Addressing the problem of opinion mining in enterprises

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Abstract:
Today, customer satisfaction has become the number one goal of any successful business. They truly have the potential to elevate small businesses to complete brand closures overnight. Real-time analysis of customer opinions (feelings) is the basis for this success. Therefore, this study attempts to focus on the challenges faced by companies in the four categories of opinion mining. Natural language processing using machine learning algorithms can do wonders for opinion mining. Each business requires a special approach, so it's important to choose the right opinion mining for your specific type of business. This research ensures rapid infusion into the enterprise. Companies make myriad proposals for real-time analytics, but this study strives to present an ideal injection.

Introduction

Opinion mining or sentiment analysis is a text analysis technique that uses computational linguistics and natural language processing to automatically identify and extract sentiment or opinions (positive, negative, neutral, etc.) from text. This allows us to understand what our customers think, what they like, what they don't like and why, so we can create products and services that fit their needs. With the right tools, you can automate opinion mining on virtually any form of unstructured text that requires little or no human input.

Are there certain aspects of your business that receive regular accolades but others that are just lukewarm, or worse? Do you want to perform market research to see how sentiment toward your brandcompares to that of your competitors? Sentimentanalysis can process thousands of pages, comments, emails, or surveys in just minutes for real-time results. Or you can perform opinion mining over time to see how sentiment classification rises or falls.NLP softwareallows you to train models to the specific terminology and criteria of your business for a consistently accurate and objective analysis of your customers' conversations. Save time and money and leave behind the wavering subjectivity of manual human processing. Sentimentanalysis is not a novel research theme. The use of automation in sentiment analysis has increased significantly in the past couple of years. Natural Language Processing, Machine Learning and Opinion mining are few streams of computer science on which the research theme is dependent. Nowadays, lots and lots of data is available and can be adopted for use. For making any important decisions, devising business strategies it is a necessity to

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analyse enormous amounts of data available from various sources. Social media is one of the upcoming sources providing indefinite data which is used for sentiment analysis. But the

data obtained from social media is disorganized. Obsolete content analysis methods focused on predicting topics. In the past few years opinions, emotions and sentiments are some qualities which are reflected by the content from social media. The volume of data obtained from social media is gigantic making it more complex to analyze. As a result, decrease in interest of semantic-based application and inclination towards statistics and visualization is observed[1].Opinion Mining is a process for automatic extraction of knowledge and information from the opinion of others. Sentiment classification and analysis are trending fields of research predominant in Sentiment Analysis. They are the formalization for studying and construing opinions and sentiments. Opinion mining is used interchangeably with Sentiment Analysis, Opinion Extraction, Sentiment Mining, Subjective Analysis, Emotion Analysis, Review Mining to create a knowledgebase of opinions, views, recommendations, preferences in a more structured and explicit form. This knowledge base is very crucial to us when we have to make a decision. This is not only true for individuals but also true for organizations[2].Text can be written using two writing styles: formal and informal writing style. Formal writing consists of Poetry, novels, plays, government/ official documents. And informal text consists of chat room data, short message on social media, SMS. As Literary arts contains a lot of emotions, these literature pieces especially poems can be used for task of Sentiment Classification which is very challenging in computational point of

view. And secondly, short messages like tweets, face book status, are also become the useful source for Opinion Mining and their sentiment analysis. Because of length constraints in these kinds of messages, Opinion Mining is very difficult on thisdataset.[5]

Process of Opinion Mining:

The Architecture of Opinion mining is shown below. Right from the data collection feedback and surveys from the internet (it can be of way also) is faded to the Information Retrieval section where all the data isbeen cleaned by eliminating unnecessary data for the feedback and sending it to the Subjective Text section. In this section the data is clustered in a subjective manner like its been written in a specific point of opinion. Their by the gien to Opinion Classification which will compile the input to predict the input data to be positive, neutral or negative. Henceforth it is passed on to Opinion summarization which will now showcase the overall sentiment for the inputted data as positive or negative as a summary result.Figure1. Architecture of Opinion Mining[6]

Categories of Opinion Mining:

Opinion mining and sentiment analysis models can focus on polarity of opinion (positive, neutral, negative), personal feelings (sad, angry, upset, happy, excited, and more), and intentions or objectives (interestedor not interested). Types of opinion mining:

●Fine-grained sentiment analysis

●Emotion detection●Aspect-based sentiment analysis

●Multilingual sentiment analysisFine-grained sentiment analysis:The most common use of opinion mining works to categorize comments and statements on a scale of opinion polarity. This can be simply positive, negative, or neutral, or you can go beyond this into fine-grained

sentiment analysis with a larger scale of categories that include:●Very positive●Positive●Neutral●Negative●Very negative

