Sarcasm Detection

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Sarcasm Detection

Major Project

Submitted in partial fulfillment of the requirements

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Certificate

This is to certify that the major project entitled **"Sarcasm Detection"** submitted by **Gayatriba Jadeja (Roll No: 15MCEI08)**, towards the partial fulfillment of the requirements for the award of degree of Master of Technology in Computer Science and Engineering (Information and Network Security) of Nirma University, Ahmedabad, is the record of work carried out by him under my supervision and guidance. In my opinion, the submitted work has reached a level required for being accepted for examination. The results embodied in this major project part-I, to the best of my knowledge, haven't been submitted to any other university or institution for award of any degree or diploma.

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Acknowledgements

Abstract

Sarcasm is a sharp remark to mock or insult using words which means the opposite of what is literally said. Sarcasm is extremely healthy for the mind. People who understand sarcasm well are often good at reading peoples mind. Sarcasm is very tricky part of speech and is relatively unexplored for social media analysis. It being tricky is very hard to detect not just automatically but even for humans. Sarcasm is a distinct kind of sentiment in which the meaning of the statement is opposite of what is said i.e the literal meaning of the statement is opposite of actual meaning. It is used mostly to mock or insult people or to be funny. It is expressed though body gestures, tonal changes but for obvious reason they cannot be documented and hence not useful for sarcasm detection in text. By using interjection words also sarcasm can be detected. Select interjection words from the statement and their reply and based on that sarcasm detection is done . If the statement has negative sentiment and its reply has interjection word followed by positive sentiment sentence or vice-verse then it is considered sarcastic.

Abbreviations

IWS	Interjection word start
PBLGA	Parsing based lexical generation algorithm
EL	Elicitor Tweet
PD	Polarity Detector
PS	Positive Sentiment
NS	Negative Sentiment

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Chapter 1

Introduction

Sentiment analysis is the process of determining the opinion of the writer for given text whether it is positive , negative or neutral sentiment. Sentiment analysis also comprises of sarcasm detection, as it is a special kind of sentiment which means opposite of what is said. Nowadays social media data are widely used for sentiment analysis as peoples approach towards social media is very frank. Social medias like Facebook , Twitter , blogs , etc users give their opinion about a product and from that piece of text through sentiment analysis sentiment related to that product can be explored which is vital for product improvement . As sarcastic sentences have dual meaning they are hard to detect. For example yes of course I love working on holidays . Here the tweet has positive words but he overall meaning of the tweet has negative sentiments. Hence through positive words negative polarity of the statement is shown.

According to Macmillan English dictionary, sarcasm is the activity of saying or writing the opposite of what you mean, or of speaking in a way intended to make someone else feel stupid or show them that you are angry. According to Oxford dictionary the definition of sarcasm is The use of irony to mock or convey contempt.Sarcastic sentences are response to a question or statement . From now on that question or statement is will be called elicitor tweet. Usually twitter datasets are used for sentiment analysis as they allow short text. Twitter is a online news and social media service that allow users to post and upload text or tweets limited up to 140 characters. Because twitter has limitation for writing text user use emoticons, hashtag, punctuation mark, interjections, etc.

People tend to write complex jargons sentences in social medias which makes it difficult for computer program to understand. Twitter keeps text short so they are easy to analyse and provide precise opinion also to further segregate tweets hashtags are used. There are some special features in sentences like interjections, exclamations, hyperbole, etc from which sarcasm can be detected. Hyperbole means to exaggerate or magnify the statements just to enhance the emotions in the statement. Amalgamation of exaggerated words, punctuation marks, intensifiers forms a hyperbole text.

Intensifiers are phrases containing adjective or adverb .These are used to intensify the noun or subject to give a sarcastic effect. Punctuation marks such as !!!,??,, can be used to show sarcastic effects. From observation it is concluded that if any text starts with interjection immediately followed adverb or adjective it can be sarcastic sentence, for e.g oh really!! Thats great!!!, Wow, what an amazing night this has turned out to be sarcasm ,oh yeah he runs so speedily. Here great and amazing are adjectives whereas speedily is an adverb. Likewise if text starts with interjection followed by adjective and then adverb or viceverse than it is sarcastic text. Utterances with interjection and intensifier or hyperbole is considered more sarcastic. For e.g. fantastic weather is considered more sarcastic than weather. But the context in which the sentence is spoken is equally important .Depending upon the context sarcastic reply is given. Hence to improve result for sarcasm detection context is also important.

