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OPINION MINING AND SENTIC ANALYSIS IN SOCIAL NETWORK BASED ON ELM

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Abstract
Extreme Learning Machine (ELM) is a new learning algorithm for feed forward neural network for classification or regression with a single layer of hidden nodes where the weights connecting inputs to hidden nodes are randomly assigned. Extreme Learning Machine allow polarity associated with natural language concept to be calculated in a more dynamic way to explore twitter user classification using content and context which are induced by hash tags and social communication in twitter. However, the explosive nature of the unstructured information generated around the world brings a challenge for sentiment-based information retrieval and analysis. This aims to solve the problem of extraction from product reviews that exploits common-sense knowledge by enabling fast reconfiguration of vector space.

Introduction
The learning speed of feed forward neural networks is in general far slower than needed and it has been a major bottleneck in their applications for past decades. Two key reasons behind may be first, the slow gradient-based learning algorithms are extensively used to train neural networks, and all the parameters of the networks are tuned iteratively by using such learning algorithms. The effort behind the Semantic Web is to add semantic annotation to Web documents in order to access knowledge instead of unstructured material, allowing knowledge to be handled in an automatic way. Web Mining can help to learn definitions of structures for knowledge organization (e.g., Ontology) and to provide the population of such knowledge structures. All approaches explored are semi-automatic. They assist the knowledge engineer in extracting the semantics, but cannot completely replace.

NLP toolkits
It is a suite of libraries and programs for symbolic and statistical natural language processing (NLP) for English written in the Python programming language. They are Stanford's Core NLP Suite, Natural Language Toolkit, Apache Lucene and Solr, Apache OpenNLP GATE.

Related work
ELM, a new learning scheme of feed forward neural networks, error surface that impacts the performance of back propagation learning algorithm is the presence of local minima. Neural network may be over-trained by using back propogation and obtain worse generalization performance.Extreme Learning Machine for Regression and Multiclass Classification, ELM uses multi output nodes, and index of the output node with the highest output value is considered as the label of input data. ELM and LS-SVM have the same optimization cost function. ELM method not only has universal approximation capability (of approximating any target continuous function) but also has classification capability (of classifying any disjoint regions). “An ELM-based model for affective analogical reasoning” when it comes to interpreting sentences and extracting useful information for users, their capabilities are still very limited. Indeed, such scenario has led to the emerging fields of opinion mining and sentiment analysis, which deal with information retrieval and knowledge discovery from text using data mining and natural language processing (NLP) techniques to distill knowledge and opinions. Mining opinions and sentiments from natural language though, an extremely difficult task as it involves a deep understanding of most of the explicit and implicit, regular and irregular, syntactical and semantic rules proper of a language. The target spotting module aims to separate one or more opinion targets, such as people, places, events and ideas, from the input concepts.

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System model

The data is extracted from the web that is induced by the hash tags and social communication in the twitter user classification. There by classification of the data and pattern categorization with the extracted data. The data is classified in accordance with the following four affective-space dimension. They are pleasantness, attention, sensitivity and

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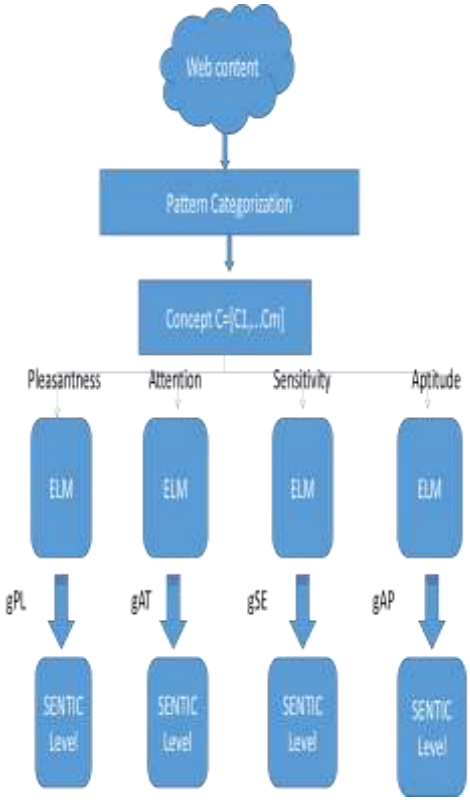

Fig 3.1 System Architecture

aptitude. Then the SVM classifier classifies the data in the specified dimension of the affective space with their corresponding sentic levels that aims to examine the attitude of a speaker or a writer concerning some topic or the overall contextual polarity of a document. Fig.3.1 represents the System Architecture of the proposed work.

Proposed work

Discovering the product attribute is in some sense a standard entity recognition problem, an opinion extraction system would be mostly interested in features for which associated opinions exist; likewise, an opinion holder is not just any named entity in a news article, but one that expresses opinions. For example, relations particularly pertinent to opinion mining are those centered on comparisons the relations encoded by such sentences as “The new model is more expensive than the old one” or “I prefer product A over product B”.

