

Applications of Sentiment Analysis: A Review

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Abstract— Sentiment Analysis is the analysis and interpretation of emotions [1] (negative, positive, or neutral) in data in the form of text using content analysis techniques. Analysis of sentiment enables companies to recognize customer sentiment about their brands, service or product in online feedback and conversations in this review paper, we focus on all the applications of sentiment analysis in various walks of life. We dwell on the various sectors that may be enhanced using sentiment analysis.

Keywords: Sentiment Analysis, Data Mining, Text Analysis

I. INTRODUCTION

Sentiment Analysis is the method of assessing the positive, negative or neutral meaning of a piece of writing. A sentiment analysis program for text analysis uses machine learning and natural language processing (NLP) techniques to assign scores to sentiments with weights within phrase or sentence to categories, themes, people, or topics.

II. APPLICATIONS OF SENTIMENT ANALYSIS

A. Sentiment Analysis for Brand Management

Sentimental analysis is widely used in reputation management and brand monitoring [2] across various markets. It is important to understand how consumers regard a product or a brand or a service as equally useful to advertising firms, tech companies, fashion markets, media organizations and more. The application of sentiment analysis essentially offers greater versatility and insight in presenting the label and its products. This helps marketers to: track customer experience of the brand; figure out the basic attitude details; detect trends and patterns; keep a close eye on the influencers. All of this helps one to adapt to the state of the art quickly and to make a decent display of the items. Ultimately, analysis of sentiment can be used for: automation of media monitoring process and related alert system. Monitor brand names or reviews on various channels (blogs, social media, review pages, forums, etc.) Categorize the value of specific marker references (i.e., which channel, user type is essential to the brand). The entire operation consists of two phases: overtime.

B. Sentiment Analysis for Analytics of Product

Analysis of sentiment in analyzing the product [3] is the consequence of reputation management. The model monitoring is very close, in principle. But instead of naming the name, it goes for detailed remarks and observations about the product and its success in specific areas like performance improvements, the user interface, etc... This kind of knowledge is really useful in the early stages of a minimally viable product because you need to check the company by fire (i.e. live users) and make it as refined as possible. At this point, the simplest approach to perform analysis of sentiment is to collect and classify suggestions for further development. [4]. Algorithms of sentiment analysis do a necessary job to demonstrate what kind of input comes from which segment of the audience and what

it leads to. Typically, the whole thing is categorized into the following types: analysis of competitor, brand keywords, consumer needs, brand-adjacent keywords, customer experience. This can also be a significant consideration in the effective marketing of the drug. The analysis of sentiment in marketing analysis at the later stages merges with tracking of brand and provides a multidimensional view of the company and its image: how different target audience audiences perceive the brand / name? What components, and in what context, are the points of contention for the product or its presentation?

C. Sentiment Analysis for Customer Analysis

Precise focus segmentation of customers and subsequent value proposition growth are core elements of successful market operations. [5]. On the contrary, to remain competitive and keep your company on demand, you need to keep an eye on the pulse of your customers. Knowing the Voice of the Client is at the very heart of these activities. But one not only catches and understands the speech of the customer. It is scattered around the various platforms and described in a variety of opposing forms. All of this needs to be handled in a nice and simple way. Algorithms for Customer Sentiment Analysis will recognize and analyze the client's voice with even greater precision [6]. Double-edged loop. Market Research [7] -analysis of sentiment is used to analyze target market areas generally. This will help to define and further determine what particular segment requires and needs to be expected from certain products that are desired or used in the segment, and so on. From multiple platforms, the analysis of sentiment is used for the analysis of indirect and direct consumer feedback. You will research the experiences between consumers and your company and figure out what that means for the business.

D. Sentiment Analysis for Market Research, Competitor Analysis

In addition to product understanding and study of market tastes, business research is perhaps the most influential job area for analyzing sentiments. It is important to remember that consumer assessment is not the main market analysis tool. This will also offer an extra company viewpoint and provide some valuable perspectives into how stuff are viewed from the ground level, i.e. customers. After that, the competition and its strategic strategies can be studied using a similar approach. Here's what you will do with feeling analysis: collecting knowledge through various sources, content generated by users, (like feedback, comment) news articles, contents of influencers, contents of the competition, extracting several insights on based on various criterias, common notions, perception of the different aspects, providing findings in real-time, filling the holes in business intelligence; Analysing the opinions can draw on the desires and expectations of customers, and help in adjusting the value proposition to satisfy all the appropriate points. Example: The way in which Apple sells its products and positions them on the market is a perfect example of an

analysis of sentiment platform to promote market research and the analysis of rivals. Consider how much the company's strength aspects fit general complaints and disappointment of the different divisions of the consumer.

