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Online Rating of Electronic Gadgets

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ABSTRACT
The product reviews are posted online in the hundreds and even in the thousands for some popular products. Handling such a large volume of continuously generated online content is a challenging task for buyers, sellers and even researchers.
The purpose of this study is to rank the overwhelming number of reviews using their predicted helpfulness score. The helpfulness score is predicted using features extracted from review text data, product description data and customer question-answer data of a product using random forest classifier and gradient boosting regressor. The system is made to classify the reviews into low or high quality by random-forest classifier.
The helpfulness score of the high quality reviews is only predicted using gradient boosting regressor. The helpfulness score of the low quality reviews is not calculated because they are never going to be in the top k reviews. They are just added at the end of the review list to the review listing website.
The proposed system provides fair review placement on review listing pages and making all high quality reviews visible to customers on the top. The experimental results on data from two popular Indian e-commerce websites validate our claim, as 3-4 new high-quality reviews are placed in the top ten reviews along with 5-6 old reviews based on review helpfulness. Our findings indicate that inclusion of features from product description data and customer question-answer data improves the prediction accuracy of the helpfulness score.
With the popularity and growing availability of opinion rich sources such as reviews from e-commerce sites, choosing the right product from huge product brands have difficult for the user. In order to enhance the sales and customer satisfaction, most of the sites provide opportunity for the user to write review aspects about the product. These reviews are in textformatandincreasesdaybyday. Itisdifficultfortheuserandmanufacturer to understand likes and dislikes of a customeraboutheproduct.Inthissituationsentimentanalysishelpsthepeopletoanalyzethereviewsandcometoco nclusionwhetheritis good or bad. Sentiment Analysis which also known as opinionminingisoneof thesubsectioninNaturalLanguageprocessinginwhichitlearnsaboutSentimentorsubjectivityfromreviews.The main purpose of the project is to develop a system to extract the reviews from e-commerce site, extract aspect from their views and categorize reviews into positive and negative.

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I. INTRODUCTION

For the past few years, there has been increasing trend for people to buy products online through e-commerce sites.

But with the user-friendly platform, there is loop hole which does not guarantee satisfaction of the customer.

The customers have the habit of reading the reviews given by other customers in order to choose the right product. But Due to high number of reviews with mixture of good and bad reviews, it is confusing and time-consuming to determine the quality of the product.

Predictive analysis is the advanced analysis technique that is used to predict unspecific future events. It uses techniques like machine learning, statistical algorithm, artificial intelligence, and data mining in order to analyze present-day data so that the predictions on future outcome are based on historical data. The goal of the predictive analysis is to do an in-depth analysis and to go further to know what would happen in order to provide the best assessment of what may happen in the future .

Predictive analysis has become a greater tool which is used to establish customer responses and purchases and promote multiple opportunities. This model helps to attract business, retain it, and increase their most valuable customers. A number of the companies use this model to predict and manage their resources. These analytics help organizations to function in a more efficient manner . It is very difficult to read through each individual review of different items and make a good decision for an individual customer. For instance Flipkart E-Retailing Company recently launched Moto G, 3rd Generation mobile product has almost 15660 ratings and 5601 feedbacks . So it will be a tough task to read through these reviews before making decisions and also it is difficult to identify the important features of a product which cannot be identified by looking at the reviews. For example, most of the user says the iPhone's signal connection was not good, but the material and the design of the iPhone is very good compared to other phones. The product consists of numerous features, but some features are more important than others.

II. PROBLEM STATEMENT

Technology and electronic brands compete with the big players – like Apple and Dell. Beyond the challenging competitors, there are ever-changing product innovations in the Electronic industry and the ecommerce industry itself is constantly evolving. Thus, choosing the right product is the most tedious job for any customer and our aim is to provide a framework that gives a quick insight about the product on the bases of their ratings generated by processing customer reviews collected from different sites.

But there are several challenges to overcome for at most accuracy like

- Collecting the data from different e-commerce sites
- Processing them
- Classifying them as positive and negative reviews for each feature of the product
- Finally generating a rating list of the products so that it provides a accurate option as per the user demand.

III. SCOPE

We aim to develop a Website with a Rating system based on customer reviews, that can be used instead of crawling product details on multiple websites to Select the product which suits best to user requirement.

Goal

- Model that can be used when crawling product listings on multiple websites, to predict whether to rate that product "high" or "low" based on past ratings.
- Increase coverage of listings that can be included in our aggregator website, by including those items that do not have ratings.

IV. OBJECTIVE

The main objective of our project is to provide a full insight about a particular gadget desired by a customer based on the user reviews helping them to choose the right product.

Specifically, the project tends to achieve the following:

I. To assess all the reviews provided by customers about different products on different E-Commerce websites.

II. To process all these reviews and classify them as positive review and negative review for each product available.

III. To rank the product based on this classification thus, providing the most suitable option as per the user requirement.

