TWITTER SENTIMENT ANALYSIS

A Course project report

In partial fulfillment of the degree

Bachelor of Technology

By Team 19

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CERTIFICATE

This is to certify that the Course Project Report entitled "Twitter Sentiment Analysis" is a record of bonafide work carried out by the student(s) **Amma Kartikeya, Thrishul Kumar Arraboina, Chinnabathini Vamshi, Koppula Sachin Kumar** bearing Roll No(s) **18K41A0562, 18K41A0564, 18K41A0574, 18K41A0599** during the academic year 2020-21 in partial fulfillment of the award of the degree of ***Bachelor of Technology*** in **Computer Science & Engineering** by the Jawaharlal Nehru Technological University, Hyderabad.

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TABLE OF CONTENTS

I. ABSTRACT

Social media have received more attention nowadays. Public and private opinion about a wide variety of subjects are expressed and spread continually via numerous social media. Twitter is one of the social media that is gaining popularity. Twitter offers organizations a fast and effective way to analyze customers' perspectives toward the critical to success in the market place. Developing a program for sentiment analysis is an approach to be used to computationally measure customers' perceptions. This paper reports on the design of a sentiment analysis, extracting a vast amount of tweets. Results classify customers' perspective via tweets into positive and negative.

Here we use textblob to analysis the tweets by manually filtering them. We extract tweets from api using 2 different points. One, we can extract tweets of particular user and find the polarity by analysis. Two, we can extract tweets based on a particular keyword or hashtag, and find the polarity of each tweets and make a visualization for overall analysis.

II. INTRODUCTION

Twitter is a popular microblogging service where users create status messages (called “tweets”). These tweets sometimes express opinions about different topics. We propose a method to automatically extract sentiment (positive or negative) from a tweet. This is very useful because it allows feedback to be aggregated without manual intervention.

Consumers can use sentiment analysis to research products or services before making a purchase. Marketers can use this to research public opinion of their company and products, or to analyze customer satisfaction. Organizations can also use this to gather critical feedback about problems in newly released products.

OVERVIEW:

- ✓ The overall benefits of Twitter sentiment analysis include:
- Scalability: Analyze hundreds or thousands of tweets mentioning your brand and automate manual tasks. Easily scale sentiment analysis tools as your data grows and gain valuable insights on the go.
- Real-Time Analysis: Twitter sentiment analysis is essential for monitoring sudden shifts in customer moods, detecting if complaints are on the rise, and for taking action before problems escalate. With sentiment analysis, monitor brand mentions on Twitter in real-time and gain actionable insights.
- Consistent Criteria: Avoid inconsistencies that stem from human error. Customer reps won’t always agree on which tag to use for each piece of data, so you may end up with inaccurate results. Instead, machine learning models perform sentiment analysis using one set of rules, so you can ensure all your Twitter data is tagged consistently.

III. LITERATURE SURVEY

In [1], they proposed a Hadoop based framework that captures real time tweets and processes it with a set of algorithms which identifies sarcastic sentiment effectively. They observed that the elapse time for analyzing and processing under Hadoop based framework significantly outperforms the conventional methods and is more suited for real time streaming tweets.

In [2], author proposed two approaches to detect sarcasm in the text of Twitter data. The first is a parsing-based lexicon generation algorithm (PBLGA) and the second was to detect sarcasm based on the occurrence of the interjection word. The combination of two approaches is also shown and compared with the existing state-of-the-art approach to detect sarcasm. First approach attains a 0.89, 0.81 and 0.84 precision, recall and f - score respectively. Second approach attains 0.85, 0.96 and 0.90 precision, recall and f - score respectively in tweets with sarcastic hashtag.

In [3], authors introduced a novel approach for automatically classifying the sentiment of Twitter messages. These messages are classified as either positive or negative with respect to a query term. They present the results of machine learning algorithms for classifying the sentiment of Twitter messages using distant supervision. They also describe the preprocessing steps needed to achieve high accuracy.

Here every research, used the manually detected sentiments of tweets to train the model and then using api or manually collected tweets for performing.

IV. PROPOSED METHOD

In our proposed system, we used tweepy and textblob libraries to find the sentiment in tweets. There is no large public dataset of tweets for analysis, so we collect our own data. Twitter has Application Programming Interface (API) to access tweets for a particular constraint programmatically. In the API, we can set which language tweets to be extracted, here we keep it default i.e., English. Our system will propose only English tweets only.

