RESEARCH ARTICLE

Decision Support System Using Social Intelligence

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Abstract— **The main motto of this research work is to model a natural language processing toolkit to extrapolate users' opinion or sentiment analysis for delving of feedback with regard to a product, person or thing using the means of social media interactions. A mechanism behind the data gathering using social networking sites is done with the natural language processing and imparting them to a natural language model for observation. It has become critical for enterprises to unlock customer sentiment embedded in the huge amount of social media data so that they can quickly respond to complaints and improve their product quality. Thus the proposed methodology will gather user comments from social networking sites apply natural language processing technique to analyse the sentiments that will assist in decision making of the organisation. We will also be checking the validity of the result obtained comparing the results obtained by polls survey and by natural language model.**

Keywords— **Sentiment Analysis, Natural Language Processing, Decision Support system, Social Intelligence, Web Scraping**

I. INTRODUCTION

Consumers are day by day relying more on feedbacks posted on the social networking sites to make a variety of decisions ranging from what movies to watch, what business to invest in, etc. Various researches in the past have suggested that consumers follow these reviews and consider them more unbiased and transparent than the traditional sources. Since social network web sites have become popular media for people to share their views, enterprises have to look up to the opportunities to leverage this data for business intelligence applications such as enterprise marketing services and customer relationship management. It has become difficult for enterprises to unlock customer sentiment embedded in the huge amount of social media data so that they can quickly respond to complaints and improve their product quality.

Social intelligence can be better depicted as a blend of abilities: the first is a basic understanding of people around (i.e. a kind of strategic social awareness) and the second is the tactics needed for negotiating successfully with them. In other words, the ability to get along with other and to encourage them to cooperate with you.

A decision support system (DSS) is a computer program application that analyzes business data and presents it so that users can make business decisions more easily. It is computer-based information system that brace business or organizational decision-making activities. DSSs provides the management, operations, and planning levels of an organization (usually mid and higher management) and help to make decisions, which may be speedily changing and not in advance easily specified (Unstructured and Semi-Structured decision problems). Decision support systems can be either fully computerized, human or a combination of both.

Web scraping is universal technique adopted by search engines closely related to web indexing, in which indexes information on the web using a web crawler. In contrast, web scraping emphasizes more on transforming unstructured data usually HTML format, into structured data which can be analyzed and stored in central local databases. Web scraping relates to web automation, which pretends human browsing using computer software. Uses of web scraping include contact scraping, website change detection, online price comparison, website change detection, research, web data integration, weather data monitoring.

II. LITERATURE SURVEY

Adjectives are always important to impart inference from social media networking sites. For this objective, the paper entitled as "Generate Adjective Sentiment Dictionary for Social Media Sentiment Analysis Using Constrained Nonnegative Matrix Factorization" is a source of adjectives and polarity. The paper propound to automatically generate an adjective sentiment dictionary from social media data with the following steps: (1) obtain a set of seed positive and negative adjective words and expand it using synonym and antonym relations from the WordNet (Fellbaum 1998); (2) extract all the adjectives linked to the adjective set by 'and' and 'but' using Part-Of-Speech (POS) technique on social media corpus; (3) construct a graph matrix (or a nonnegative symmetric matrix) where each entry is the edge weight between two adjectives calculated from the synonym relations from WordNet and the 'and' conjunction relations; (4) construct a constraint matrix (a nonnegative symmetric matrix) where each non-zero entry value denotes a Cannotlink weight between two adjectives calculated from the antonym relation from WordNet and the 'but' conjunction relation; (5) use our proposed Constrained Symmetric Nonnegative Matrix Factorization (CSNMF) algorithm to iteratively cut this adjective graph into positive and negative sets, where each adjective is assigned a positive score and a negative score.

III.PROPOSED WORK

The four main modules in the above figure describes the flow of systems:

- Extraction of comments- We extract the comments from social websites and store it into the database.
- Sentiment Analysis-sentiment analysis is the study of using a machine to determine the polarity of an opinion -whether it is positive, negative, or neutral.
- Create DW for DSS- storing it into form of structured data where it will be segregated according to positive and negative comments.
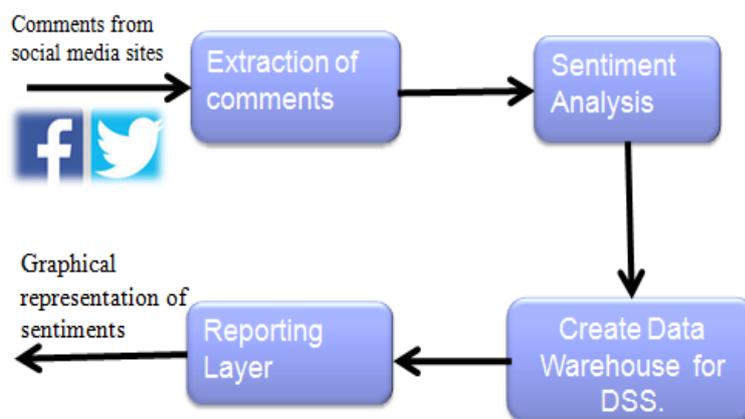- Reporting Layer-the final GUI will be created which will be the graphical representation.

