accuracy of the prediction.

Keywords- Sentiment Analysis, Twitter Data, Machine Learning Techniques, Opinion Mining, Social Media, Support Vector Machine (SVM) , Naïve Bayes(NB), Maximum Entropy ,Decision Tree(DTS), Random Forest(RF) .

I. INTRODUCTION

In recent year people in these days depending on microblogging sites like facebook instagram, tumblr,twitter youtube milions people share the posts, live news and express their opinion about different subjects such as a political affair, product review, educational, women issue and general topics, extracting knowledge from the twitter data [1]. Sentiment analysis is the mining of opinion and analysis of twitter data and that describe as a positive negative and neutral category which explore data from various social media platforms [2]. Theaim of this analysis in research determiningthe subject ivityopinion. Result of this analysis based on this sentiment analysis and review of tweets or classified opinions which are based on the data size and document type [4]. Twitter application is an excellent medium for creation of tweets presentations [5]. Twitter analysis is a popular topic for research. Such analysis is useful because it's gathering by crawler data which are used for collect to data from twitter and classified public opinion by analyzing of vast social media data [6]. The aims of this study that analyse the level of sentiment from the social

media [7] In this sentiment analysis we are using twitter API for extracting data then cleaning thedata and afterthese processes fed data into three classified tweets on the basis of sentiment (new data) [8]. ThisAnalysis helps to understand the way of thinking about any research topic brands, productsetc [9].Through the advertisement campaign can see how people are reacting from this campaign in personal marketing. There is a way to analyze sentiment related to them.[10]. Use of the same campaign can be seen as reacting for Political parties and can be analyzed.

There are several reasons for sentiment analysis where we can choose twitter data as given below.

- On twitter more than 500 million number of tweets on daily bases and that is a vast level of data for sentiment analysis.
- On Twitter there are number of all age groups people, with a high percentage of business executives' people being present from many countries on social media.
- 50 million or more people download from many browser twitter applications.

In this study we have used of supervised learning Classifiers to analyze the sentiment of the people for this analysis. Such as Support Vector machine learning classifiers (SVM), Decisiontree (DTs) and Random forest (RF). In this result we will compare all classifiers based on accuracy which gives the best result. Finally for this research we also used machine learning techniques. In our work we introduced of score vector of tweets and our external features with n-gram of features and show that impact of SVM classifiers on for improve our classification performance level.

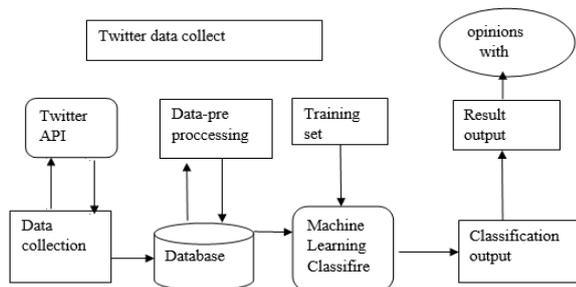


Figure 1. Working Architecture of Twitter classification.

II. LITERATURE REVIEW

Santhosh Kumar et al., IEEE, 2016. The study of mining and Analysis of the opinion on the twitter data can explore things from various social platforms using machine learning techniques. Through the twitter platforms user sent to- post - read post this is known as a ' tweets'. theirs is the way of share the information and opinion and that's comments on other post [29]. This is the good platforms for advertisement of other tweets and opinion. In this model extract the twitter data from the social media and removed the unwanted data and classified into three categories negative, positive, neutral . For this paper we will collect hotel data from the twitter for this analysis using machine learning algorithms and find the result from the various metrics for the get accurate output result. opinion based analysis using different classifier for to get accurate result of tweets. In this model both supervised and unsupervised machine learning algorithms [9].

