

Sentiment Analysis Using Comments from Social Media



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Introduction

- This project system generally deals with the analysis of comments and tweets from social media, taking it as an input.
- Processing them with certain procedure will give the predicted emotion of comment.
- Different methods are available for classification and prediction of sentiments from the comments such as rule-based, dictionary based.

Introduction(cont'd.)

- Naïve Bayes is the classifier which can be easily used for classification of emotions.
- Prediction of Sentiments will be primarily developed on the concept of Plutchik's wheel of emotions.
- It has four pair of sentiments i.e. eight sentiments which has to be displayed as output of analysis of comments.

Literature Survey

Name:	Fine-grained Sentiment Analysis with 32 Dimensions. By Xianchao Wu, Hang Tong, Momo Klyen
Year:	2017
Description:	This system does deal with range of total 32 emotions. It uses concept of Plutchik's wheel of emotion to classify comments into different 32 sentiments. The mathematical model of Naïve Bayes is used for classification and prediction uses intensity based technique.
Reference:	IEEE(Institute of Electronic and Electrical Engineering)
Conclusion:	This paper has close resemblance with proposed system. It has vast scope as it classifies the opinions to 32 different sentiments.

Literature Survey (cont'd.)

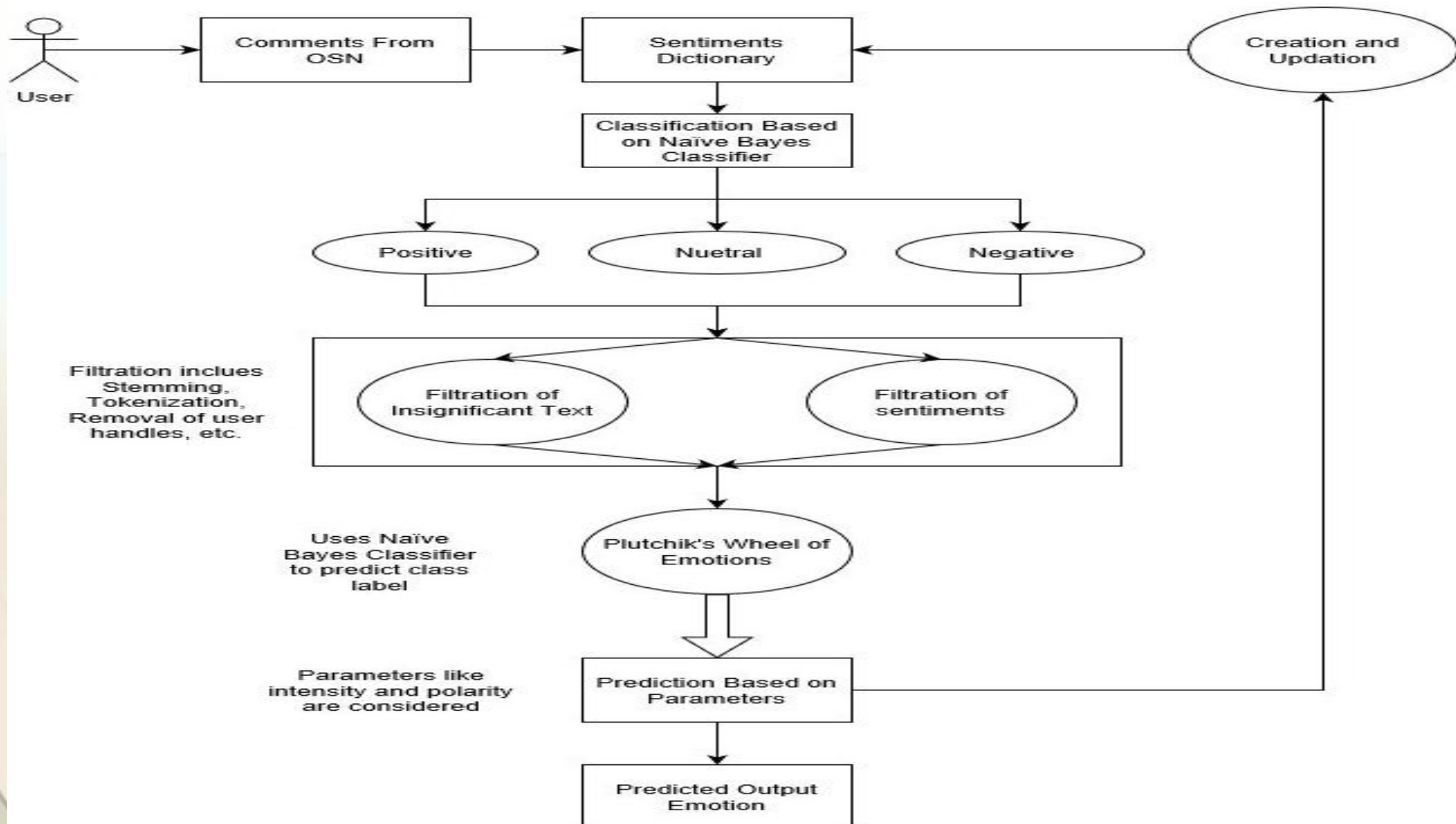
Name:	Rule-based Emotion Detection on Social Media: Putting Tweets on Plutchik's Wheel. By Eric Tromp, Mykola Pechenizkiy.
Year:	15 December 2014
Description:	This paper used RBEM and Plutchik's wheel of emotion concepts and draws out analysis by putting tweets on Plutchik's wheel
Reference:	arXiv:1412.468 [cs.CL], Netherlands
Conclusion:	Results of this system shows RBEM-Emo is competitive to current systems supporting three different language