We extract different tweets based on a particular constraint. After extracting tweets we will filter it out by eliminating hashtags, mentions and other keywords, which are not part of the tweets. After filtering the tweets, we just use textblob to analysis the polarity in the tweets. According to the polarity of that tweets, we will categorize them in to either positive or negative, if not both to neutral.

We can extract certain amount of tweets, and process them all at a time. And get the sentiment of that tweets. Also, we performed the analysis of the tweets without cleaning of the tweets because it uses keyword or hashtags to retrieve tweets.

Twitter Sentiment Analysis can be used in various fields, some of the Use Cases are:

- Social Media Monitoring
- Customer Service
- Market Research
- Brand Monitoring
- Political Campaigns

V. RESULTS

```
PS D:\3-1\AI-ML\PROJECTS> python nlp1.py
Choose which category you want to find the sentiment:
0.Username
1.hashtag or keyword
0
Enter username: elonmusk
Enter no.of tweets to analysis: 126
```

Choice of selection is the first category(here, username)

```
                                    tweets                  id  len  ...             source   likes  retweets
0                  @tesletter Lasers can do anything  1469450311639220229   33  ...  Twitter for iPhone    7034       252
1    @Tesmanian_com There will be a few tweaks befo...  1469428197011992576   59  ...  Twitter for iPhone    7439       282
2      @JeremyCom I do aspire to entertain the people!  1469427853129355273   47  ...  Twitter for iPhone    5343       300
3    @GailAlfarATX @SawyerMerritt @dogecoin Imbued ...  1469384135198363651   77  ...  Twitter for iPhone    2678       197
4    @jackfarrington @SawyerMerritt Manufacturers h...  1469371515430912004  139  ...  Twitter for iPhone    2990       165
..                                                 ...                  ...  ...  ...                 ...     ...       ...
121          DayQuil + NyQuil https://t.co/aadssRmjyf  1465817742632792065   40  ...  Twitter for iPhone  215209     16583
122  @Tesmanian_com The magnitude of the Starship p...  1465795739104206853  140  ...  Twitter for iPhone    7631       722
123                           @Erdayastronaut Yes       1465793980025741316   19  ...  Twitter for iPhone    7315       229
124  @Tesmanian_com If a severe global recession we...  1465793233729069063  140  ...  Twitter for iPhone   14180      1026
125  @micsolana The overarching problem is that we ...  1465786605889892356  140  ...  Twitter for iPhone   16730      2923

[126 rows x 7 columns]
```

Tweets extracted with all details

```
 ->                                                  tweets  sentiment
 0                   @tesletter Lasers can do anything          0
 1    @Tesmanian_com There will be a few tweaks befo...         -1
 2      @JeremyCom I do aspire to entertain the people!          0
 3    @GailAlfarATX @SawyerMerritt @dogecoin Imbued ...         -1
 4    @jackfarrington @SawyerMerritt Manufacturers h...          0
 ..                                                 ...        ...
 121          DayQuil + NyQuil https://t.co/aadssRmjyf          0
 122  @Tesmanian_com The magnitude of the Starship p...         -1
 123                           @Erdayastronaut Yes          0
 124  @Tesmanian_com If a severe global recession we...         -1
 125  @micsolana The overarching problem is that we ...          1

 [126 rows x 2 columns]
```

This the final result after finding the sentiment of each tweets. Here “1” is considered for positive, “-1” is considered for negative and “0” is considered for neutral tweets.

```
Choose which category you want to find the sentiment:
0.Username
1.hashtag or keyword
1
Please enter keyword or hashtag to search: spidermannowayhome
Please enter how many tweets to analyze: 250
```