Other method to find sarcasm is positive sentiment word in negative situation .This is the elementary meaning of sarcastic text. Sarcasm is nothing but in negative situation using positive words or vise-verse. Hence this shows contradiction in meaning of the sentence. For e.g. I love going to dentist here love is a positive word and going to dentist is a negative situation.

Also hashtags helps in detecting sarcasm. People usually use hashtags to enhance their meaning of tweets People usually use hashtags to enhance their meaning of tweets. Different types of datasets can be used here, like online tweets,product review,website comments etc.

Chapter 2

Literature Survey

2.1   Techniques :-

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Social medias like Facebook, Twitter , blogs , etc users give their opinion about a product and from that piece of text through sentiment analysis sentiment related to that product can be explored which is vital for product improvement . As sarcastic sentences have dual meaning they are hard to detect. For example yes of course I love working on holidays . Here the tweet has positive words but he overall meaning of the tweet has negative sentiments. Hence through positive words negative polarity of the statement is shown. According to Macmillan English dictionary, sarcasm is the activity of saying or writing the opposite of what you mean, or of speaking in a way intended to make someone else feel stupid or show them that you are angry.

Accordingto Oxford dictionary the definition of sarcasm is The use of irony to mock or convey contempt.Sarcastic sentences are response to a question or statement . From now on that question or statement is will be called elicitor tweet. Usually twitter datasets are used for sentiment analysis as they allow short text. Twitter is a online news and social media service that allow users to post and upload text or tweets limited up to 140 characters. Because twitter has limitation for writing text user use emoticons, hashtag, punctuation mark, interjections, etc. People tend to write complex jargons sentences in social medias which makes it difficult for computer program to understand. Twitter keeps text short so they are easy to analyse and provide precise opinion also to further segregate tweets hashtags are used.

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Likewise if text starts with interjection followed by adjective and then adverb or viceverse than it is sarcastic text. Utterances with interjection and intensifier or hyperbole is considered more sarcastic. For e.g. fantastic weather is considered more sarcastic than weather. But the context in which the sentence is spoken is equally important .Depending upon the context sarcastic reply is given. Hence to improve result for sarcasm detection context is also important. Other method to find sarcasm is positive sentiment word in negative situation .This is the elementary meaning of sarcastic text. Sarcasm is nothing but in negative situation using positive words or vise-verse. Hence this shows contradiction in meaning of the sentence. For e.g. I love going to dentist here love is a positive word and going to dentist is a negative situation. Also hashtags helps in detecting

sarcasm.

2.2 Related work

According to Diana Maynard, Mark A. Greenwood many deduction can be made through hashtags. If a positive hashtag is followed by sarcasm hashtag then the real polarity of the tweet is negative and vice-verse. If a positive or negative tag is followed by sarcasm tag then the tweet has polarity opposite that of the tag. Tweets can be better understood if the speaker and the audience know each well. In that case the context will be known by the audience. In order to judge any tweet the context in which it is spoken should be known[1]. People tend to give sarcastic reply when a situation inconvenient to them has occured . In such cases if past tweets are recorded then they can be helpful for knowing speakers thought on that subject.

Speakers are more likely to use sarcasm hashtag when they think that it will be hard for audience to grab the meaning of the tweet. This usually occurs when the readers of the tweet are unknown or less familiar[2].According to Khattri et al. a tweet can be sarcastic if it having words having contradictory polarity or if it contradicts with its past tweets. Sentiment of the target tweet is compared to sentiment of historical tweets and if there is contrast in sentiment polarity then it is sarcastic. This is possible when the topic about the tweet is same and for that the timeline of the author is searched. When a new product is launched users give their opinion to it , for automatic detection of opinion there are many tools and technique. Based on entity and aspect opinions are characterised. For opinion mining part of speech tagging, domain specific dictionary , word polarity etc are seen[3].

