

SURVEY PAPER ON RECOMMENDATION SYSTEM DEVELOPMENT FOR FOOTWEAR E-COMMERCE BASED ON SELLS AND QUANTITIES

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ABSTRACT: Recommendation system give a advice about the products, information or services that the user might be interested in. they are intelligent applications to assist the user in a decision making process where they want to choose one item amongst a potentially set of alternative product or services. And they probably among the most prominent application having a substantial impact on the performance of e-commerce sites and the sectors.

In this paper we proposed a new method of recommending Footwear products by Visitor's behaviour like clicks, ratings, sells, quantities etc. based rational technique that uses Brands, Categories, Discount, Location, Occasion etc. of each visited product for tracking user's dynamic behaviour, uses 'popularity' measures for more accurate recommendation list of items. The results of comparison between proposed system and traditional recommendation system prove that proposed system provide good quality accuracy and diminishes the limitations of traditional system.

Keywords: E-commerce, Recommendation System, Footwear , Sells And Quantities, Web Mining, filtering methods

I INTRODUCTION

Nowadays E-commerce organizations using best recommendation system to attract the customers to their website. The recommendation system makes a great use of concepts of data mining and their web mining, to extract the important information from databases that include product details data and user's historical data, as well as, from the data obtained by the user's activity behaviour on their website. User's behaviour can be in terms of his purchase data, his click event over particular URLs, and his preferences. Taken all this into consideration, a list of products is generated, with the maximum probability that the user will purchase the product from the list. The list can be knows as recommendation list. In this paper, we explain the main concepts related to "recommendation system development for footwear retail e-commerce", and also explain a new technique, Behaviour and purchase Based Rational Technique, which is enhancement of traditional recommendation

techniques, which can generate a dynamic recommendation list, and gives better results over traditional systems.

Most sites today use many methods or algorithms using behavioural data in other ways in their recommendation

Systems. However, it could be of interest to explore other approaches where other methods, such as hybrid systems using both product data and behavioural data, are used to recommend products, as methods only using behavioural data usually have trouble recommending products when they don't have enough data. The project is also using practical data, which means problems will be encountered that would not be there on manufactured data, and has the advantage of using WAMP test framework (this will be presented in the SIMULATION TOOL chapter). Finally, one of the project goals is to be able to generalise the procedure created during

the project enough to work on different sites without much configuration.

Types of Web Page Recommendation System

A recommendation system can be developed in a number of techniques. According to behavior of recommendation system can be classified into following categories.

a) Content-Based Method

Content-based recommendation method recommends the products which are similar to the searched products. There are several methods of finding the similarity of an product to a set of products. In particular, keyword analyzing techniques are applied to find recommendations

b) Collaborative Method

Collaborative methods rely on the total preference and rating of all users instead of a single user's preference and rating. An example of collaborative recommender systems is the book and CD recommendation system at amazon.com. Collaborative recommendation relies on the ratings of similar users. Therefore the similar users have to be found in order to generate recommendations.

c) Hybrid Method

Hybrid recommendation aims to avoid certain limitations of filtering methods by combining two or more filtering methods together. The hybrid method is a combination of two algorithms i.e. Content-based and collaborative-based

algorithms. Which is used to make effective recommendation systems? Several techniques are used to combine content-based and collaborative based algorithm.

II RECOMMENDATION SYSTEM

Recommendation is a social process which is done by people when they want to describe their degrees of appreciation about someone or something. In computers, recommendation System began to appear in the 90's. Traditional recommendation System is mainly used to recommend products, services or people. According to Resnick and Varian (Resnick and Varian, 1997), in ordinary life, people normally trust recommendations made by others. Those recommendations appear to them as word of mouth reputation, recommendation letters, shoes and book reviews printed in news papers and magazines. Resnick and Varian (Resnick and Varian 1997) define recommendation System as "system where users provide recommendations as inputs data which the system then collect and directs to appropriate recipients." recommendation System attracted public interest during 1990s and it (Resnick and Varian, 1997) has obtain wide scope acceptance now. This sort of systems created the basic ground for new product sales opportunities in e-commerce (Schafer et al., 1999; Sarwar et al.,2000a). Recommendation System applies personalization techniques, considering that different visitors have different preferences and different information needs (Konstan et al.,1997).

