MJRET

Open Access

Multidisciplinary Journal of Research in Engineering and Technology

Journal homepage: www.mjret.in

ISSN:2348 – 6953

NEW OPINION MINING TECHNIQUE FOR ONLINE PRODUCT REVIEWS AND FEATURES

Miss Lovenika Kushwaha, Prof. Sunil Damodar Rathod

Computer Department
Dr. D. Y. Patil School of Engineering, (Affiliated to Savitribai Phule Pune University)
Pune, India

Abstract: *Web sites for online shopping is becoming more and more popular nowadays. We never neglect this thing that everyone is fond of shopping and there are lots of online sites those provide products with benefits. I mean to say that right product with low prices, who want to leave chance like this. That's why the importance of E-commerce sites gaining popularity rapidly all over the world. To make it easier for the customers those being confused among the products online merchants add extra functionality to their site like comment about the product after purchase, feedbacks, rating through stars or give their opinion about the product. Through these add-ons online merchants enhance the customer shopping experience. Because most of the people rely on the opinions or sentiments of the other person or we can say that they first observe and then take decisions. For example, if I am new to online shopping first I observe the product with all aspects and then take a decision. Like I want to buy a mobile from the site so, firstly I go through its specification and then read all reviews about it which is written by another user of the product. By reviews I can easily understand the functioning of the product.Through this availability of reviews of product people visit these kinds of sites not just to shop products, but also to know the opinion and sentiments of the other buyers about online products. Customer reviews about product helps other customer to make the right decision of product to buy and also helps sellers to understand the purchasing behavior of customers. Due to vastness of these online reviews which are in the unstructured form creates confusion and wrong interpretation about the product. We mine unstructured data to structured data. Opinion mining is very meaningful miner for this kind of data.*

In this paper opinion mining is used to process the online product reviews, feature and recommend the best product among others. In this paper I have created a prototype web based system for recommending and comparing products which sold online on websites. Natural Language Processing (NLP) is used to automatically read reviews and used Naive Bayes classification to determine the polarity of reviews (obtain a polarity score from negative review and positive review). We have also extracted the reviews of product features

and the polarity of those features. We graphically present to the customer, the better of two products based on various criteria, including the star ratings, date of review, the helpfulness score of the review and the polarity of reviews.

In this paper a novel technique is proposed for opinion mining and feature extraction of product reviews. The objective is to encourage the customers and assist them in choosing the right product. As future work we propose to offer a summary of reviews for more than 2 products and also automatically rank products based on the features that the user is interested in. It was based on natural language processing and opinion mining. Results indicate that the proposed methods are highly effective and efficient in performing their tasks. We will also aim at improving the accuracy of our opinion polarity detection and feature extraction.

***Keywords**: Opinion Mining, Sentiment analysis, Natural Language Processing (NLP), Sentiment Classification.*

1. INTRODUCTION

As we all know very well that E-Commerce sites are gaining popularity across the world. Customers are migrating towards online purchases more instead of going to the markets because of its easiness, convenience, reliability, and rapidness. Moreover, we can say that it's an era of virtual market in which we enter, we roam, and we find our needy things and purchase them without going anywhere. And the most important thing that we might didn't noticed of these online shopping sites, due to this virtual/online markets, buyers first compares the price and features of the product then buys either from the shop or the online shopping site. So, by this it's clear that online purchasing of different products is in trend. According to sensors India is one of the most growing E-commerce and E-retailing markets, which are expected to grow around USD 9 billion by 2016 [1]. Due to this rapid growth in the industries, companies using different algorithms which are sophisticated to understand the behavior of buying the products online by the users and also enrich their experience on online shopping. The competition is too high in this field nowadays, so, companies offer more comfortable deals to customers. One of the key parameters for the companies is its customer reviews about products and product ration on E-commerce site. But this factor is not only helped to sellers, but also plays an important role in consumers deciding whether to purchase a product or not. Let's take an example, if anybody is not having the knowledge about a particular product which he/she is going to purchase it then, he/she takes opinion of others about that product who is the user of this product. Similarly, in online shopping, I want to buy a Samsung galaxy from the amazon site, but I don't know how its features work because I'm purchasing a mobile for the first time, so it's natural that I ask about this mobile to the person who already using it. But it's not possible to find that person and clear my doubts, to make it easy every site is having the review column about the products. So, I go through the reviews about Samsung galaxy with specifications and make my decision. So, here we get that how much these reviews about the products are important and play a very vital role in E-commerce sites. By studying the reviews of customer about products helps both shoppers as well as E-commerce companies too. With the availability of robust machine learning algorithms and tools, individuals and companies may create a platform that can help us to understand these following things:-