Numerical values [4]can also help in detecting sarcasm for eg. Took 7 hours to reach work today. hurray.This sentence is sarcastic, compared to Took 10 minutes to reach work today. yay. Tsur et al.[5]uses patternbased features , these features are then compared on the basis of exact match , partial overlap match, no match. Sarcastic words can have two meaning literal and sarcastic, this is called as Literal/Sarcastic Sense Disambiguation (LSSD).Ghosh has pointed out a t method to find such target words having dual meaning and then to find its real [6]. By reframing the target word to opposite meaning words authors real meaning can be conveyed. For eg I love going to the dentist can be re-phrased

as I hate going to the dentist or I dont like going to the dentist

2.3   Methods

2.3.1   Interjection word start

Here we detect sarcasm based on interjection words .If the first tag is interjection and intermediate /last tag is adjective or adverb or combination of both then the statement is sarcastic.

2.3.2   Parsing based lexical generation algorithm

A parse tree is generated which defines word as per there part of speech. Here then we create positive and negative sentiment file based on polarity of words and positive and negative situation file . In this method we basically try to find negative sentiment word in positive situation and vice -verse to detect sarcasm. As one of the definition of sarcasm is this only.

2.3.3   Naive bayes

Based on Bayes Theorem Naive bayes is a classification technique. It is assumed that the attributes are independent . It shows the possibility that if x occurs then y can also occur. If the features are independent then this method is best to use.[7]

2.3.4   Support Vector Machine

SVM is a supervised machine learning algorithm which is used for both clustering and classification . Best work Svm does is to seperate two classes. Svm is used here to separate word based on its intended meaning , for this there are two classes , one of literal meaning words and other of sarcastic meaning word.

2.3.5   Semantic Orientation using negation

To find the orientation of the word we have to see the negation words ,adverbs ,adjective ,noun , conjunctive words. Negation words changes the polarity of the word . For eg This medicine decreased my pain Here decrease of pain is a a ppositive sentiment. Conjuntive words are used to connect two same or different type of sentence eg Swift is spacious and difficult to drive .Other cojuction word are Or. And , either or ,etc [1]

2.3.6 Point- wise mutual information (PMI) score

PMI is a measure of likeliness between two word.Basically PMI means how much details two word X and y share. If the value is 0 then they share nothing common between them. If PMI score is high then we get little of new information.[1]

2.3.7 Dictionary based method

Dictionary based method This method take seed word and then searches dictionary like wordnet or sentiwordnet.It searches till no more new word is found , here the problem with it is that topic based lexicons cannot be generated automatically.[8] [9] [10]

Chapter 3

sarcasm detection model

The model comprises of Social media entities (SME),Polarity detector (PD),Social media (SM). Social media entities (SME) are the topics on which the users are writing about,posting on social media.

Polarity detector as the name signifies detects two types of polarity ,positive and negative.The polarity detector is capable of detecting correct sentiment of the sentence.

Whenever a new product is launched people tend to write tweet ,reviews,blogs on social media. From all this sources sarcasm can be detected.
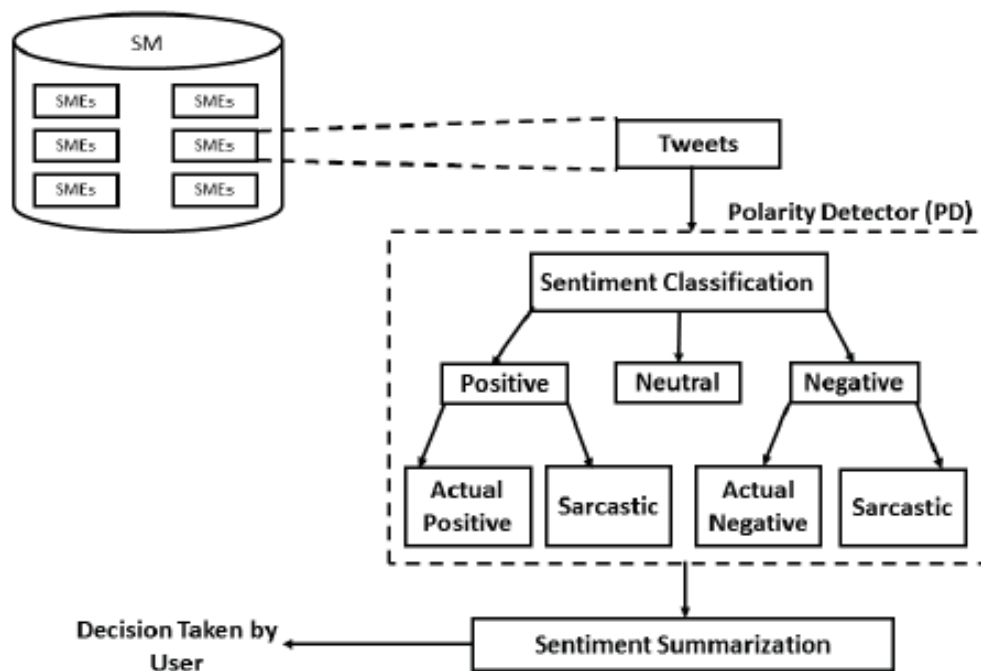

