Sentiment Analysis on LinkedIn Comments

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Abstract:- **Nowadays, the social networking is huge and widespread among the world. Because people post, share their opinions, own feelings and own comments for the post and rates the products, photos and videos. Likewise the LINKEDIN which is a Professional website will help the people to post comments, like and share the post, and also help the people search about the job. There is lot of opinions for the single post, but people want the common opinions about the post to clearly know about the job/post. In that situation, sentiment analysis will help the people to know the common opinions about the post/job are positive or negative or neutral. In this paper we have analyzed the people's opinion in the text format about the post whether it is positive or negative or neutral using the NLP (Natural Language Processing)[1], Linguistic Process with Python Coding.**

Keywords: Sentiment Analysis, Opinion Mining, Comment analyzer, NLP, Linguistic Process.

I. INTRODUCTION

Now, on an online social media platform people post their personal findings, feelings or thoughts about any topic or a product for social communication, branding, marketing etc. A popular User's or Company's post usually attract hundreds or thousands of comments and it looks difficult for a reader to read all of these comments to assess general public opinion about the topic discussed in the post. Furthermore people wants to know about the common comment about the post or any common opinion about the job notifications. In that situation the sentiment analysis helps to analyze the opinions in the text format of the people about the post. Sentiment analysis otherwise known as opinion mining. In essence, it is the process of determining the emotional tone behind a series of words, used to gain an understanding of the attitudes, opinions and emotions expressed within an online mention. Sentiment analysis is extremely useful in social media monitoring as it allows us to gain an overview of the wider public opinion behind certain topics. The applications of sentiment analysis are broad and powerful. The ability to extract insights from social data is a practice that is being widely adopted by organizations across the world. In this paper, we have used the linguistic process, NLP (Natural Language Processing) i.e., text opinion about the post/job. Using Sentiment analysis, we have analyzed whether the sentence (text) is positive or negative or neutral [7].Two approaches were nearly used in sentiment analysis which describes the interest and thought about the post in the social network. One is semantic approach and another one is learning based approach. Semantic approaches are characterized by the use of dictionaries of words (*lexicons*) with semantic orientation of polarity or opinion. Systems typically preprocess the text and divide it into words, with proper removal of stop words and a linguistic normalization with stemming or lemmatization, and then check the presence or absence of each term of the lexicon, using the sum of the polarity values of the terms for assigning the global polarity value of the text [6]. Typically, systems also include i) a more or less advanced treatment of modifier terms (such as *very*, *too*, *little*) that increase or decrease the polarity of the accompanying terms; and ii) inversion terms or negations (such as *no*, *never*), which reverse the polarity [3] of the terms to which they affect. The learning-based approaches consist on training a classifier using any supervised learning algorithm from a collection of annotated texts, where each text is usually represented by a vector of words (bag of words), n-grams or skip-grams, in combination with other types of semantic features that attempt to model the syntactic structure of sentences, intensification, negation, subjectivity or irony. Systems use different techniques, but the most popular are classifiers based on SVM (Support Vector Machines), Naive Bayes and KNN (K-Nearest Neighbor). More advanced techniques appear in the most recent investigations, such as LSA (Latent Semantic Analysis) and Deep Learning.

II. LITERATURE SURVEY

Anu Sharma and Savleen Kauret . al[6] A Sentiment analysis is a technique to analyze the emotions, opinion and attitude for product review. Sentiment Analysis (SA) is a taken a numeric form text input and that input take from social network, E-commerce web site, and this input goes firstly in emotion mining to analyze the sentiment reviews that posted online by a user. The sentiment analysis (SA) is based on supervised learning technique. The sentiment weight is pre-listed in semantic dictionaries.SA is pre-define set of rules and dictionaries to analyze the product review and opinion mining. There are different kind of classification technique that used in sentiment analysis. Sometime sentiment analysis is not enough for product review for sentiment analysis. This paper focus on different techniques for sentiment analysis and text summarization.

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Anisha P. Rodrigues, Niranjan N. Chiplunkar, Anujna Rao et.al [7] Nowadays, online social media have become the important platform across the globe to share information. People prefer online social media as it is easy to share their opinions on a daily basis hence sentiment analysis is of utmost importance wherein people rely on the opinions shared online. With this extensive growth in the usage of online social media, huge amount of social data is generated. How to process this large set of data efficiently, effectively and in a manner suitable for the user is an important research topic. In this paper, they firstly introduce the definition of sentiment analysis as well as Hadoop and describe the Hadoop architecture, then focus on the analysis of Hadoop framework for sentiment analysis of social media data.

Vishal A. Kharde, S.S. Sonawane et. al[5] In this paper, authors provide a survey and a comparative analysis of existing techniques for opinion mining like machine learning and lexicon based approaches, together with evaluation metrics. Using various machine learning algorithms like Naive Bayes, Max Entropy, and Support Vector Machine, they provided research on twitter data streams they have also discussed about the general challenges and applications of Sentiment Analysis on Twitter

S. M. Junaid, S. W. Jaffry, M. M. Yousaf, L. Aslam, S. Sarwar et.al [4] in this paper a novel sentiment analysis and opinion mining framework is proposed. This framework utilizes various techniques of computational linguistics to measure sentiment orientation of user's opinion around different entities. The proposed framework is used to perform sentiment analysis and opinion mining of users' posts and comments on social media through a Facebook App. Furthermore a user study is conducted to gauge performance of the proposed framework. The results of this study have shown that the framework is capable of finding opinions of the users and sentiments around those opinions with more than 85 percent accuracy when compared with actual human judges.