E. Sentiment Analysis for Workforce Analytics/Employee Engagement Monitoring

Many companies go beyond using mood analysis to assess market trends or consumer interaction and extend it directly to systems associated and HR. These businesses evaluate workplace satisfaction, recognize variables that discourage team members and eventually decrease the success of the business. And the SA software experts simplify the analysis of organizational responses, allowing them to fix issues and complaints quicker. Managers of human resources should track and control the general sound of comments, departmental community outcomes and keywords, and check whether or not the emotions in staff have shifted over time. Analyzing the sentiment takes employee disposition analysis with real-time reporting tools to the next level. Team members can, for example, fill out input forms with a request to evaluate their working environment on a monthly basis. We should also look at their social media posts to find a possible connection between their working lives and their state of mind.

III. HOW TO CONDUCT SENTIMENT ANALYSIS

A. Data Collection and Preparation

First, one requires to put all the pertinent company comparisons together in a single text. Considering collection criterias—if such sources are bound by time limitations, make use of a single language only, and can come from a particular location, etc. The details must be then ready for review: it must be read, all non-text data removed, grammatical typos or mistakes corrected, all unnecessary items excluded, such as information about the reviewers, etc. We will discuss it until we have the data prepared, and extract the feeling from the data. Given that tens or even hundreds of thousands of references can need analysis, automating this time-consuming work with software is the best practice.

B. Using off-the-Shelf Tools and APIs

Various consumer experience softwares collect feedback from a wide range of sources, alerts, analyzes text, and visualizes results in real-time. In their set of features, text analysis platforms (e.g. Microsoft Text Analytics API, IBM Watson Natural Language Understanding, Discover Text, and Google Cloud Natural Language) have sentiment analysis. InMoment has 5 products which together provide a forum for customer experience optimisation. One of these, Voice of the Consumer, allows companies to capture and interpret feedback by customers in email, voice, and video formats. There is a large number of sources of evidence, including polls, social media, customer relationship management etc. Developers give consumers live alerts, customized dashboard and different options for monitoring. Clarabridge is Customer Service (CEM) management tool. It collects and analyzes texts from conversations, websites for polls, blogs, forums and pages for analysis. Consumers

can also benefit from emails, employee and supervisor reports, call logs and IVR surveys: these can be translated to text by the program. We have social media monitoring, too. The program takes business and source into account, and knows the meaning and context of each post. The findings of the sensitivity analysis are shown on a scale of 11 points. Users will change sentiment scores if necessary, to be more particular to business. DiscoverText is a collaborative text analysis system, based on the cloud, for governments, researchers and entrepreneurs. Users of Capterra note the solution is great for importing/retrieving, filtering, and analyzing data from different sources, including Twitter, SurveyMonkey, emails, and spreadsheets. Analysis of sentiment is one of the various methods for the analysis of text used by DiscoverText. IBM Watson Natural Language Comprehension is a set of advanced systems for text analysis. Users can retrieve metadata such as definitions. Persons, phrases, types, and relationships, by processing text with this tool. It also allows the definition of the sector and the area to which the texts belong, the semantic roles of the parts of the sentence, the emotion of the writer and the change of feeling within the document. At the moment IBM Watson Natural Language Understanding supports analysis in 13 languages. Developer tools are provided so that they can use the IBM Watson services to build their solutions (e.g. chatbots). Microsoft Text Analytics API users can extract key phrases, entities (e.g., people, businesses, or locations), feelings, and define which of the 120 supported languages their text is written in. The Sentiment Analysis API returns data using the 0 (negative) to 1 (positive) sentiment ranking. The app is able to detect stimuli in English, Spanish, German and French texts as of today. Developers specify that the analysis should be carried out on the document as a whole and advise on the use of documents consisting of one or two sentences in order to achieve greater precision. So the Microsoft Text Analytics API analyzes The Nun Movie review. With 100 percent confidence, the English language has been detected and the feeling is measured in percentages. The empirical findings are also provided in JSON format. The Natural Language API in Google Cloud will extract feelings from emails, text documents, news articles, social media, and blog postings. Combined with other cloud services, this includes extracting details from scanned documents, audio files, and documents in various languages.

IV. CONCLUSION

Sentiment analysis can be used in all sectors and spheres of life. We have seen that the usage in the various sectors enhances efficiency. We have also described the various approaches and algorithms used to perform sentiment analysis with a detailed methodology. Sentiment analysis will have tremendous future scope as it has wide ranging applications spanning all sectors. It will make businesses, markets, elections and prices easier to predict and understand. Sentiment analysis is a powerful tool with far reaching implications.

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