The main objective of recommendation System is that of complexity reduction for the human being and selecting those pieces of information that are relevant for the recommendation seeker. From the beginning implementation of the recommendation System focuses on simple database queries. The most popular technologies used, according to (Schafer et al), are: Nearest neighbour: the algorithm computes the distance amongst visitor's preferences or characteristics. Predictions about products (products, services or people) are to be recommended considering shorter differences amongst the item and the set of the nearest neighbours.

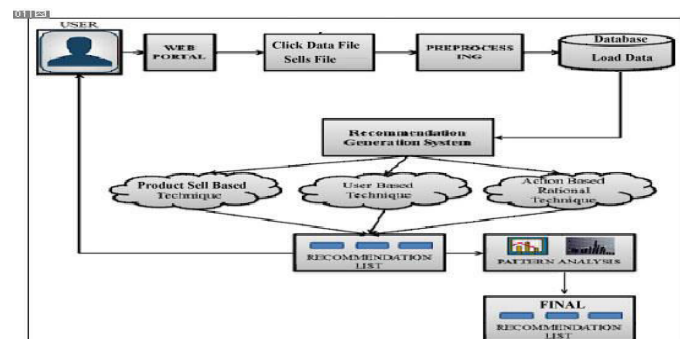


Figure II Recommendation System

III PREVIOUS WORKS ON RECOMMENDATION SYSTEM

H. Hwangbo, Yang Sok Kim and Kyung Jin Cha (2018) presents a real-world collaborative filtering recommendation system implemented in a large Korean fashion company that sells fashion products through both online and offline shopping malls. The company's recommendation environment displays the following unique characteristics: First, the company's online and offline stores sell the same products.

Vaishali Bajpai and Yagyapal Yadav (2018) survey Recommender system is a strategy in e-commerce, which recommends products based on the visitor's interest. It has the capability to predict whether a particular visitor would prefer an item or not based on the visitor's profile. Recommender systems are useful for both e-commerce service provider and visitors. So it should be required for a recommendation system to provide most preferable products to the visitor's interest.

Arjun Sidana and Dr. Himanshu Aggarwal (2017) review the WWW contain a huge amount of data that is rising in both dimension and volume day by day. Data mining process has been in use in almost every field of business. Nowadays, various data mining processes use web mining techniques for discovering the valid, novel, understandable and useful data. web Mining can be classified into three major categories including the web content data mining, web structure mining and web usage mining.

S. Sharma and S. S. Lodhi (2016) proposed a web mining technique to extract information from the web data stream. The study identified the issue of discovering the relevant information from the abundant information present on the web. The main problem is in identified how to process the raw data to gather information regarding the website use and filtering the search results in order to present only rules and patterns. To mitigate the above-mentioned issues, the data mining method based on the decision tree methods is proposed in this paper. The methods were developed for mining the weblogs temporarily. The proposed method was able to provide useful information for generating the log files and extracting information, rules, and patterns from the web data stream.

IV PROPOSED WORK

In this proposed system first of all the web usages information is utilized to find the visitor's behaviour. We do visitor behaviour analysis phase is analyzed the visitor's history and past navigational patterns. Therefore the similar behaviour of others is computed by finding the patterns matched to the total available visitors in a web application that is a kind of ratio between total visitors in the application and the number of visitor's behaviour are matched with the particular visitor. That provides a behaviour score of the particular visitor.

A. DATA ACQUISITION

In this phase the entire navigational data which includes all the web pages visited is collected and stored. The proposed work makes use of common log file format to maintain the data, important attributes namely IP address, timestamp, status code, URL, method (GET and POST), visitor agent and Referrer URL are recorded and used for further analysis. This data obtained is highly unstructured and inconsistent in nature. And therefore has to be preprocessed for further analysis.

entries having filename suffixes such as gif, jpeg, tif, jpg are discarded. In visitor differentiation phase we assign unique visitor ID, to each IP address and registered visitors to differentiate one customer from other. In session clustering phase we group together session belonging to unique visitor. Session provide us with complete set of activities done by the visitor in specific time period. Finally in data formatting stage we place the data in tabular form.