Shubham Goyal et. al[2 In Sentiment analysis author used natural language processing and information to extracting writer's comments or reviews. In this paper author used Data text mining and hybrid approach of KNN Algorithm and Naïve Bayes Algorithm to find the sentiments of Indian people on Tweeter.

Aakash Bakhle, Priyanka Deshpande, Aniket Phatak, AkshayJoshi et . al[3] In this paper, they introduced the concept of sentiment analysis using a web application. The application consists of a database that holds data from various social networking sites and online forums. This is a small scale application which is a part of larger corporate projects. It is based on API integration, Natural Language Processing and is programmed using HTML5, Bootstrap, JQuery, with the help of Spring Tool Suite. The application

helps user in efficient decision making by accessing the data present in the database.

III. NATURAL LANGUAGE PROCESSING

A field of Artificial Intelligence which enables computers to analyze and understand the human language. Natural Language Processing (NLP) was formulated to build software that generates and understand natural languages so that a user can have natural conversations with his computer instead of through programming or artificial languages like Java or C[5][7].

By utilizing NLP, developers can organize and structure knowledge to perform tasks such as automatic summarization, translation, named entity recognition, relationship extraction, sentiment analysis , speech recognition , and topic segmentation.**"** Apart from common word processor operations that treat text like a mere sequence of symbols, NLP considers the hierarchical structure of language: several words make a phrase, several phrases make a sentence and, ultimately, sentences convey ideas **".** NLP systems have long filled useful roles, such as correcting grammar, converting speech to text and automatically translating between languages.

NLP is used to analyze text, allowing machines to understand how human's speak. This human-computer interaction enables real-world applications like automatic text summarization, sentiment analysis, topic extraction, named entity recognition, parts-of-speech tagging, relationship extraction, stemming, and more. NLP is commonly used for text mining, machine translation, and automated question answering. Basically, our paper focuses on the sentiment analysis to analyze the human text and to check whether the users given text or comment is positive or negative. NLP algorithms are typically based on machine learning algorithms. Instead of hand-coding large sets of rules, NLP can rely on machine learning to automatically learn these rules by analyzing a set of examples (i.e. a large corpus, like a book, down to a collection of sentences), and making a statistical inference. It will create many of open source NLP libraries. In our paper we have used the "NLTK TOOLKIT" **for** analyzing the user's comments.

VI. NLTK TOOLKIT

It is a Python library that provides modules for processing text, classifying, tokenizing, stemming, tagging, parsing, and more. NLTK is a leading platform for building Python programs [2][7] to work with human language data. It provides easy-to use interfaces to over 50 corpora and lexical resources such as Word Net, along with a suite of text processing libraries for classification, tokenization, stemming, and tagging, parsing, and semantic reasoning, wrappers for industrial-strength NLP libraries. It is free and open source toolkit and it is available for all operating systems. It is a easy toolkit which have been used to implement the python programs [4][8][10]. The NLTK module is a massive tool kit, aimed at helping you with the entire Natural Language Processing (NLP) methodology. NLTK with everything from splitting sentences from paragraphs, splitting up words, recognizing the part of speech of those words, highlighting the main subjects, and

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then even with helping machine to understand what the text is all about. In this series, we're going to tackle the field of opinion mining, or sentiment analysis.

V. PROPOSED SYSTEM

In this project we have analyzed the LinkedIn comments using the sentimental analyzer with the Natural Language Processing (nltk packages) along with the PIP Package to identify whether the users comment is positive or negative or Neutral
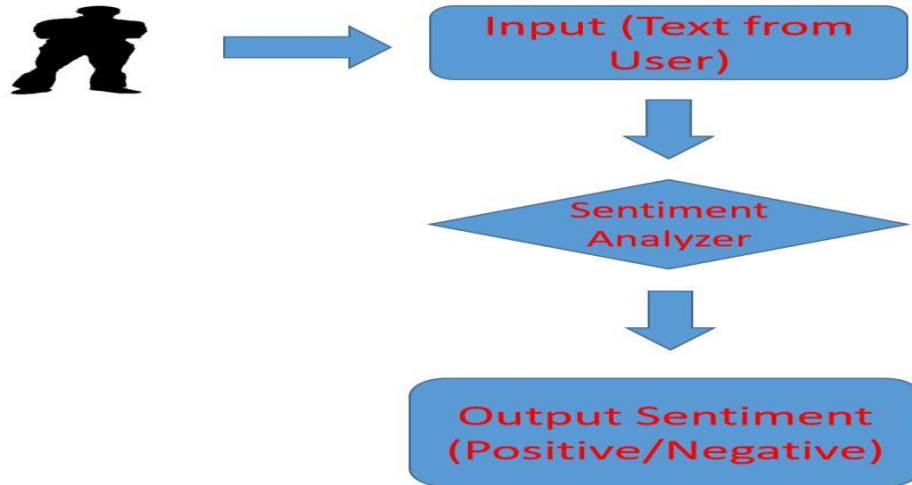
VI. ARCHITECTURE

Fig.1   Process of analyzing the text

INPUT:

This is the first step of the process to get the input text/query from the user. It sends the user's input query/text into the system for processing the text.

PRE-PROCESSING:

It gets the query from the input to process the query/text which is given by the user. It processes the input text/query and sends it to the analyzer to analyze the text.
SENTIMENTAL ANALYZER:

It analyze the text which is processed into the system, given by the user and check whether the given text/query is Positive or Negative or Neutral and sends the final set of data to the output unit.

OUTPUT:

It gets the result which is processed by the processor in the system and shows the output to the users whether the users entered text is positive or Negative or Neutral.

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