Multilingual sentiment analysis:Multilingual sentiment analysis is often very difficult, as it involves a lot of preprocessing and resources. Some resources, like sentiment lexicons, are available online, while some, like translated corpora and noise detection algorithms, have to be built. And you'll need coding experience to put them into practice.Machines with emotions are no longer sci-fiwith the headways of technology. It is essential to have a superior There are various methods used for opinion mining and sentiment analysis among which following are the important ones [3]:1) Naïve Bayes Classifier.2) Support Vector Machine (SVM).3) Multilayer Perceptron.4) Clustering.IV.CHALLENGES IN OPINION MINING :Opinion mining has become really important as nowadaysfor devising even smaller strategies, corpuses of data has to be analyzed. So solutions for opinion and sentiment mining are evolving at a great pace and reducing the burden of human shoulders. There are many techniques available for sentiment analysis. But still it"s very difficult to say which technique works best because each technique has its own issues and certain challenges. Mainly there are two techniques used for opinion mining. 1) Lexicon based and 2) Learning based Lexicon based techniques involves high precision but on the other hand gives low recall. Also, another issue in this technique is that lexicons aren"t available in all the languages. Learning based techniques make use of labeled examples to classify text. But it requires learning training as well as training dataset which becomes an issue too. Another technique-syntactic technique does yield good results but then it isn"t language independent. Few other challenges that erupt during the process of classifying text in opinion mining have dependency on factorslike: Value for n-when n-gram framework is used, choosing a higher value of n will degrade the performance. Occurrence of word-the number of occurrences of a word should be at the most 2-3 times for sentiment analysis. Features to be used-Deciding what features must be used is also a challenge as the list of features returned by tokenization contains few irrelevant features. Hence it becomes necessary to select relevant features which will determine the precision of a classifier. People are habitual to using slang and casual language on social websites which makes it really difficult to predict people"s opinion. So to eradicate such issues methods must be developed and existing ones

Ijecs 01 January Tabassum H KhanAddressing Challenges of Opinion Mining inBusinessesPage | 25637should be modified to adapt to the kind of language used on social websites. Now the term "spam messages" or "fake reviews" have becomereally common and used on a large scale on social websites. This creates a hurdle in the process of sentiment mining. So one of the biggest challenges is to identify such spam messages and fake reviews which can mainly be done through the comparison of qualitative with summary reviews. Also, identifying duplicates, detecting outliers and knowing the reputation of the reviewer is to be kept in mind while implementing opinion mining. There are limitations in collaborative filtering which is responsible for identifying most famous concepts and suggest some out of the box thinking. Another challenge is the risk of filter bubbles, where a combination of automated content analysis with behavioral analysis proves

to be very effective but eventually deviates from the selection of useful opinions making the user unaware of content that is different from what he expects in some manner. Integrating opinion with implicit data and behaviour to validate data andprovide analysis beyond the opinion expressed is another common challenge. Asymmetry in available opinion mining software and the need for continuous improvement in the usability and user-friendliness of opinion mining software and other tools is another key challenge in the field of sentiment and opinion mining. Skewness in the dataset that is responsible for impacting recall is another challenge in sentiment mining[study].There are many research challenges arises in this field, on the basis of our research study we analyze following issues:• Major challenge arise in handling ambiguity in NLP as user may use correct semantics or may not use correct syntax.• Some linguistic issue arise in opinion mining as language is not necessarily always English.• Another challenge is the cost of tools which can only be afforded by large organizations and government funded groups.• Another challenge is the domain dependency of words. One feature set may give good performance in one domain and poor in another.• There is an asymmetry in the availability of opinion mining tools.[6]Text used in social media, in particular micro-tweets, presents numerous challenges when compared to formally structured text such as that presented in newspapers and scientific journals. As illustrated by Nabil et.al, the challenges related to the sentiment analysis systems to Twitter blogs arise due to several features of tweets. Tweetscan contain unstructured language, numerous orthographic mistakes, slang words, ironic sentences, contractions, colloquial expressions, abbreviations or idiomatic expressions. Analysing tweets composed

in Arabic is a particularly challenging task due to spelling inconsistencies, the use of connected words and a lack of capitalisation, which would otherwise be used to identify features. In addition, most people write tweets as they speak; for instance, the emotional character of Arabic tweeters and the frequent tendency to repeat letters for exaggeration, examples of which include 'sorrrrrrrry' and 'noooooo'. Moreover, some characters have more than one form, an issue that highlights the need for normalisation, i.e., the unification of Arabic characters[12].

Infusion:

Emotional Intelligence is an entire new horizon for the robot to still understand and conceive, Thinking about current generation expectation from human are fare beyond, can this be achieved from a robot pet or any other similar type machine [23] . Some shows some waved off literature context in the evolution of robotics in Artificial Intelligence. EI is being friendly, affectation, loving, concerning, reacting calmly in tuff situation, feelings, anger control, stress handling, being right at right time and so much .Suggestion is to design an approach which will be capable of simulating all the EI emotions at a time and at right place. Thus, quantitative information shown in this article may perhaps best be regarded as indicative rather than authoritative. Despite such shortcomings, this article should be helpful in providing a base, for individuals in and out planning for future robotic research and development, applications and utilizations. Robotics and AI are playing an incredible vital responsibility in any country's economic growth and be prepared likewise for its impact on the workforcestructure .

Conclusion:

Emotional Intelligence deep understanding is itself quite difficulty in Humans. Making EI work

Ijecs 01 January Tabassum H KhanAddressing Challenges of Opinion Mining inBusinessesPage | 25638for Robots will take miles for us. Certainly many stones have been unturned by researchers. The precision, emotions, affection, felling and decision making will still be a challenge in this domain. Emotional Intelligence Robot shall be a bliss for mankind in near future.

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