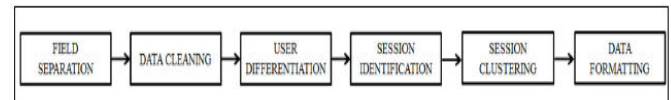


Figure 4.3 Data Preprocessing Steps

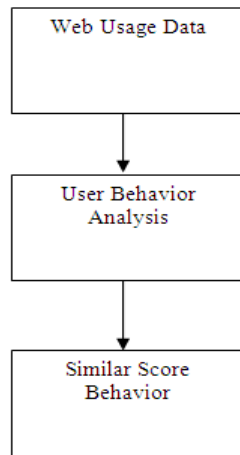


Figure 4.1 Product Information Flow

B. CREATING THE TEXT FILE

Now we will create file by file handling PHP functions. And dump visitor's behaviours data into text file. We are taking some fields like IP, Product URL, Date, and Time.

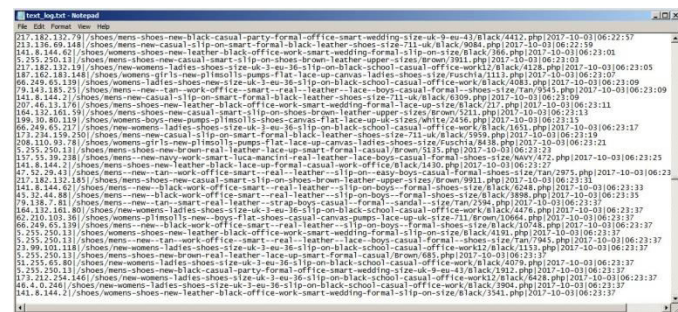


Figure 4.2 Text file

C. DATA PREPROCESSING

In this phase inconsistent, redundant data is eliminated using following steps. Field separation stage focuses on distinguishing one attribute from another by making use of separator character such as space. In data cleaning stage we filter out outliers data. We check for URL suffixes. Log

D. BUILDING A RECOMMENDATION ENGINE IN PHP/MYSQL

Recommendation engines are nothing but an automated form of an "online shop". You can buy good product. Not only check that product, but also the related ones which you could buy. So, does this recommendation engines.

The ability of these engines to recommend personalized content, based on past behaviour is incredible. It brings customer pleasure and gives them a reason to keep returning to the same website.

In this paper, I will cover the fundamentals of creating a recommendation system using PHP/MYSQL with LAMP. We will get some study that how recommendation work and create basic popularity filtering model and a collaborative filtering model.

a) HYBRID FILTERING MODEL

Let's start by understanding the basics of a Hybrid filtering method. The Combination of Content based and Collaborative filtering method Called Hybrid filtering method. The core idea works in 3 steps:

- Recommendations List by **High Sells and High Quantity** Shoes.
- Recommendations List by **Low Sells and High Quantity** Shoes.
- Recommendations List by **Low Sells and Low Quantity** Shoes

V CONCLUSION

In this research, we provide a many method of recommending Footwear products to customers by extending the existing collaborative filtering method to reflect the characteristics of Footwear products. First, we considered the fact that Footwear products are sold, and preferences for Footwear products also

appear online by using online search data and online purchase data to generate recommendations. Finally, the product which the customer wishes to purchase is a product that replaces or supplements the product that the customer preferred before. We have used product information to make recommendations that reflect this purchase intention. We developed a new recommendation system to reflect these approaches.