- Product comparison which based on customer review and feature on the product.
- Comparison among different E-commerce site.
- Recommending online products to customers.
- Opinion about products helps to make decisions.
- And summary of reviews about features of product.

As we know that how these reviews are important, but there is a problem which may be faced by an individual. It may be possible that a product is having 10 reviews, but it is also possible that a product having 3900 reviews with nearly 4800 ratings [1]. To overcome this problem E-commerce sites provide as many details about the products as possible on their web page. To make it easier for customers to make decisions E-commerce site provides big information in the form of these following aspects:-

- Polarity of reviews (positive and negative tone of reviews about products)
- Star rating of products (like we observe movies reviews)
- Product specifications and price
- Age of reviews
- Overall score of a product.

By giving these various aspects of reviews, mining the reviews and offering the decision making process to the customers are invaluable. Mining of customer reviews about products includes extraction of features from reviews [1], review summarization [3], automatic extraction of review [2], quantitative analysis, processing reviews [3]; calculate overall scores, qualitatively analyzing the review through opinion mining and sentiment analysis [4]. So many researchers are mining these reviews with different tools and techniques, but only some of them achieve success with acceptability. We can also understand our system procedure in fig.1 below in further section.

In this paper a prototype of the website is created which recommend online products to the customer after comparing among other products and features. Natural Language Processing (NLP) technique is used to obtain the polarity of reviews. Feature-based summarization or review processing also done by opinion mining and sentiment analysis. To analyze the score for a specific product by including:-

- Star ratings
- Number of poles of reviews
- Score of reviews given by customers
- Review's age

These aspects used to compare two or more products based on reviews or specification and encourage customers to buy products from this E-commerce site.

2. LITERATURE SURVEY

E-commerce site are growing rapidly, similarly opinion mining is also grabbing the rapidness as well. As to analyze the reviews of products opinion mining and sentiment analysis is the key for better refinement. Here are some tools and techniques which process the review

summarization for right recommendation of online products because fakes is also a problem with online sites.

- **Opinion mining**

  To mine the view (opinion) of other persons is not an easy task to do or if it's about to mine 3000 of views then yes, it is not an easy one to do in a less time. To mine thousands of reviews which include many things like positive review, negative review, some features are good, but some are not up to mark, so it's not easy to combine them and make a summary of it which helps to make a decision about a product just reading the reviews. I want to say that the outcome of mining reviews must be useful for customers which makes them to buy. Opinion mining and sentiment analysis [4] [5] is the best way to solve our minor problems.

- **Natural Language Processing (NLP)**

  NLP is used to obtain the polarity of reviews. It's not necessary that always customer write good reviews about a product if he/she not like the product then they put bad reviews about the product. So, it's important to mine these polarity reviews to find the best features about a product which helps to score product [1].

- **Semantic classification**

  Before starting with sentiment classification lets understand first about sentiment. Sentiment: in general words "feeling", "emotions", "belief" etc. so if a person giving its opinion about something it means his/her belief about it. Sentiment classification classifies the phrases from the review whether it is in positive or in a negative sentiment manner. These sentiment messages are classified by looking the specific phrases that indicate the belief towards a product or anything like a review about a movie (e.g. "Great acts", "wonderful performance", "money worth it movie") [6].

- **Review summarization**

  It is the part of the review process in which every review is processed through algorithm or tools, then generate a summary of a review, which makes customer to understand the product feature within a minute without doing a hard work [3].