L. L. Bo Pang et all In this paper we have used of different deep learning techniques for this sentiment analysis with twitter data .through the deep learning technique can at the same time solve a wide range of problems or complex operations and gain popularity among researchers [30]. Deep learning algorithms by themselves generate the high order features to predict respect of the object in this feature extraction. which is helpful in generating respect for the object. Using Features of deep learning can handle huge amount of structure and unstructured data. Generally utilize of two types of neural

network ,Convolution neural network(CNN) for the use of image processing and recurrent neural network (RNN) with nature language processing. we can use of different type of embedded system such as a word2Vec, global vector(GloVe).. Various combinations are applied for the best score value for each model and compare the performance [10].

V. Lakshmi et all in this analysis we collect data with opinion in this new era from microblogging sites such as twitter, facebook, Twitter is a platform where people share their information, ideas as tweets and twitter is one of the good sources for sentiment Analysis [31]. People Opinion can be divided into three categories: negative, positive, neutral and performing analyzing different types of opinion ,grouping that is necessary for sentiment analysis. Data mining are used for unwanted information from social networking sites and text mining, natural language processing are used for it. The aim of this research classification of the tweets using the machine learning techniques to improve classification results for sentiment analysis and increasing efficiency and reliability of propose approaches [32]. Using decision tree, hybride, Ad boosted tree to gets highest accuracy of the classifier. This proposed model based on the two preprocessing stage and classifier stage. Hybrid Models are used to improve classifier accuracy and f-Measured[11].

Levy, M et all Today's people share the information through social media site like facebook, twitter in the world. twitter is a platform which is used to interact with different communities. where users send posts-read posts known as tweets. user updated opinion such as daily news ,brand, various places. Aim of this model collocet the real data from twitter account and then performed sentiment analysis. we are using supervised machine learning algorithms in this analysis for this model. For this analysis of paper we are performing sentiment analysis using extract the data directly from twitter API, then cleaning process and discovery of the twitter data. After the fed data will be performed into several models for the training of data. Each tweet classified into three categories negative, positive and neutral on the basis of sentiment analysis [33]. Where data collect two subjects MCDonald and KFC Which are more famous. For These models use different machine learning algorithms and find the results using cross validation, f-score, maximum entropy, various testing metrics etc. In further work we can perform sentiment analysis for various fields like detecting rumors on twitter data regarding the spread of diseases [12].

W. Medhat, A hussan et all Today's the modern era based on the internet where people share the opinion ,idea;s through social media such as : microblogging sites, personal blog, reviews and so on . One of this sentiment analysis is a part of text mining were Analyzed of people opinion and divided into tweets as good, bad ,neutral. In this paper work published of people reviews and sentiment

of tweets then identified with the help of searching keyword and evaluate the polarity of tweets as a positive,negative [34]. Using a Naive Bayes classifiers(NBC) can be both test the data and features of words or also evaluate the Polarity of sentiment of each tweets and compare between machine learning classifiers such as namely ,Random forest, Naive Bayes and support vector machine with performance evaluate parameters such as accuracy ,precision.Using Classifier such as RF,NBC,SVM increasing both estimated accuracy and three features of the number of tweets.In future work some more features can be added which are used for improving accuracy of prediction[13].

Sidharth ,darsini et al Everyday, globally people are share their ideas and information using social media platforms. Twitter application is one of the most popular platforms for sharing of the opinion ,reviews,posts and particular topic issues.The main focus of this paper that performed sentiment analysis of people opinion and social issues of women's by this proposed model which is very critical problem In many countries with every woman.Using twitter scraper collecting data from twitter to build a dataset in python programming then clean the data set and remove noise from the data set.python proگرامing tools like text blob which are used for classified of each tweets as and technology are used [35].By theText blob to classified each tweets as a good,bad and neutral based on polarity of sentiment. **#Women** and **#MeToo**. **There are two data sets**. Through the different machine learning algorithms can be tested on the model. After Results compare the performance of each model with tested data using various testing parameters. Support vector machine are used for higher accuracy of both #hashtag (#Women's and #Metoo). #women have more popular hashtag then #Metoo shares information. In future work the use of the same methodology with other twitter data and to enhance performance of other classifiers for sentiment analysis [14].

