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Cloud Computing Features, Issues and Limitations

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ABSTRACT

Sentiment Analysis is defined as the process of mining of data, view, review or sentence to predict the emotion of the sentence through natural language processing (NLP). The sentiment analysis involves classification of text into three phases" Positive"," Negative" or" Neutral". It analyzes the data and labels the 'better' and 'worse' sentiment as positive and negative respectively. Thus, in the past years, the World Wide Web (WWW) has become a huge source of raw data generated custom or user. Using social media, e-commerce website, movies reviews such as Facebook, twitter, Amazon, Flipkart etc. user share their views, feelings in a convenient way. In WWW, where millions of people express their views in their daily interaction, either in the social media or in e-commence which can be their sentiments and opinions about particular thing These growing raw data are an extremely high source of information for any kind of decision-making process either positive or negative. To analysis of such huge data automatically, the field of sentiment analysis has turn up. The main aim of sentiment analysis is to identifying polarity of the data in the Web and classifying them. Sentiment analysis is text-based analysis, but there are certain challenges to find the accurate polarity of the sentence. This states that there is need to find the better solution to get much better results than the previous approach or technique used to find polarity of sentence. Therefore, to find polarity or sentiment of, user or customer there is a demand for automated data analysis techniques.

Keyword - Machine Learning, Natural Language Processing, Sentiments

I. INTRODUCTION

1.1 Basics of machine learning

Machine Learning is a branch of artificial intelligence (AI) and computer science which focuses on the use of data and algorithms to imitate the way that humans learn, gradually increasing its accuracy. It is the science that gives the computers ability to act without being explicitly beingprogrammed to do so.

1.2 Basics of Natural Language Processing

Natural Language processing refers to the branch of artificial intelligence (AI) which is concerned with giving the computers the ability to understand text

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and spoken words in much the same waythe human beings do.

1.3 Introduction Of Sentimental Analysis

Sentiment analysis is a significant task in natural language processing and is the core for some prevalent downstream tasks including public opinion analysis [3], [19], [21], [24], [33], [44]. This task focuses on predicting the sentiment information of a given input sentence. However, previous works usually require massive labelled data, which limits their applications in situation where data annotation is expensive. The traditional method of providing supervision is through human- generated labels. For example, given a sentence Anyway, the food is good, the price is right and they have a decent wine list, an annotator should label it as Positive. However, the label does not provide information about how the decision is made. A more informative method isto enable the annotators to explain their decisions in natural language, so that the annotation can generalize to other examples. In the above example, an explanation can be Positive, because the word food occurs before is good and the word price precedes the word right within 2 words, which can generalize to instances such as Delicious food with a fair price. Natural language (NL) explanations have shown effectiveness in providing additional supervision, especially in low-resource settings [10], [34]. Additionally, they can be easily collected from human annotators without significantly increasing the annotation effort. However, exploiting NL explanations as supervision is challenging due to the complex nature of human languages. First, textual data are not well structured, and thus we must parse explanations into logical forms so that machines can better utilize them. Additionally, linguistic variants are ubiquitous, which makes it difficult to generalize an NL explanation to match sentences that are semantically equivalent but have different word usages. When we perform exact matching with the previous example explanation, it can fail to annotate sentences with reasonable prices or good bread.

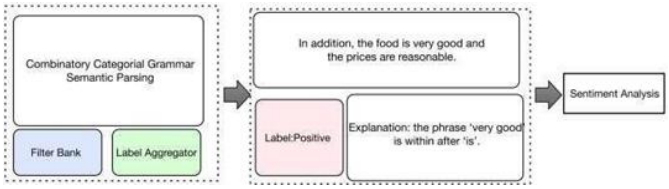

Figure 1.1: High Level illustration of SANLE

Attempts have been made to train classifiers with NL explanations. Previous works have relied on identifying the relevant input parts including labelling the features [7], [20], [29], highlighting the rationale phrases in text [1], [41], or marking relevant regions in the images [38]. However, certain types of information cannot be simply attributed to annotating a part of the input, such as missing one word or at least two words. In the above example, a sentence such as Decent bread ata fantastic enough price will be rejected because of the directly preceded requirement. Therefore,we believe that the generalization ability of NL explanations is under-explored. We emphasize thata good data annotation method should 1) be able to generalize annotations to semantically similar instances (beyond stemming, parts of speech, etc.) and 2) model the uncertainty in annotations. Towards these aims, as shown in Figure 1, we propose the SANLE framework to learn neural mod- els with explanations, as illustrated in Figure 1. Given a raw corpus and a set of NL explanations, we first parse the NL explanations into machine-actionable logical forms with a combinatory cat-egorical grammar (CCG)-based semantic parser. Unlike previous work, we soften the annotation process by generalizing the predicates using a neural module network and changing the labelling course from accurate matching to blurred matching. After the filter removes the incorrect semantic interpretation functions, the correct labelling functions are executed on many unlabelled examples and generate a weakly supervised large training

dataset. The annotation generated by natural language explanations is used as external knowledge to jointly train the sentiment analysis classifier.The key idea of these proposals is to learn knowledge embeddings and let knowledge participatein computing the attention weights. Our proposed models can concentrate on different parts of a sentence when different pieces of knowledge are provided, so that they are more competitive for the sentiment analysis classification. We conduct experiments on many sentiment analysis tasks. The experimental results demonstrate the superiority of SANLE over various baseline methods.