In this research work we focus on providing good quality product recommendations to all the users especially unregistered ones of E-commerce site. The beauty of the proposed system is it dynamically provides recommendation as per changing users' behaviour and traversal patterns by making use of web usage mining and constructing patterns from the historical data. The proposed recommendation system minimizes the false positive errors that occur frequently in traditional recommendation system. Also issue of star ratings and cache memory are handled by the system thereby providing good quality recommendations. Results prove that accuracy of approximately 80 to 85 percent is achieved for registered user and 65 to 70 percent for unregistered user in above recommendation technique, which is better than product based technique and almost equivalent to user based approach. The recommendation system has the potential to attract new customers and retain existing ones. This technique can help the E-commerce organization have competitive edge in the market and can be helpful in forecasting demands and sales for a specific product. It would be interesting to evaluate the proposed technique with different conventional recommendation approaches and measure its accuracy. This proposed system can also be tested for other application areas like books recommendation, music recommendation etc. In this research work we focus on providing good quality product recommendations to all the users especially unregistered ones of E-commerce site. The beauty of the proposed system is it dynamically provides recommendation as per changing users' behaviour and traversal patterns by making use of web usage mining and constructing patterns from the historical data. The proposed recommendation system minimizes the false positive errors that occur frequently in traditional recommendation system. Also issue of star ratings and cache memory are handled by the system thereby providing good quality recommendations. Results prove that accuracy of approximately 80 to 85 percent is achieved for registered user and 65 to 70 percent for unregistered user in above recommendation technique, which is better than product based technique and almost equivalent to user based approach. The recommendation system has the potential to attract new customers and retain existing ones. This technique can help the E-commerce organization have competitive edge in the market and can be helpful in forecasting demands and sales for a specific product. It would

be interesting to evaluate the proposed technique with different conventional recommendation approaches and measure its accuracy. This proposed system can also be tested for other application areas like books recommendation, music recommendation etc.

REFERENCES

- [1] F. O. Isinkaye, Y. O. Folajimi and B. A. Ojokoh, "recommendation system: Principles, method and evaluation", Egyptian Informatics Journal, pp. 261-273, 2015.
- [2] P. Lopes and B. Roy, "dynamic recommendation system using web usages mining for e-commerce users", Procedia Computer Science Volume 45, pp. 60 – 69, 2015.
- [3] Chapter 9- recommendation Systems, available online at: <http://i.stanford.edu/~ullman/mmds/ch9.pdf>
- [4] S. Hernandez, P. Alvarez, J. Fabra, and J. Ezpeleta, "Analysis of Users' Behaviour in Structured e-Commerce Websites", IEEE, VOLUME 5, pp.11941-11958, 2017.
- [5] S. Mittal, A. Goel and R. Jain, "Sentiment Analysis of E commerce and Social Networking Sites", International Conference on Computing for Sustainable Global Development (INDIA Com), IEEE, pp.2300-2305, 2016.
- [6] N. Kumari and S. N. Singh, "Sentiment analysis on Ecommerce application by using opinion mining", International Conference- Cloud System and Big Data Engineering, IEEE, vol 6, pp. 320-325, 2016.
- [7] S. Sivapalan, A. Sadeghian and H. Rahnama, "Recommender System in E-Commerce", World Automatic Congress, IEEE, pp.1-6, 2014.
- [8] M. Aprilianti, R. Mahendra, I. Budi, "Implementation of Weighted Parallel Hybrid recommendation Systems for Ecommerce in Indonesia ", ICACIS IEEE, pp. 321-326, 2016.
- [9] S. Sharma and S. S. Lodhi, Development of Decision Tree Algorithm for Mining Web Data Stream, International Journal of Computer Applications 0975 8887, vol138 2, March 2016
- [10] S. S. Patil and H. P. Khandagale, Enhancing Web Navigation Usability Using Web Usage Mining Techniques, International Research Journal of Engineering and Technology IRJET, vol4 6, June 2016
- [11] CBull, DAsfiandy, AGledson, JMellor, SCouth, Combining data mining and text mining for detection of early stage dementia the SAMS framework, LREC Workshop RaPIDPortorož Slovenia, 2016
- [12] P Ristoski and H Paulheim, Semantic Web in Data Mining and Knowledge Discovery A Comprehensive Survey, Preprint submitted to Journal of Web Semantics, 2015