Harpreet Kaur et al in this analysis is to predict the polarity of the word and classify them according to negative, positive tweets. For this paper we are using lexicon-based classifiers and machine learning. Multinomial naive bayes (MNB), Support vector machine (SVM), LogisticRegression (LR)Recurrent Neural network (RNN). In this paper two types of existing data sets have been used, first is "Sentiment140 " from stanford university, which consist of 1.6 million tweets and another one original consisting of every library data 13870 entries by 'Crowdflower' data and both data sets are classified based on sentiment. Various classifiers are performed on both data sets and obtained as a result then compared with them. Use of this model for sentiment to predict new data. By using a Text machine learning models data will be trained and accurately classified based on standard dictionaries [15].

B. O'Connor et al in recent years twitter is a more popular topic for sentiment analysis. In this analysis of tweets blessed on ordinal regression. Aim of this analysis performs the sentiment analysis on twitter data using ordinal regression by machine learning techniques. In this approach using a feature extraction method on pre-processing tweets and creating an efficient feature [36]. For feature scoring and balancing can be used in several classes. Supervised learning classifiers such as Multinomial logistics regression (MLR), Support vector machines (SVM), Decision tree (DsT), Random forest (RF) are used in this research. In this analysis using NLTK corpora resources twitter data set publicly made available for implementation of this system [37]. Using machine learning methods. Finding that detection of ordinal regression with best accuracy for Experimental.However obtain best performance using Decision tree over the other methods. The Decision tree gives a high accuracy at 91.81% .For the future work use of bigramS and trigram with different deep learning techniques are used in improved approaches [16].

Seyedali Mirjalili et al.Sentiment analysis is a method of text mining whether sentiment is positive, negative, neutral in the form of text. This is part of mining of opinion or material polarity. For the improvement of this analysis use of a number of users are available on social media platforms. Number of users post their tweets on twitter in 280 characters because we can make easy analysis by limiting the number of characters in tweets. On twitter daily 550 million tweets are posted [38]. Purpose of twitter sentiment analysis is general sentiment of society through twitter data. Various machine learning methods are use such as support vector machine classification method,maximum entropy classification method,Naive Bayes Classification method in this paper.through this method we will see what is the high accuracy and Precision of twitter data.The same work as well as using the baseline learning method but maximum entropy method are more effective than baseline method.This study defined the classified tweets based on positive,negative or neutral.For the future work to improve the performance measure[17].

B. Pang, L. Lee In this study sentiment analysis can be done by particular opinions which are in social media through Online microblogging sites like twitter, facebooketc. which is used to consider a in the field of research area related to product, moviesreviews, stock exchange. In research Movie's data extracted from the twitter API and Using machine learning algorithms prediction of sentiment data with movies reviews for. Classifiers such as Support vector machine (SVM), Naive bayes (NB), Maximum entropy classifier are classified using unigram, bigram features. After preprocessing, cleaning of data and training the data using a classifier. For training set Use of15000 tweets and for testing set 2000 tweets [39]. Outperforms, accuracy of all classifiers

SVM, Hybride is 84% with selection feature. Including Maximum Entropy, naive bayes with bigram. because Maximum Entropy is better than naive bayes and SVM gives better results from another classifier [18].

B. Pang, L. Lee et al Twitter is the most important social media platform which can be used for various aspects. Use of twitter in various cases like get the viewpoint of the latest product, movies review, estimate of an event and identify the someone data, with weightage, idea and so on. This analysis works for not only favor of user's either against a political party and even mixed opinion. In this paper we study the prediction of user opinion which are based on different political parties [40]. In this study using SVM or Naive bayes algorithms, analyzed the sentiment of people for two different parties congress and BJP. We have also used tweets to build a sentiment of 140dataset. For increased accuracy of the number of data sets. Using SVM for the data set #congress tweets and #BJP tweets with accuracy 77.33% and 75.48%. We have used domain-based tweets for two reasons. First is for the prediction of labels in the data set and to get better tweets. Second is used depending on the data set for improvement of the accuracy of the largest data set like sentiment 140. Use of hashtag for one political party and other is slang, incorrect authorized licensed used [19].

