Comment Based Grading and Rating System in E-Commerce

Sameerkhan Pathan[1], Shahrukh Khan[2], Mohammad Arshad[3],Amir Ahmad[4] Anand Bali[5]

[1] Student, Computer Engineering, MHSSCOE, Maharashtra, India
[2]Student, Computer Engineering, MHSSCOE, Maharashtra, India
[3]Student, Computer Engineering, MHSSCOE, Maharashtra, India
[4] Student, Computer Engineering, MHSSCOE, Maharashtra,India
[5] Assistance Professor, Computer Engineering, MHSSCOE, Maharashtra, India

Abstract: In this paper we are presenting comment based Grading and Rating algorithms are best known for their use on e-commerce Web sites,[1] where they use input about a customer's interests to generate a list of recommended items. It is a technique based on the integration of comment mining, sentimental analysis, and the records of customer historical behaviours. The overall process of Comment-Grading can be separated into 5 key steps: 1.Extracting overall comment set of a group category of commodities; 2.Extracting modifier set and negative words set; 3.Acquiring specific comment set; 4.Acquiring specific positive weight set; 5.Acquiring overall item grade set. After these 5 steps, we are able to grade and rank all the items with an acquired grading equation. Then the needed as well as top ranking items can be recommended. Moreover, we utilize the real information of mobiles and their reviews from the famous e-commerce website Amazon.in as our experimental data and discuss some important results which reveal that the Comment-Grading really works well. At last, we also briefly introduce the prototype recommendation system we developed on the basis of Comment-Grading.

Keywords:Comment-Grading;Commentmining;SentimentalAnalysis; Historical behaviours; Recommendation   Query Optimization.

1. INTRODUCTION

In the e-commerce, there are two major approaches for customers to meet items face to-face. One is called "Customer-active" which is achieved by customers themselves through some search engines. The other way is accomplished by merchants with a kind of recommendation system to recommend commodities [2]. We call it "Items-active". For "Customer-active", what a customer enters in search engines reveals what he/she wants. Existing search engines for commodities utilizes the similar techniques as those for normal web pages which is based on keywords matching, meaning that items saved in the database should be tagged with enough key words. Most of such key words, however, are manually appended by merchants. This mechanism is very low-efficient. It is easy to neglect some vital features as well. If there is a system which can automatically mine out the key features, (i.e. the key words), of a group category of items, then it is possible to complete the marking process with less manual operation so as to improve comprehensive efficiency. This should be our first mission, since the mining of features not only benefits the existing "Customer-active" searching approaches, but also acts as the fundamental of our proposed recommendation algorithm. As for "Item-active", we have more words to say because it executes the function of a recommendation system better. Since the birth of e-commerce, there has arose many recommendation algorithms. A latest and popular method is called Collaborative Filtering It has two typical types, one is user-based and the other is item-based. The main idea of user-based is that many users may have similar purchasing behaviours so that they are put into a same group. Once a member has bought a certain item, this item will be recommended to other members in the same group. However, the item-based approach connects similar commodities rather than users together. If an item is purchased then a similar one may be recommended. The integration of such two approaches achieves relatively good performance, resulting in the widely use of Collaborative Filtering algorithm [2] in contemporary large e-commerce websites However, such algorithm fails to consider diverse assessments and reviews after each item. Therefore sometimes many low rating items are recommended, merely because they are similar to what user has purchased [3]. Hence, a better system should understand how to rank recommended commodities and provide both related and highly appreciated items. Apparently, it involves evaluation, which can only be done by customers in common sense. Therefore, our task is to analyse on the customer reviews then extract their sentimental orientation to accomplish the final grading and ranking process [6]. Besides, we also believe the current general model of recommendation will gradually become more personalized. That's why we further proposed an improved algorithm which can make personal recommendation towards a specific customer based on his/her historical behaviours [6]. Thus, a more complete, reliable and personalized recommendation algorithm has been proposed in this paper on the basis of practical business demands and existing systems' drawbacks. We call it Comment Based-Grading algorithm. Meanwhile, we also developed its corresponding prototype system. Our Chinese experimental dates of multi-brand mobiles and their reviews come from Amazon.cn [5].

2. PROPOSED SYSTEM

2.1 Overview

This project deals with developing an ecommerce website for Online Electronics. It provides the user with a catalog of different products available for purchase Recommendation is done according to rank i.e. top ranking items are recommended to customer. This grades/rates the products according to the reviews analysis. In order to facilitate online purchase a shopping cart is provided to the user. It is a technique based on the integration of feature mining, sentimental analysis, and the records of customer historical behaviours. Bezier Algorithm and Frequency Count Algorithm are used in this project. Technologies like HTML and PHP are used for developing front end and MySQL is used for back end.
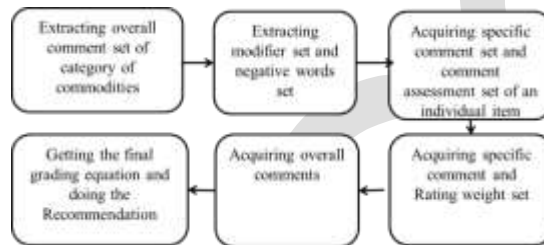
2.2 Methodology

Fig.3.1 Block diagram Comment Based system for E-Commerce

We work within our own eight-stage e-commerce development methodology.