Figure 3.1: system modal

Chapter 4

Preliminary

Tweet posted in twitter is of three types positive , neutral , negative. It further can be classified as from positive to actual positive or sarcastic , similarly for negative tweets. With the rapid growth of social media people use it for decision making and it becomes very tough to automate it in case of sarcasm.

Sarcasm is a text having implicit meaning. So the context in which it is spoken is equally important. Sarcastic tweet are always response to something or someone . Hence the context in which it is spoken should be known. Based on the elicitor tweets sarcastic responses are given. Hence sarcasm depends on the context and the polarity contrast in the sentence. The sarcastic sentence have polarity contrast in the form of positive word in negative situation or vice-verse. This polarity contrast is detected though sentiment containing word like adjective ,adverbs, interjections etc.
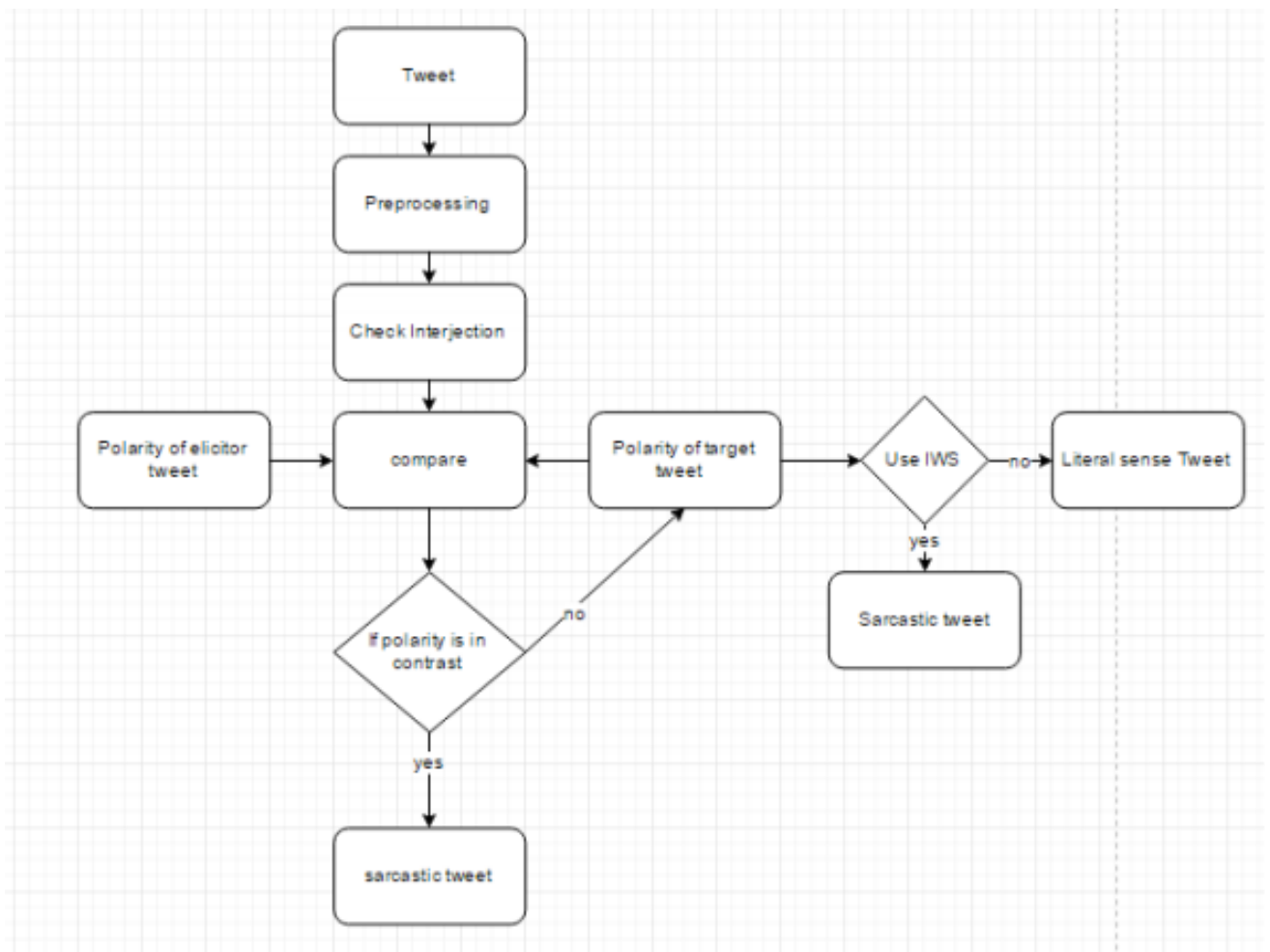
Figure 4.1: Propossed system