- **Extraction of features from review**

  At the time of writing reviews about a particular product most of the customer focuses on the features of the product like "cannon camera has good picture quality with its 28 megapixel lens gives an HD effect in picture", "battery backup is not good", "screen resolution is good but its touch is slow". Tools are used to obtain features from reviews and then generate a summary of it and score the products [1].

3. PROCESS FLOW DIAGRAM

In fig.1 a process flow diagram shows the flow of the mining process to extract reviews of product [2] and suggest the best product to the customers from anywhere at the moment.

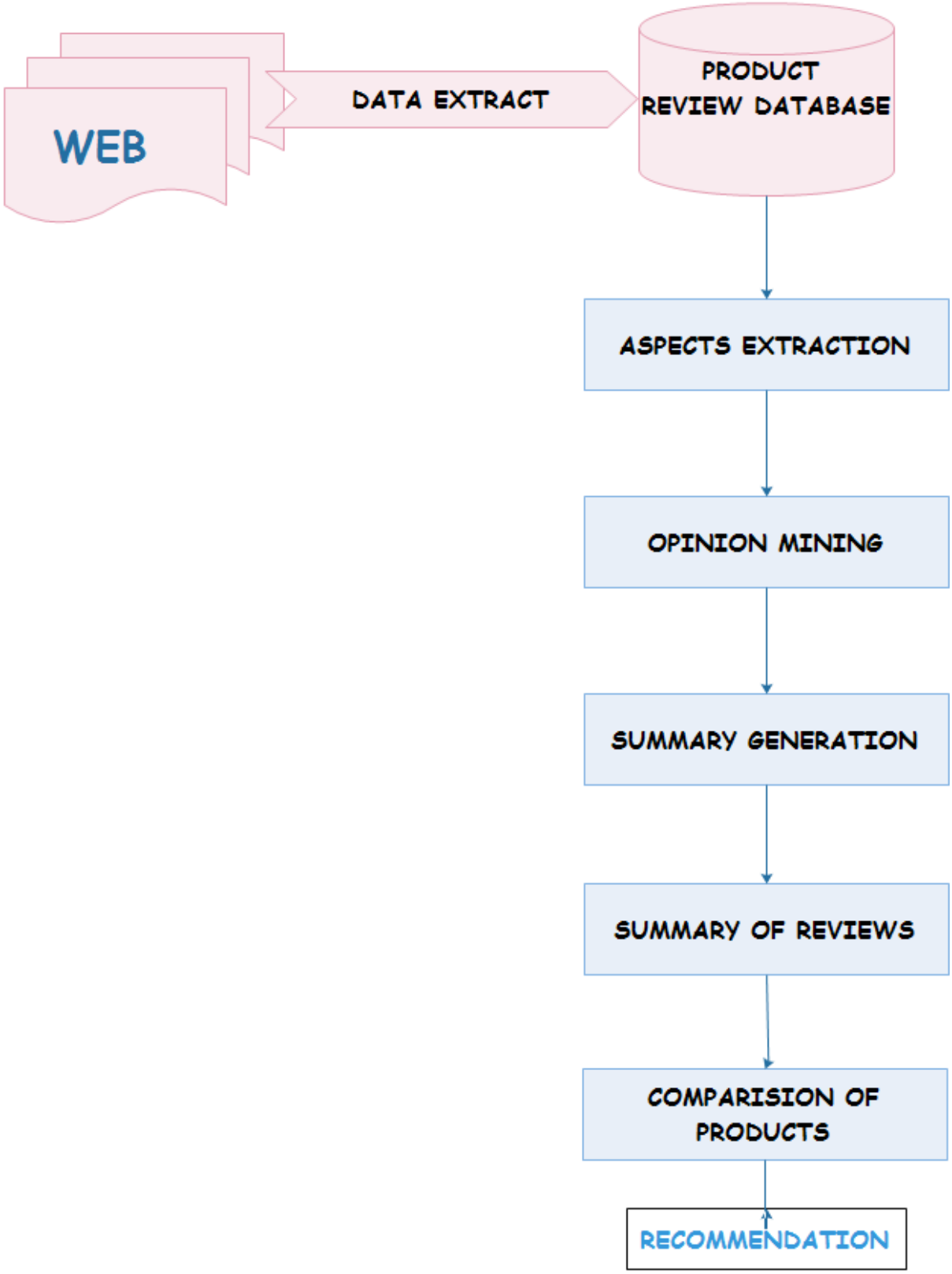

Fig.1 Process Flow Diagram

4. TAXONOMY CHART

In fig.2 taxonomy chart displays the comparison between different features and techniques, these are going to use in recommending online products to customers. These features and techniques are varied on different systems and papers. The technique which is majorly used in performing opinion mining is Natural Language Processing (NLP) which is clearly shows in taxonomy chart as well. In existing paper [1] only some of the features and techniques are used but in proposed paper possibly all features and techniques are used. And this taxonomy chart also describes why I select this title and paper for my research.

Taxonomy Chart

Fetures/Techniques / Other survey papers	Opinion miner	NLP	Review Summariza-tion	Naive bayes classification	Opinion Summarization	Opinion mining/Sentiment Analysis	Parts of Speech tagging	Feature-based Summarization	Sentiment Classificati-on
Recommender System on Customer Reviews using Sentiment Classification	✗	✓	✗	✗	✗	✓	✗	✗	✓
Feature Based Summarization of Customers' Reviews	✗	✓	✓	✗	✓	✓	✓	✓	✓
Mining and Summarizing Customer Reviews	✗	✓	✓	✗	✓	✓	✓	✓	✓
Challenges in developing opinion mining tools for social media	✗	✓	✗	✗	✗	✓	✓	✗	✓
Implicit Aspect Identification Techniques for Mining Opinions	✗	✗	✗	✗	✗	✓	✗	✓	✓