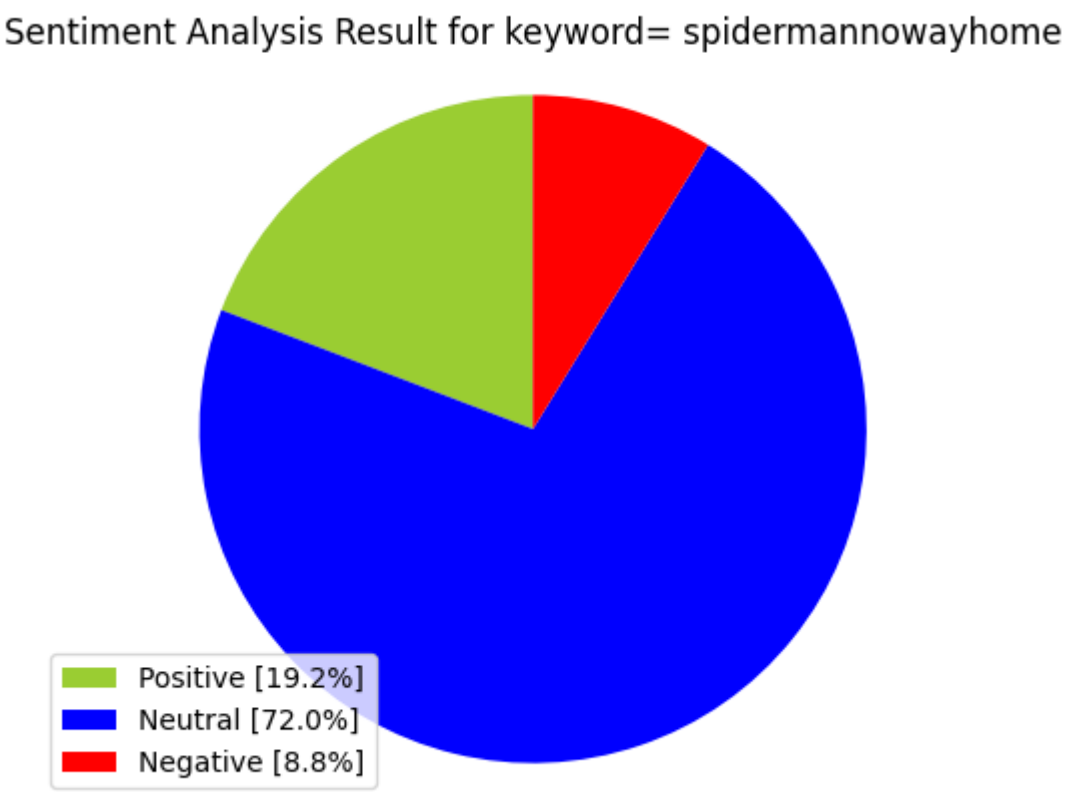
Choice making(here it's hashtag or keyword)

```
-> RT @PSG_inside: 🆒🕷️

Spi der-Man nous a rendu visite au Parc des Princes avant la sortie du film #SpiderManNoWayH        ome au cinéma le 15 décem
…
-> RT @johnnys: From their upcoming 2nd album #CITY and the theme song to #SpiderManNoWayHome's Japan release, #SixTONES' new
est track #Rosy i…
-> RT @EARTH199999MCU: The entire identity reveal scene
#SpiderManNoWayHome https://t.co/f0lQS9WNwi
-> RT @GabyMeza8: El primer minuto de #SpiderManNoWayHome ha sido liberado de forma oficial por parte de #Sony. La esperada p
elícula del trepa…
-> RT @CinematicLeaks: OH YEAH⚡#SpiderManNoWayHome https://t.co/eo92ODi62T
-> RT @johnnys: From their upcoming 2nd album #CITY and the theme song to #SpiderManNoWayHome's Japan release, #SixTONES' new
est track #Rosy i…
-> RT @spideysnews: Peter and Doc Ock face off in a new clip from #SpiderManNoWayHome 🦾
https://t.co/E6KvRxUD6Y
-> RT @SpiderManMovie: It's time to catch some Multiverse men. #SpiderManNoWayHome is exclusively in movie theaters December
17!
🖌️ https://t.…
-> RT @rameshlaus: #SpiderManNoWayHome clearly seems to be going the same way as US as per advances and fan craze is concerne
d. And the love f…
-> RT @SpiderManBRA: 🕷️ Homem-Aranha e Doutor Estranho nos novos spots de #SpiderManNoWayHome https://t.co/UR9xCSzq5p
-> RT @wandasolsen: WE'RE JUST ONE WEEK AWAY FROM #SpiderManNoWayHome https://t.co/xCHPp9O02x
-> RT @DrStrangeUpdate: Doctor Strange in #SpiderManNoWayHome https://t.co/Ei3jkPK2zX
-> RT @IGN: The Daily Bugle had a pop-up in NYC and gave out free newspapers filled with articles about Peter Parker! #Spider
ManNoWayHome http…
```

These are some of the tweets extracted from API about spidermannowayhome keyword. We extracted a total of 250 tweets here.

```
total number:  250
positive number:  48
negative number:  22
neutral number:  180
```

Numerical results of the tweets.