4.0.1 Feature extraction

From some time research interest in sarcasm detection has increased.They use datasets of twitter ,blogs ,online form , books, website comments,etc.For sarcasm detection we use feature extraction[7].For detection we majorly take three features pragmatic ,lexical and hyperbole.Lexical features[4] include uni-gram ,bigram,n-gram,hastags.In hyperbole we exagerate the statement hance overly positive sentiment make it a negative sentiment .In pragmatic feattures we see for smiles, emocticoons,etc.Besides we can also keep in mind other feature such as intensifiers , puntuation marks, word frequency. Detection is divided into two phases first find the target word then do sarcasm detection.

Pragmatic- smiles, emoticons, replies
Interjection- yay, oh, wow, yeah, nah, aha, etc.
Intensifier- adverb, adjectives
Punctuation Mark- !!!!!, ????

Figure 4.2: Types of Features

In feature extraction explicit and implicit incongruity is checked. An explicit incongruity giving rise to sarcasm bears resemblance to thwarted expectations (another commonly known challenge to sentiment analysis)[11, 12]. Consider this example: I love the color. The features are interesting. But a bad battery life ruins it. The positive expectation in the first two sentences is thwarted by the last sentence. A similar incongruity is observed in the sarcastic My tooth hurts! Yay!. The negative word hurts is incongruous with the positive Yay!. Hence explicit incongruity features are a relevant subset of features from a past system to detect thwarting

Phrases with implicit sentiment are used as implicit incongruity features. These phrases are sentiment-bearing verb and noun phrases, the latter being situations with implied sentiment (e.g. getting late for work)[13, 14, 15]. Feature extraction is done in in two ways: (a) they extract only positive verbs and negative noun situation phrases and then generalize it to both polarities, (b) remove subsumed phrases (i.e. being ignored subsumes being ignored by a friend) while retaining both phrases.

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4.0.2 Tokenization

A token is a contisequence of characters that we want to treat as a group. Decomposing a text into tokens enables creating counts of tokens, which can be used as features. A token could be a paragraph, a sentence etc. but commonly words are chosen as tokens in text categorization.

4.0.3 Stopwords:

Stopwords are words that if removed meaning of the sentence remains intact.Some e.g of stopwords are is,of,are,the,etc. The NLTK toolkit provides list full of stopwords. But stopwords should be used wisely as sometimes sentence is fully made up of stopwords e.g to be or not to be.