Existing paper	✓	✓	✓	✓	✗	✓	✓	✓	✗
Proposed paper	✓	✓	✓	✓	✓	✓	✓	✓	✓

Fig.2 Taxonomy Chart

5. CONCLUSION & FUTURE SCOPE

In this paper only a brief description of techniques is presented. To mine the opinions of the people opinion mining and sentiment analysis is the best approach. The purpose of this mining review is to benefit the customers and encourage them to buy products online without facing any problem. In this comparison of two products is done as an extension it will be more than two with specifications and also with the ranking based system of products.

ACKNOWLEGEMENT

I would like to thank my guide Mr. Sunil D Rathod for his inspirational thoughts and guidance. Under his guidance I am able to write my review paper through which I complete my first step to stage 1. I also thanked to a journal site because they provide us a platform to enhance our skills.

REFERENCES

[1] *Venkata Rajeev P, Smrithi Rekha V "Recommending Products to Customers using Opinion Mining of Online Product Reviews and Features" 2015 International Conference on Circuit, Power and Computing Technologies [ICCPCT] 978-1-4799-7075-9/15/$31.00 ©2015 IEEE.*

[2] *Blessy Selvam, S.Abirami " A survey on opinion mining framework" International Journal of Advanced Research in Computer and Communication Engineering Vol. 2, Issue 9, September 2013.*

[3] *Zhan, Jiaming, Han Tong Loh, and Ying Liu. "Gather Customer Concerns From Online Product Reviews–A Text Summarization Approach." Expert Systems with Applications 36.2 (2009): 2107-2115.*

[4] *Pang, Bo, and Lillian Lee. "Opinion Mining And Sentiment Analysis." Foundations and trends in information retrieval 2.1-2(2008): 1-135.*

[5] *Liu, Bing, and Lei Zhang. "A Survey of Opinion Mining And Sentiment Analysis." Mining Text Data. Springer US, 2012. 415-463.*

[6] *Hu, Minqing, and Bing Liu. "Mining And Summarizing Customer Reviews." Proceedings of the tenth ACM SIGKDD international conference on Knowledge discovery and data mining. ACM, 2004.*