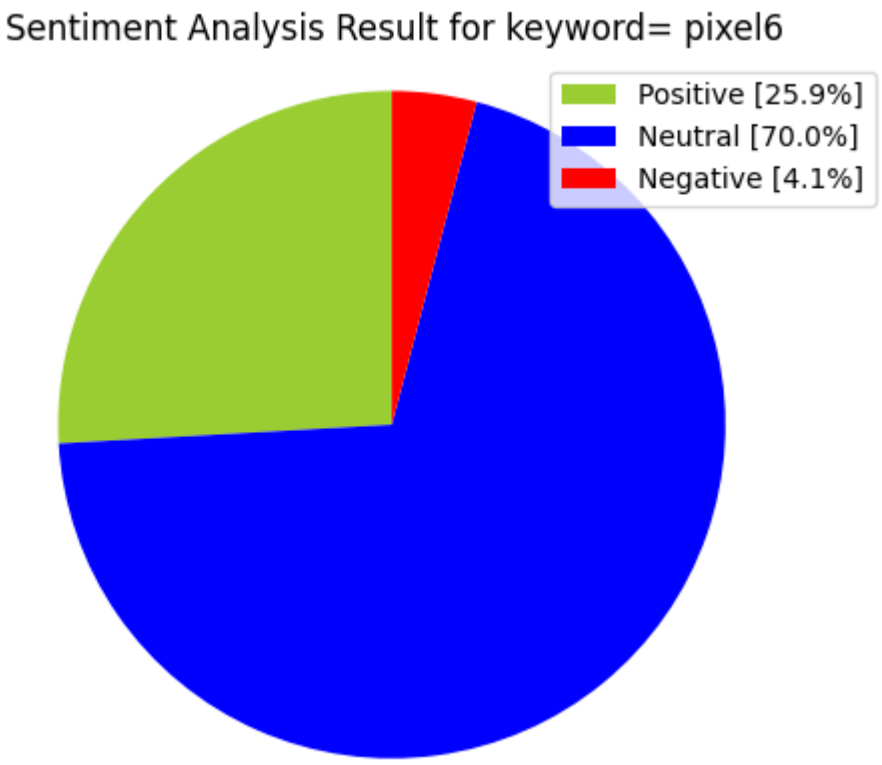
Visualization of overall sentiment analysis of tweets extracted for keyword "spidermannowayhome".

```
Choose which category you want to find the sentiment:
0.Username
1.hashtag or keyword
1
Please enter keyword or hashtag to search: pixel6
Please enter how many tweets to analyze: 170
```

Another example for a product reviews.

```
This phone is such a joy to shoot with!

Finally found some…
-> RT @terarara76: 最近のスマホってすごいねぇ。
#Pixel6 https://t.co/GyRhhxtp1H
-> So apparently /r/Pixel6 is now just a gallery of cats and dogs. https://t.co/ZRyBjCSNfh
-> 投げ売りなのかレンタルなのか。

au Pixel6 投げ売り開始。2年間「1円」でレンタル可能に【ヨドバシカメラ】 https://t.co/5RSDAteOgM @skyblue_1985jpより
-> Pixel6くんのすごいのは広角レンズもあるので首元ギリギリまで迫る迫力のオケツも余裕で画角に収まるところです https://t.co/4Vh
Y3vTOg
-> RT @thisisprincely: About to turn this into a Google Pixel 6 showcase page. 🙌

This phone is such a joy to shoot with!

Finally found some…
-> RT @thisisprincely: About to turn this into a Google Pixel 6 showcase page. 🙌

This phone is such a joy to shoot with!

Finally found some…
-> RT @thisisprincely: About to turn this into a Google Pixel 6 showcase page. 🙌

This phone is such a joy to shoot with!

Finally found some…
-> RT @wallfever: A dozen of dope Organic Psychic walls, available in the #Wallfever app
Artwork by @AmaanCG
Check your app now for the walls…
```

Some of the extracted tweets.



Visualization of overall sentiment analysis for keyword “pixel6”.

VI. CONCLUSION

Sentiment analysis helps you monitor your customer's emotions on Twitter and understand how they feel. It adds an extra layer to the traditional metrics used to analyze the performance of brands on social media, and provides businesses with powerful opportunities.

FUTURE SCOPE

In future development, we use advanced libraries with effective algorithms in order analysis sentiment in emotes and sarcasm tweets. And make the model ready to use for any industry.

REFERENCES

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3. Alec Go, Richa Bhayani, Lei Huang, "Twitter sentiment Classification using Distant Supervision." CS224N project report, Stanford. 2009 Dec, 1(12), 2009.

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