4.0.4 Stemming:

Stemming is the process of converting word to its base form .Hence in this way the word is converted into its base form. Some example of the words:

- talk

- talked

- talkies

- talking

Nltk provides features to use stemming .The algorithm identifies suffixes e, ed, es, ing and then removes them.

4.0.5 Adverb and Adjective

In sentences sentiment containing words are adverb , adjectives , interjections emojis, etc. These sentiments contain positive , negative or neutral polarity . If there is a contrast in polarity then it is a possibility of sarcasm in it. The contrast can be in the form of positive word in negative situation and vice-verse. Here previous or elicitor tweets are considered, hence polarity of that tweet is also compared. Also if adverb , adjective is followed by interjection word then there are greater chances of it being sarcastic . For a normal sentence to be sarcastic exaggerated words are used and for that adjectives are used e.g wow,what an amazing night it has turned out to be here amazing is an adjective used to indicate sarcasm[16, 17] . Similarly for adverb Oh wow look at the most realistic doughnuts in a video game sarcasm . Punctuation marks and qoutes are also use to emphasize the sentiment like !!!,??,,,etc.

4.0.6 Part of speech tagging

To find adverb and adjectives Part Of Speech is used . POS is a process of finding part of speech of given text based on the context i.e related words in sentence or paragraph. Here NLTK (Natural Language Toolkit) is used for POS , it is a python based toolkit . For tag notation Penn Treebank Tag is used .The notation are as follows JJ-adjective, NN-noun, RBadverb, VB-verb, and UH-interjection, etc.
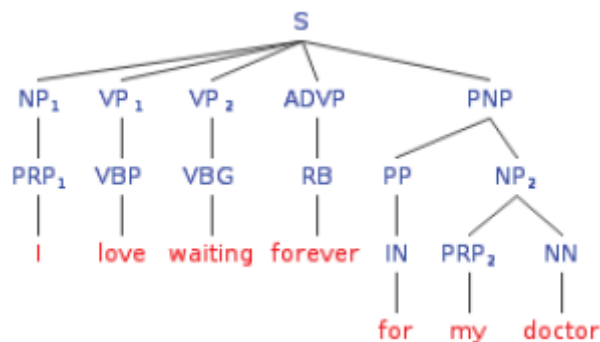
Figure 4.3: Part of speech tagging

4.0.7 Polarity Indicator

To calculate the polarity of the tweets NLTK package VaderSentiment is used. A word from text is given as input and as output numeric value of polarity is given. The polarity is calculated between 0-1 for negative ,positive and neutral .The polarity of all the words in a sentence are totaled and then the result is given.[6, 18, 14] Here if not or any negation word is present then it changes the polarity , this fact is also considered in polarity score calculation.

```
i love my India
{'neg': 0.0, 'neu': 0.323, 'pos': 0.677, 'compound': 0.6369}
```

Figure 4.4: Sentence polarity

4.0.8 Precision

Precision is number of relevant instances to retrieved instances. Precision means how many selected items are relevant. Precision is a Exactness Measure.

$$\text{precision} = \frac{|\{\text{relevant documents}\} \cap \{\text{retrieved documents}\}|}{|\{\text{retrieved documents}\}|}$$

Figure 4.5: Precision

4.0.9 Recall

Recall is part of relevant instances that are retrieved from selected instances. Recall is the measure of relevance. Recall is a Completeness Measure.

$$recall = \frac{|\{\text{relevant documents}\} \cap \{\text{retrieved documents}\}|}{|\{\text{relevant documents}\}|}$$

Figure 4.6: Recall

4.0.10 IWS+PBLGA

Interjection word start is a method in which detection of sarcasm is done by the interjection words. While in PGBLA based on polarity of the grammatical words the sarcasm is discovered. Here a combination of Parsing based lexical generation algorithm and Interjection word start is used. Best of both the algorithm is used. But basically use of IWS with some modification is done.Here this method is applicable only for the sentences contaning interjections rest all it will detect as not sarcastic.

```
 1: for T in C do
 2:     k = find_postag (T)
 3:     TF ← TF ∪ k
 4: end for
 5: for TWT in TF do
 6:     t = find_subset (TWT)
 7:     FT = find_first_tag (t)
 8:     INT = find_immediate_next_tag (t)
 9:     NT = find_next_tag (t)
10:     if FT = UH && INT = ADJ ‖ ADV then
11:         Tweet is sarcastic
12:     else if (FT = UH) && (NT = (ADV + ADJ) ‖
            (ADJ + N) ‖ (ADV + V)) then
13:         Tweet is sarcastic
14:     else if (FT ≠ UH) then
15:         Invalid tweet.
16:     else
17:         Tweet is not sarcastic
18:     end if
19: end for
```