Classification Of Data

The “positive” and “negative” opinions are often evaluative (e.g., “like” vs. “dislike”) there are other problems where the interpretation of “positive” and “negative” is subtly different. The opposing nature of polarity classes gives rise to exploration of agreement detection. Determine whether they should accept the same or distinct sentiment-related labels based on the relationship between the elements of the pair. Sentiment analysis is

classifying the *polarity* of a given text, sentence or feature/aspect level whether the revealed opinion in a document, a sentence or an entity feature/aspect is positive, negative or neutral. Advanced "beyond polarity" sentiment classification looks at emotional states such as "angry", "sad" and "happy".

Svm classifier

The following terms plays a major role namely, they are Sentiment Polarity and Degrees of Positivity, Subjectivity Detection and Opinion Identification. The data to a sentiment classifier is not need to be always strictly opinionated. But a piece of news can be good or bad news without being subjective without being expressive of the private states of the author. The task of determining whether a piece of objective data is good or bad is still not quite the same as classifying the distinction between subjective and objective information. Is "long battery life" objective? Also consider the difference between "the battery lasts 2 hours" versus "the battery only lasts 2 hours". A number of projects address sentence-level or sub-sentence level subjectivity detection in different domains. Subjectivity recognition uses different features that address the problem of determining clause-level opinion strength. The problem of determining opinion strength is different from rating inference is classifying a piece of text as expressing a neutral opinion giving it a mid-point score for rating inference does not equal classifying that piece of text as objective lack of opinion.

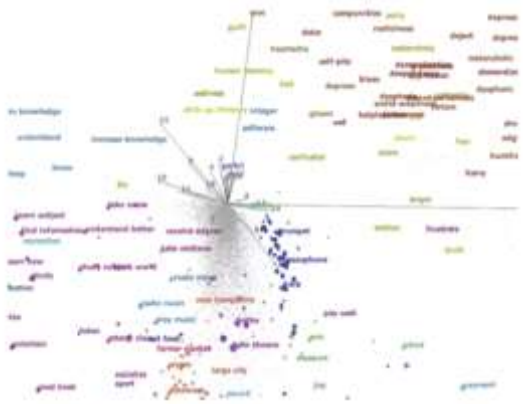

Fig 3.2 Affective Multi Dimensional Vector Space Framework

Identification of emotion / sentic

Emotion classification, the means by which one emotion is separated from another, is a contested issue in emotion research and affective science. The classification of emotions has been researched from two fundamental positions that emotions are distinct and fundamentally different constructs and those emotions can be characterised on a dimensional basis in groupings.

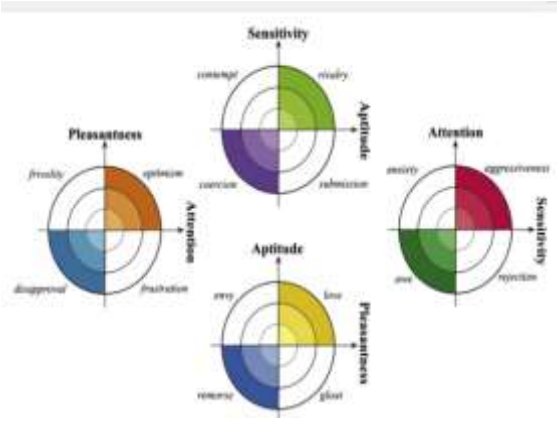

Fig.3.3 Identification of Emotion

ANALYZE THE DATA [ELM]

The reasoning process begins by verifying the target concept to be learned or explained. It is then compared to a general matching concept whose semantics and sentics that are already well-known. The two concepts must be similar enough to make a valid, substantial comparison. Affective analogical reasoning is based on the brain's ability to form semantic patterns by association. Randomly set the input weights and bias for each hidden neuron. Compute the activation matrix, H. Compute the output weights by solving a pseudo-inverse problem. The sentic levels of hour glass model that describes the total state of mind is given in the following table

Interval	Pleasantness	Attention	Sensitivity	Aptitude
[G(1), G(2/3))	Ecstasy	Vigilance	Rage	Admiration
[G(2/3), G(1/3))	Joy	Anticipation	Anger	Trust
[G(1/3), G(0))	Serenity	Interest	Annoyance	Acceptance
(G(0), -G(1/3)]	Pensiveness	Distraction	Apprehension	Boredom
(-G(1/3), -G(2/3)]	Sadness	Surprise	Fear	Disgust
(-G(2/3), -G(1)]	Grief	Amazement	Terror	Loathing

Table1: The sentic levels of the Hourglass model. Labels are organized into four affective dimensions with six different levels each, whose combined activity constitutes the 'total state' of the mind.

Conclusion & future work

Millions of people express their opinions about concerned products and services on the web, distillation of knowledge from this huge amount of unstructured information is a key element for tasks such as social media marketing, product positioning, and financial market prediction. All the sentiment analysis tasks are highly challenging, understanding and facts of the problem and its solution are still very limited. So far, researchers have probably depended too much on machine learning algorithms. Some of the most essential machine learning algorithms produces no human understandable results although they achieve improved precision.

All such approaches rely on syntactical structure of text, which is far from the way human mind processes natural language. Sentic computing aim to overcome the gap by giving machines means to understand the semantics associated with natural language concepts through common-sense reasoning. According to which brain activity consists of different distinct resources and that emotional states result from turning some set of these resources on and turning another set of them off. Also explores how the ensemble application of sentic computing and ELM can enable multi-level affective common-sense reasoning. Current thinking in cognitive psychology suggests that human process information at multiple levels.

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