V. PROPOSED SYSTEM

5.1 System Architecture

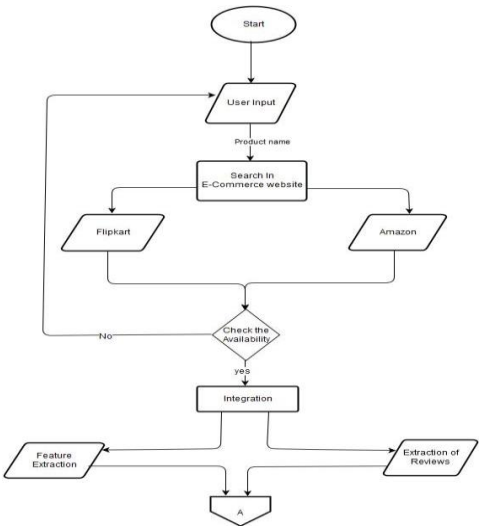

Figure1:System design process-1

After extracting customer reviews and specifications of the product, text content of the review was scraped outandthenitisfilteredtoremoveunwantedsymbols,meaninglesswords,smiley's,stopwords,etc.Naturallanguage processing of the text is performed to identify crucial terms corresponding to the technical specification of the product. It is the ability of a computer program to understand human language. Each review can have both good and bad feedbacks. Also, the polarity of each features to be identified in the review to calculate the rating. In order to meet both these targets, the review of different sentences has to be divided to form sentence segmentation and assign tag to every word in the sentences. It can be done by using the PO Stagger which is provided by open NLP tool.

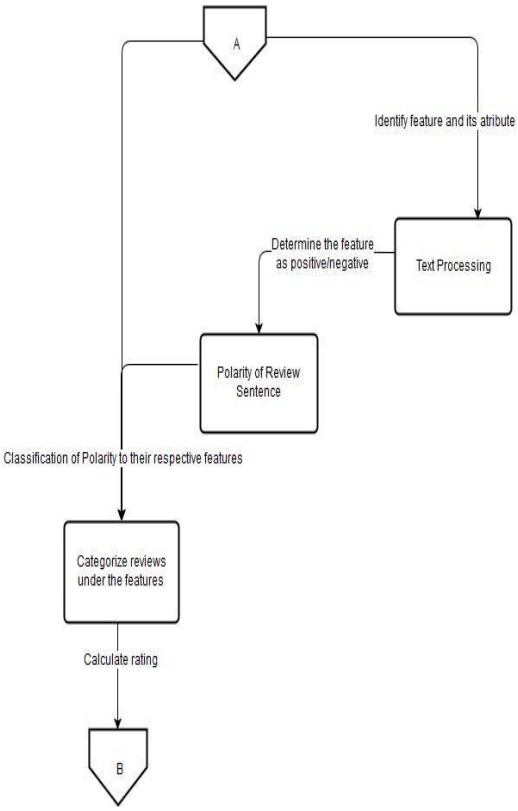

Figure 2: System design process-2

When users write review/feedback of items, many of them concentrateon aparticularfeatureof theproduct.For instance, the sentence "I like the camera of LG G3 butte battery got damaged several times" reveals positive comment on the "camera" and negative opinion about the"battery".Herecameraandthebatteryarethespecifications of this phone. Likewise, each specificationisassignedascorebasedonpositive/negative feedback.

The alchemy API is used for sentiment analysis inorder to determine the polarity of individual features inthe review. It uses machine learning algorithms to extractsemantic meta-data from text content. So it can be used toidentify a particular feature mentioned in the review. Andperform a content analysis with the words around thesefeaturestodeterminethepolarity.AftertheNLPprocessing thewords are definedwith specific tags.Sothisoutput can be givento alchemy API.

Itcomparestheadjectivesobtainedineachsentenceto the seed list of positive and negative words which isdefinedearlierandreturnsthepolarityofthesentence.The seed list consists of words like good, easy, super etc.aspositivewordsandwordslikeworst,badetc.asnegativewords.

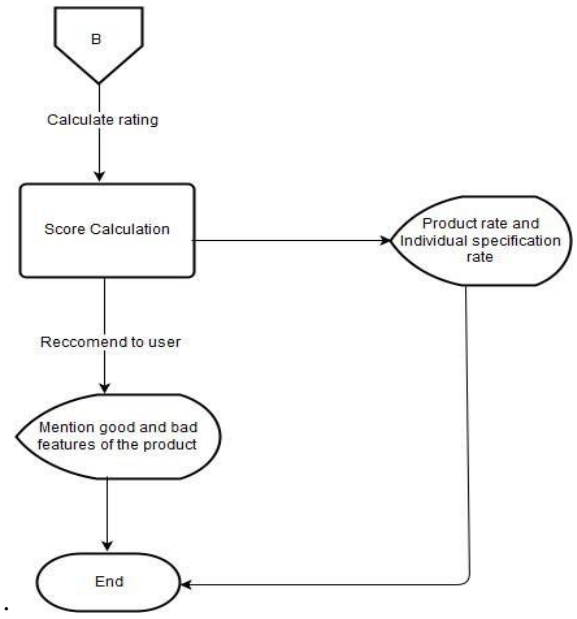

Figure2:System design process-3

5.2 SYSTEM METHODOLOGY

- Collection of customer reviews from different E-Commerce Websites
- Processing and Analyzing Reviews
- Sentiment analysis from reviews
- Classification of Product polarity based on reviews to generate a Rating list

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VI. CONCLUSION

Sentiment analysis is an important aspect in almost every business and social domain in present time. Most of our decisions are biased by other peoples' opinions. Our study will certainly reduce the uncertainty of customers making decisions of buying online gadgets. Our study provides useful information for both customers and merchants. In our study, we tried to give an overview of customer satisfactions on world's top five smart phone brands. An inter-brand comparison on consumer satisfaction is shown considering the price issue. Additionally, we have measured the contributions of different features or attributes of online gadgets on consumer satisfaction that will guide the product developing companies to make market oriented plans.

Future Scope

The system performance can be further improved by using certain extra features such as product sales rate, etc. Review listings may also be improved by giving more weight to recent high-quality reviews over older reviews.

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