Figure 4.7: IWS algorithm

In IWS parse the sentence and tag them with figure of speech.According to the algorithm the first word of the sentence should be interjection , ofcourse articles can be ignored.For that stemming of articles and stopwords can be done .If the first word/tag is interjection like "wow", "oh","alas",etc then the intermediate tag or last tag should be either adverb or adjective or combination of both , if such a condition is satisfied then the sentence is sarcastic otherwise not. Here we can use context also. If the scenario in which a reply is given is known then finding sentiment of the sentence can be a bit easy. Therefore first find the sentiment of the "question" sentence.

```
1:  for T in C do
2:     k = find_parse (T)
3:     PF ← TF ∪ k
4:  end for
5:  for TWP in PF do
6:     k = find_subset (TWP)
7:     if k = NP ‖ ADJP ‖ (NP + VP) then
8:        SF ← SF ∪ k
9:     else if  k = VP ‖ (ADVP + VP) ‖ (VP + ADVP)
           ‖ (ADJP + VP) ‖ (VP + NP) ‖ (VP + ADVP +
           ADJP) ‖ (VP+ADJP+NP) ‖ (ADVP+ADJP+
           NP) then
10:        sf ← sf ∪ k
11:    end if
12: end for
13: for  P in SF do
14:    SC = sentiment_score (P)
15:    if  SC >0.0 then
16:       PSF ← PSF ∪ P
17:    else if  SC <0.0 then
18:       NSF ← NSF ∪ P
```

Figure 4.8: PBLGA algorith

If the sentiment of the sentence are negative and the "reply " sentence has positive sentiment then the tweet is sarcastic. For eg "i just got a fracture" Reply:"wow that's great" In the Question sentence the sentiment contaning word is "fracture" and it has negative sentiment and in response sentence though "great" its positivity is defined.

4.1   Dataset

Many types of datasets are posssible like tweets, books,website comments, etc. A table for the same is shown in fig 3.8. Dataset consist of twitter statements and their sarcastic reply. The reply also consist of sarcasm label. It is a twitter dataset consisting of 4500 tweets and their response. From these dataset interjection containing reply are extracted .Only on these filtered dataset proposed method will be checked. Sometimes it becomes very hard for reader to detect sarcasm let alone a machine, because any sarcastic statement uttered is atleast understood by the speaker. Hence only user labelled tweet for sarcasm are considered true. Twitter has limit of 140 characters which makes it short text , because of this it becomes relatively easy to detect sarcasm plus it allows hashtags ,

emocticons , and special characters. For pre-processing stopword and stemming is done . Stopwords are unnecessary word like articles and conjunction which if removed has little impact on the meaning of the sentence. Stemming means to reduce word to its base form which means words like following, followed, follow all will have reduced form follow. By using stopwords and stemming all the unnecessary information is removed and only the words that add to meaning of the sentence are kept.

D1	Tweets of Twitter
D2	Online product reviews
D3	website comments
D4	Google Books
D5	Online Discussion Forums

Figure 4.9: Types of Dataset

Chapter 5

Method

In this paper the polarity contrast concept is used. Here the polarity contrast is between elicitor tweet and target tweet. Here first the tweets having interjection words are only considered. Interjections are both positive (wow,yay) and negative (oh,alas) polarity word.Here supervised approach is used.

A sarcastic reply is only possible when the reply is having opposite polarity. For eg the elicitor tweet is the flight will be delayed for 5 hours and the sarcastic reply is thank you , delay is a negative polarity word whereas thank you is a positive polarity word. Hence in this situation context in which sentence is spoken is very important. Since the elicitor tweet is so imp , in this paper the polarity of it is compared to polarity of target tweet then if contrast happens then it is a sarcastic reply.