A. Darwish et al Most of the people share their information, ideas and opinions over the internet on social media such as twitter platforms. In this study increasing the number of sentiment information. We gain using investigation method how to people feel that and how to respond in different situations. Compare between performance of machine learning and deep learning algorithm in this paper. For this sentiment classification we have used of a hybrid system and neural network. work of data set containing more than 1 millions tweets collected from five domain. In this system using 75% of trained dataset and 25% tested. In the efficient result the maximum accuracy of rate 83.7% of the hybrid learning approach using the supervised approaches. Different classification techniques are including Convolution neural network, Naive bayes, decision tree, recurrent neural network. Using hybrid models to gain highest accuracy of 83% with sensitivity 87.1% with specificity. The data set. In future work combined with emotion or text for sentiment analysis [20].

T. Joachims et al Twitter deals with analysis of the tweets in the term in the field of research for the twitter sentiment classification. In proposed models for different features extraction via N-grams of twitter data through machine learning domain [41]. We also used the different weighting schemes for understanding impact on accuracy of classifier. For improvement of the performance of SVM classifier using a score vector tweets to provide external knowledge. We have included four different n-gram features with different weighting techniques in this

experiment. The Unigram feature shows the best performance with accuracy of results. Hybride sets an external feature and compares in the term of accuracy with the better performance of SVM classifier. For future work we have to plan with more relevant external knowledge to improve performance [21].

Surnar, Avinash et al Social network sites are a platform where day by day as tweets millions of people share their thoughts, twitter platforms are the way of expressing opinions. so we have main focus in this review paper. Sentiment analysis based on text mining and NLP. In this paper using a machine learning technique to perform extraction sentiment from sentiment of tweets and also used of different approach for this analysis of study using tweets. We have discussed in the survey paper different techniques, approaches and methodology. It's important to know about Extrication tweets, structure, twitter and significance. In literature papers show that the accuracy is increased by WordNet using these techniques. such as SVM, Naive Bayes, Maximum Entropy [22].

O. Almatrafi et al Sentiment analysis is possible when the use of machine learning and Natural processing language. Using various content structures include audit, news, articles categories them as positive, negative, neutral of opinions. Obtaining the results from tweets is very difficult for prediction in indian language. Get tweets in hindi language with the use of twitter tools archiver. In the India election of 2016, we have collected tweets over the period of time that reference five national political parties to perform text mining on 42, 235 tweets and also used both supervised and unsupervised approaches in this analysis. Through the SVM, Naive Bayes, Dictionary based algorithm to build of classified and classify the tested data positive, negative, neutral. The result was SVM for BJP (78.4%), Naive Bayes for BJP (62.1%) and dictionary approach for Indian national congress. BJP won with 60 out of 126 but next as a political party 26 out of 126 constituencies. We have predicted using opinion polls that social media such as twitter, facebook are growing. In the above content the Accuracy of SVM algorithms 78.4% greater than Naive bayes algorithms 62.1%. [23].

Agarwal, Apoorv et al In Public places today's women and girls have experienced a lot of violence and harassment in most of the public places in indian cities. The main focus of this paper. The main role of social media promoting women safety in indian cities with social media sites or applications like facebook, twitter platform. In this paper most of the important responsibilities and safety of women surrounding them and how they developed for women safety purpose of india. We also focus on twitter data (tweets) which usually images, written messages, written messages and text, for women safety in indian cities can be used for read message in youth culture of india and strike action through the educated people. Twitter handles with hashtag messages

are globally spread across the twitter where they express their views how they feel about your opinion, when traveling for work in public transport. and how to feel them in mine, surrounded by unknown people. We also used machine learning algorithms with SPF algorithm and linear algebra factor model approach which helps categories of data into meaningful groups [24].