Fig 1-Modules

IV. PROPOSED ARCHITECTURE

The mechanism of gathering the user comments and its processing is described in detail as follows:

1) Identify the social media content that you want to tab, understand the structure of web page and the relevant data points that would have to be extracted.
2) Design the rules for automated process to identify the relevant data to develop the logic and then implement the actual automated process for extraction of the relevant data.
3) The extracted data is stored in staging area and then subsequently pushed into the HDFS file system. A staging area is a data base or a data storage space where the data is kept temporarily we have used the HDFS file system to accommodate the needs of storing unstructured data like user comments.
4) One can choose to use a relational database in case only structured data is been extracted. Along with traditional data warehouse we can use social media data to built SMA reports for consumption by end users.
5) This process looks like BI project. To do sentimental analysis on user comments, there is an additional component that has to be plugged in.
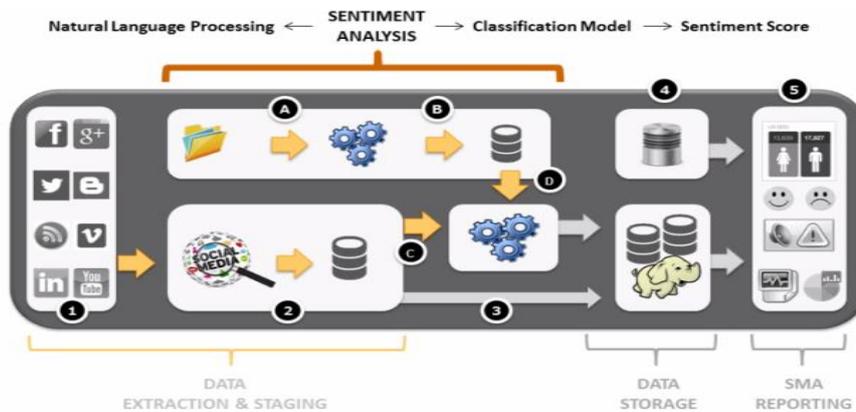

Fig 2-Architecture

Sentimental analysis

Following are the steps to perform sentimental analysis on the extracted data:

A. To identify a set of comments as your training data, apply NLP techniques to it and then create a model for classification augmented by iterative machine learning.
B. Once classification model is created, pull the comments from staging area.
C. Apply the classification model on the comment and come up with a sentiment score for each comment that runs this process.
D. Finally store the comments and the sentiment score in the HDFS storage area.

V. CONCLUSION

The wide application of natural language processing techniques and its integration with latest API technology is becoming popular in the research and development among all the leading software and hardware companies. Particularly in decision making system where decision are based on complex system of analysis and processing of a large set of information is involved the proposed methodology would be very useful. The methodology uses comments from Facebook and 'Number of likes' as useful parameter in pre-processing and removal of noisy comments. Benefit of using the proposed methodology is that it is easy to understand, available at low cost and provides sentiment analysis through efficient analysis of comments.

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REFERENCES

[1] W. Peng and D. H. Park, "Generate Adjective Sentiment Dictionary for Social Media Sentiment Analysis Using Constrained Nonnegative Matrix Factorization", Proceedings of the Fifth International AAAI Conference on Weblogs and Social Media, 2011.

[2] T. Wilson, J. Wiebe, and P. Hoffmann, "Recognizing contextual polarity in phrase level sentiment analysis" In HLT '05, 347– 354.

[3] B. Bickart and R.M. Schindler, "Internet forums as influential sources of consumer information", Journal of Interactive Marketing, pp. 31–40, March 2001.

[4] B. Pang, L. Lee, and S. Vaithyanathan,"Thumbs up? Sentiment classification using machine learning techniques" In EMNLP,pp.79–86, 2002.

[5] M. Hu and B. Liu, "Mining and summarizing customer reviews" In KDD '04, pp.168–177, 2004.

[6] C. Fellbaum, ed. 1998. "WordNet: An Electronic Lexical Database." Cambridge, MA: MIT Press, 1998.

[7] K. Abe, L. Sungbok, and N. Shrikanth, University of Southern California, USA,"Fuzzy Logic Models for the Meaning of Emotion Words".