Stage 1 - E-commerce project initiation meeting - to broadly define the scope of the   requirements, identify the key players and subject-matter experts, and specify the deployment technologies.

Stage 2 - Subject-matter expert workshop - to define the precise content of the course, as outlined within the scope-definition document. The output from this meeting is an e-commerce program blueprint.

Stage 3 - E-commerce design meeting.

Stage 4 - Lesson prototype –we will create e-   commerce design.

Stage 5 - We will develop e-commerce web application.

Stage 6 - We will implement comment based-grading system.

Stage 7 - We will do alpha and beta testing of project.

Stage 8 - Launch - We deploy the final version of the e-commerce course and assist in the launch process.

2.3Algorithm

Algorithm for system

1   Collect the reviews of the customer.
2   Split the reviews in the independent word.
3   Extract the feature set using Bezier Algorithm and Word Frequency Count Algorithm.
4   Create seeds which contain positive and negative modifiers.
5   Extract modifiers X using sentimental analysis.
6   If modifier X is seed then go to step 8
7   If modifier X is not seed Find synonyms of X in the word Net.
8   Check orientation of X i.e. positive or negative
9   If X is positive modifier Define X as a MOD and go to step 11
10   If X is negative modifier Define X as NEG
11   Add X to seed
12   Create individual Feature set F by feature set N

By using sentimental analysis we make assessment set

If assessment set is positive then Make it as a positive feature set

 go to step 16

If assessment set is negative then Make it as a negative feature set

Calculate value of E(Assessment set),Feature Weight Set W, overall feature weight set $C_{ni}=1/T_{ni}$,Item weight set $G_i=1/K_i$

Calculate grade.

Result is used for feature grading

13   Split the reviews in the independent word.
14   Extract the feature set using Bezier Algorithm and Word Frequency Count Algorithm.
15   Create seeds which contain positive and negative modifiers.
16   Extract modifiers X using sentimental analysis.
17   If modifier X is seed then go to step 8
18   If modifier X is not seed Find synonyms of X in the word Net.
19   Check orientation of X i.e. positive or negative
20   If X is positive modifier Define X as a MOD and go to step 11
21   If X is negative modifier Define X as NEG
22   Add X to seed
23   Create individual Feature set F by feature set N
24   By using sentimental analysis we make assessment set
If assessment set is positive then Make it as a positive feature set
 go to step 16
If assessment set is negative then Make it as a negative feature set
Calculate value of E(Assessment set),Feature Weight Set W, overall feature weight set Cni=1/Tni,Item weight set Gi=1/Ki
Calculate grade.
Result is used for feature grading recommendation of the product.

Algorithm for user

1   Home page
2   Search product by category or direct search
3   The list of recommended product will get by the proposed system.
4   If user want to search again then go to step 2
5   If search is finish then add a product to cart to buy product
6   If customer is registered already then go to step 8
7   If customer is not registered customer then Register first
8   Login into website
9   If customer want to review the previous product then go to step 19
10   If want to buy a product then go to step 11
11   Reconfirmed the product recommendation of the product.
12   If want to buy another product then go to step 2
13   If don't want to buy another product then go to step 14
14   Confirm product
15   Payment successful
16   If want to give review then go to step 17
17   Give reviews
18   If don't want to give review then go to step
19   Logout from website and go to step 1

3. Aims and objectives

This system is basically aimed to provide customer the more complete, reliable, and personalized recommendation algorithm in on the basis of practical business demands and existing system's drawbacks. We call it Feature-Grading algorithm.

The objective of this project is to develop a general purpose e-commerce store where recommendation of product (such as books, CDs, computers, mobile phones, electronic items, and home appliances) is done to the customer and product can be bought from the comfort of home through the Internet.

Additionally we provide SQL Injection And Query Optimization

4. Scope of the Project

1.   To provide anytime anyplace service for the customer.
2.   To provide a right product to the customer.
3.   To do a recommendation of the product according the rank with the help of user reviews.

4. To increase the profit.
5. To provide a easy and perfect way of shopping to the customer.

5. CONCLUSION AND FUTURE SCOPE

This project has many applications in forthcoming years. It will work more efficiently when the processing speed of memory will increase further. It possibly may do the set of tasks within fraction of second, with powerful servers. Also it will be more useful for constructing user friendly interface that will lead to attract online buyers towards electronic shopping.

This web application can simplify the user's life by making it easy selection of product on the basis of review. So it minifies the buyers efforts and time in this fast growing life where time is as valuable as money. Also it makes more secure while online transaction since this project has introduced new and improved security tricks.

Our future efforts will be spent on the improvements of sentimental analysis of reviews. We plan to expand the handle range from simple sentence to compound sentence, including transitional sentence, comparative sentence, and imperative sentence and so on.

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