1.4 PLAN OF Seminar

Table 1.1 summarises various tasks being carried out in estimated duration of weeks.

II. LITERATURE SURVEY

Sr. No.	Title of paper	Author	Year of publication	Findings
01	A Survey of Sentiment Analysis from Social Media Data	Kayel Chakraborty, Siddhartha Bhattacharyya , Senior Member, IEEE, and Rajib Bag	IEEE Transactions on Computational Social Systems (Volume: 7, Issue: 2, April 2020)	addresses the process of capturing data from social media over the years along with the similarity detection based on similar choices of the users in social networks.
02	Sentiment Analysis of Comment Texts Based on BiLSTM	Guixian Xu 1 , Yueling Meng1 , Xiaoyu Qiu2 , Zheng Yu 1 , And Xu Wu1	IEEE Access Year:2019 Volume: 7	e proposed sentiment analysis method has higher precision, recall and F1 score. The method is proved to be effective with high accuracy on comments
03	Knowledge-Guided Sentiment Analysis Via Learning From Natural Language Explanations	Zunwang Ke1 , Jiabao Sheng 2 , Zhe Li 2 , Wushour Silamu1 , And Qinglang Guo3 , (Associate Member, Ieee)	IEEE Access Year:2021 Volume: 9	we propose a natural language explanation framework for sentiment analysis that provides sufficient domain knowledge for generating additional labelled data for each new labelling decision.
04	Sentiment Analysis for E-Commerce Product Reviews in Chinese Based on Sentiment Lexicon and Deep Learning	Li Yang 1 , (Member, IEEE), Ying Li 1 , Jin Wang 1,2, (Senior Member, IEEE), and R. Simon Sherratt 3 , (Fellow, IEEE).	IEEE Access (Volume: 8) Year:2020	proposes a new sentiment analysis model-SLCABG, which is based on the sentiment lexicon and combines Convolutional Neural Network (CNN) and attention-based Bidirectional Gated Recurrent Unit (BiGRU).

Figure 2.1: Litrature Survey

Various concepts that need to be understood to completely understand the seminar topics are:

2.1. Types of Sentiment analysis:

2.1.1. Fine-grained sentiment analysis:

This depends on the polarity based. This category can be designed as very positive, positive, neutral, negative, very negative. The rating is done on the scale 1 to 5. If the rating is 5 then it is very positive, 2 then negative and 3 then neutral.

2.1.2. Emotion detection:

The sentiment happy, sad, anger, upset, jolly, pleasant, and so on come under emotion detection. It is also known as a lexicon method of sentiment analysis.

2.1.3. Aspect based sentiment analysis:

It focuses on a particular aspect like for instance, if a person wants to check the feature of the cell phone then it checks the aspect such as battery, screen, camera quality then aspect based is used.

2.1.4. Multilingual sentiment analysis:

Multilingual consists of different languages where the classification needs to be done as positive, negative, and neutral. This is highly challenging and comparatively difficult.

2.2. Types of approaches for sentiment analysis:

2.2.1. Rule-based approach:

Over here, the lexicon method, tokenization, parsing comes in the rule-based. The approach is that counts the number of positive and negative words in the given dataset. If the number of positive words is greater than the negative words then the sentiment is positive else vice-versa.

2.2.2. Automatic Approach:

This approach works on the machine learning technique. Firstly, the datasets are trained and predictive analysis is done. The next process is the extraction of words from the text is done. This text extraction can be done using different techniques such as Naive Bayes, Linear Regression, Support Vector, Deep Learning like this machine learning techniques are used.

2.2.3. Hybrid Approach:

It is the combination of both the above approaches i.e. rule-based and automatic approach. The surplus is that the accuracy is high compared to the other two approaches.

Various machine learning techniques to be explored are:

2.3. Machine Learning Algorithms such as:

2.3.1. Naive Bayes:

It is a machine learning algorithm based on supervised learning. It performs the task of classification. Naive Bayes classifiers are a collection of classification algorithms based on Bayes Theorem. It is not a single algorithm but a family of algorithms where all of them share a common principle,
i.e. every pair of features being classified is independent of each other.

2.3.2. Linear Regression:

It is a machine learning algorithm based on supervised learning. It performs a regression task. Regression models a target prediction value based on independent variables. It is mostly used for finding out the relationship between variables and forecasting.

2.3.3. Support Vector machine(SVM):

It is a supervised machine learning algorithm used for both classification and regression. Though we say regression problems as well its best suited for classification. The objective of SVM algo- rithm is to find a hyperplane in an N-dimensional space that distinctly classifies the data points.

2.4. Various techniques of NLP to be explored are:

2.4.1. Tokenization:

It is a technique used to extract the text content from the data and to convert it into the tokens or list of words. The token can be a single word or group of words.

III. CONCLUSION

The conclusion of the seminar is that we are able to study the various techniques and the con- cepts that useful for analyzing the data from various sources. And to derive the useful information from the data to predict the sentiment of the data. And using this information for solving thevarious business problems. Sentiment analysis or opinion mining is a field of study that analyzes peoples sentiments, attitudes, or emotions towards certain entities. paper tackles a fundamental problem of sentiment analysis, sentiment polarity categorization

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