Name:	Combining Strengths, Emotions and Polarities for Boosting Twitter Sentiment Analysis By Felipe Bravo-Marquez, Marcelo Mendoza, Barbara Poblete.
Year:	2016
Description:	This paper uses Lexicon resources after combining strength and polarity of emotions analysed.
Reference:	University of Chile.
Conclusion:	The technique which is used does boost the performance of Twitter sentiment analysis system.

Implementation:



Implementation: Block Diagram



Implementation

- Plutchik's wheel of Emotions:

For tackling problem of emotion detection, we need notion of emotion. Plutchik's wheel caters that need. Reason for using this model is that it states that these emotions are culturally independent.

Another reason is model is that each of these emotion are opposite of one of the other basic emotions.

Plutchik's states that these eight human feelings are derivatives from combination of two basic emotions.

Implementation: Mathematical Model

- Naïve Bayes:

Naive Bayes classifier assumes that the presence of a particular feature in a class is not related to the presence of any other feature .

For word W and class C :

$$P(c/w)=[P(w/c)P(c)]/P(w)$$

where $P(c/w)$ is probability of class c given word is w . $P(c)$ is probability of class c and $P(w)$ is probability of word w .

- Naive Bayes classifier will be

$$c^*=\arg \max_c P(c/w)$$

Implementation Model

1. Start
2. Take input of comment
3. Pre-process and Cleaning Comment.
4. Classify into Positive, Negative, Neutral.
5. If comment="Neutral"
 Display result;
 Go to Step 14
6. Else
 Display respective result;
7. Detect Common words.

Implementation Model(cont'd)

8. Extracting Featured words.
9. Calculate $c^* = P(W/C)$ using Naïve Bayes Classifier formula.
10. Count $P(W/C)$ for each class of emotion.
11. Select class where c^* is maximum
12. Save words along with tag of emotion.
13. Display emotion class.
14. End

Input and Output Specification

- Input Specification:

1. The user is expected to enter comments on its account which will enable the system to analyse the comments to classify into three sentiments.
2. The comments should not be blunt sentence as it will not display any sentiment while analysis.

- Output Specification:

1. Output which is given to the user will show the polarity of sentiment on positive and negative side further classifying them on basis of Plutchik's wheel

Performance Evaluation Parameter

- Quality
- Cost
- Satisfaction
- Time

Hardware and Software Details

- Hardware Details:
 1. Minimum RAM 2 GB required.
 2. Minimum 100 GB internal ROM.
 3. Reliable Internet Connection.
- Software Details:
 1. Browser supporting HTML5 and Bootstrap.
 2. Python Compiling Software.
 3. Host Server for website.

Applications

- To detect and stop the negative threats solidifying Law and Order.
- Sentiments analysis can be effectively used in business for analysing reviews and opinions
- It could also be used in different documentation setting. 'Tone Detector' is system which is used in Outlook which sets the 'tone' of Users mail.

Applications (Contd.)

- Text analysis will become easier and will reduce loads from Manual working.
- It can be used by organizations in Customer Support and Reputation management.
- To forecast market movements based on news, blogs and social media comments.

References

- Xianchao Wu, Hang Tong, Momo Klyen, “Fine-grained Sentiment Analysis with 32 Dimensions”, University of Tokyo
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- Felipe Bravo-Marquez, Marcelo Mendoza, Barbara Poblete, “Combining Strengths, Emotions and Polarities for Boosting Twitter Sentiment Analysis”, University of Chile
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