F. A. Pozzi et al Sentiment analysis is a activity when we see sentiment level of public ,opinions related a goods , service from both political and celebrity .In this analysis using a python proگرامing language for twitter analysis was conduct on Republic of 2019 indonesia president for candidates. In this paper using Naive Bayes methods for collecting a data from python libraries and use of text processing for testing and text classification of data and them classify into classes or levels of sentiment. The result from this analysis that value 'JoKowi-ma' ruf Amin paire -45.5% for positive sentiment and for negative sentiment 54.55%. and then combined both data tested and training data used for each president candidate. And get 80.90% accuracy. For this study comparison between such as accuracy value of Naive Bayes 75.58%, accuracy value of SVM 63.69%, and accuracy value of k-NN 73.34%. Using SVM and K-NN classify into classes positive and negative. Finally, in the result from our experiment then compare between methods with better accuracy level (80.90%) from naive bayes method and another k-NN-75% and SVM-63-99%. In future work we can plan to analyze for public satisfaction [25].

K. Arun, et al Today's most of the people depend on social media and across network platforms such as facebook, snapchat, twitter etc for the information such as new, business, communication, score so on. Twitter is the most popular platform for the attention of the media because this is a microblogging website. In twitter the text written in the form of tweets where we share the information over the social media and we can fetch direct responses of tweets from the public area. Using the cleaning process remove the unwanted data with the python language code fetch the tweets on particular schemes and creation of bad word. Then bad word gives as a training after then applied algorithm. After cleaning data then applied machine learning classifiers such as naive bayes, namely, random forest and naive bayes both give better accuracy in sentiment prediction involving a few parameters for increasing accuracy of prediction. Find the prediction rate of opinions using these various schemes regarding the public [26].

A Pak and P. paroubek et al Today, there is an increasing rate of internet users where data is created on various platforms. it becomes necessary to analyze data by other defense or government organizations and know the sentiment of people. with the help of organizations take control of their action and decide which step is used for it. In the era of microblogging sites. where million of users

communicate ,share their millions of views, opinions and various day -to- day life issues concerning direct and indirect thought on social platforms such as twitter, facebook, tumblr data can be efficient from these sites for marketing or social media. we have taken of various machine learning method for sentiment analysis .Using various machine learning classifier polarity based sentiment analysis and are used for classify the tweets as positive, negative sentiment. Using this classification models can be further implement to classify tweets and any twitter topic. Using a different deep learning methods like RNN, CNN, LSTM compare to machine learning algorithm for better accuracy. After data trained on various data set of different domains for high percentage of data accuracy for tested data. In future work using this model can be implement of percentage accuracy as good as human accuracy [27].

S. Y. Yoo, J. I. Song et al Twitter is the most popular social media platform. Today we can see the number of twitter users across 330 million people worldwide. User use of twitter for convey of opinion as a tweet on twitter. Determining the polarity or types of tweets. as text or subject for this analysis of sentiments. In beginning of text use of NLP (natural language processing) techniques. By these techniques can be analyzed of sentiment , removing of stop words. The main focus in this paper using lexicons and multiplication polarity are developing of sentiment analysis .In result less accuracy from lexicon approach because number of objectives is still incomplete. In future work for these sentiment analysis is determined its polarity. because based on sentiment rules for lexicon approaches which is added like uni-gram, B-gram, Tagger post etc [28].

III. CONCLUSION

In this study work of our research opinion-based sentiment analysis of tweets from twitter in the term of machine learning techniques Such as SVM, Naive Bayes, Maximum entropy, DTs, Random Forest. Our proposed work will extract data from twitter API on twitter and. Main focus of our work enhances the accuracy of the machine learning classifiers of classification of tweets. We have both supervised and unsupervised machine learning used in proposed methodology. The twitter analysis of twitter data is possible by various aspects/parameters of data sets to mine the sentiment. For this result we conduct our experiment using machine learning algorithms. The proposed model involves a supervised machine learning algorithm. After extracted of data into fed data using supervised model for training and testing purpose then classification of tweets is done using Support Vector Machine SVM Classifier for highest accuracy. Show that Result of our proposed work better in the term of SVM classifiers.

For future work use of the same methodology can be sentiment analysis in various fields like prediction of stock market and to analyze people's opinions regarding coronavirus issues that are current topics globally for health issues.

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