Interjections are used to exaggerate the sentiment and also by using interjection to adjective or adverb the it has sarcastic reply. The target tweet contain interjection hence if it is positive and the following adjective or adverb are having negative polarity then it sarcastic , and if they both are of same polarity then it is compared with elicitor tweet . If polarity is contrast then it is sarcastic otherwise it has literal sense. For e.g. the elicitor tweet is japan just had a earthqauke and that killed a lot of people plus collateral damage and The target tweet is oh really!!thats great!!!.

Now the elicitor tweet is having negative polarity and the Target tweet is having positive polarity hence they are creating contrast in sentiment , therefore target tweet is sarcastic .

Now if for the same elicitor tweet the target tweet was oh that is so bad , the polarity score is neg 0.529 therefore polarity score of both tweets will be same and the result will be literal sense sentence which it is.

Sarcasm can occur in absence of Polarity contradiction. Sarcasm can occur even if the text is having neutral score, if the elicitor tweet is having neutral polarity and the target tweet is having positive/negative polarity. The approach over here is find opinion giving adjectives and adverbs and check their contradiction. Now this method is based on Interjection word start (IWS).

In IWS hyperbole features are extracted . Hyperbole is combination of intensifiers and interjections. According to Interjection word start if interjection appears at the starting of the text and it is followed by intensifier like adjective or adverb then there are high chances that it is sarcastic. This method gives good result according to the paper Parsing-based sarcasm sentiment recognition in Twitter data ,about 826 tweets were detected sarcastic by this method out of 1000 tweets and the ground truth was 733. IWS is a supervised method and giving good accuracy

```
japan just had a earthqauke and that killed a lot of people plus collateral damage
{'neg': 0.412, 'neu': 0.588, 'pos': 0.0, 'compound': -0.8271}
[('japan', 'NN'), ('just', 'RB'), ('had', 'VBD'), ('a', 'DT'), ('earthqauke', 'NN'),
('and', 'CC'), ('that', 'DT'), ('killed', 'VBD'), ('a', 'DT'), ('lot', 'NN'), ('of',
'IN'), ('people', 'NNS'), ('plus', 'CC'), ('collateral', 'JJ'), ('damage', 'NN')]
```

Figure 5.1: Elicitor tweet having negative polarity

```
japan just had a earthqauke and that killed a lot of people plus collateral damage
{'neg': 0.412, 'neu': 0.588, 'pos': 0.0, 'compound': -0.8271}
[('japan', 'NN'), ('just', 'RB'), ('had', 'VBD'), ('a', 'DT'), ('earthqauke', 'NN'),
('and', 'CC'), ('that', 'DT'), ('killed', 'VBD'), ('a', 'DT'), ('lot', 'NN'), ('of',
'IN'), ('people', 'NNS'), ('plus', 'CC'), ('collateral', 'JJ'), ('damage', 'NN')]
```

Figure 5.2: Target tweet having positive polarity

Some common mistakes made by sarcasm detection system are:

- Subjective interest: The tweet Yay for 3 hour Chem labs is tagged by the author as sarcastic, which may not be common thinking by everybody,because some people even like chemistry although they are of longer duration.

- Incongruity due to numbers: sarcasm detection system could not detect incongruity occuring due to numbers as in Going in to work for 2 hours was totally worth the 35 minute drive..

- Politeness: In many cases, politeness overtakes implicit incongruity for e.g., Post all your inside jokes on facebook, I really want to hear about them.Many times the real meaning of the sentence was to be polite and not to create sarcasm.

Chapter 6

conclusion

Sarcasm detection research has emerged as trendy topic in recent years, based on the previous papers and books contribution only new methods has been developed. In some previous papers only historical tweets were checked for sarcasm, somewhere polarity contradiction was asked , many authors asked for context in sarcasm detection,etc. This paper is amalgamation of many existing methods with reforms. The final conclusion is that by using supervised approach in proposed method identification of sarcasm can give sufficient results for tweets having interjection in them. For future work classifiers can be used for pattern recognition and automatic sarcasm detection.

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