www.ijiarec.com

ISSN:2348-2079

Volume-7 Issue-4

International Journal of Intellectual Advancements and Research in Engineering Computations

# A novel approach for providing accurate services recommendation for big data analytics in e-commerce

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## ABSTRACT

Today the world is an overcrowded so that the product recommendations are required for recommending products or services. Purchasing a false-positive product may reduce customer's reliability over the website and this reduces the usage of the site. Day by day, the amount of customers, products and information has grown rapidly that is the problem so need scalability and efficiency when processing or analysis of this data on a large scale. If we can utilize social media data that is provide a huge pool of data about users for the highly accurate service recommendation but privacy issues of users and finally the customer is choosing irrelevant product may be shown with a higher rank in recommendation list. To avoid these problems, a novel recommendation system using a collaborative filtering algorithm is implemented in Apache Hadoop for Big Data. The intelligent recommender system is used to interface between a customer's request and the recommender system for highly accurate services of the product recommendation.

**Keywords:** Big Data, Apache Hadoop, IRS, Collaborative filtering

## INTRODUCTION

E-commerce is very much popular in day to day life and everything is available through the internet. When people are going to buy any kind of product through the internet and they first search for any reviews or comments about that product. At that time people may become confused about whether that product is preferable or not based on comments. The shopping sites are very large that when it will try to manage and manipulate becomes very tougher. A recommendation system is a decision maker strategy for e-commerce environments. Online market places make their profit based on their advertisements or sales commission while businesses have the commercial interest to rank higher on recommendations to attract more customers. Poor recommendations can cause two types of characteristic errors: false negatives which are products that are not recommended though the customer would like them and false positives which are products that are recommended though the customer does not like them. In an e-commerce environment the most important errors to avoid are false positives because these errors will lead to angry customers and thus they will be unlike to revisit the website. The quality of the recommendations has a very useful on the customer's future shopping looking behavior. Users face problems to the massive volume of information that is consistently growing. If we can utilize social media data that is provide a huge pool of data about users for the highly accurate service recommendation, but privacy issues of users and finally the customer is choosing irrelevant product may be shown with a higher rank in recommendation list. To avoid these problems, Collaborative filtering is a method of making automatic predictions (filtering) about the

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interests of a user by collecting preferences or taste information from many users (collaborating).

## RELATED WORK

E-commerce websites recommend only similar set of products on the basis of recent search history and not accurate set of products with higher confidence level of likeability. Algorithm introduced a Fuzzy Logic technique to find relevant keywords emanated from Keywords Derivation algorithm which is a necessary algorithm for final result. This algorithm is befitting to any products/services as long as the information about products and user's social media data are available [1]. Efficient customization demands a careful compromise between accuracy and scalability based on the specifications of the application. A novel hybrid Firefly Algorithm with TLBO algorithm integrated with the KMeans clustering is taken [2]. Increase Consumers, Products in Recommendation to Cannot Handle big data Scalability, Efficiency and real time recommendation problem. Apache Hadoop and Spark [3]. Data within the variety of reviews, opinions, feedback, remarks, and criticism treated as massive knowledge can not be used directly for recommendation system. These data first filter/transform as per requirement. The large amount of data available on the web so need scalability. The large volume of data available on the website as ratings, reviews, opinions, complaints, remarks, feedback and commentsregarding any item (product, event, individual and services) using Hadoop Framework. Hybrid filtering Techniques, Mahout interface for analyzing the data provided by review and rating site. [4]. Commercial interest to rank higher on recommendations to lot of Customers. Web users cannot be guaranteed and relevant to their needs, the main consequence to the final customer is that irrelevant products may be shown with a higher rank whereas relevant ones hidden at the very bottom of the recommended list. Big Data Intelligent Recommender System (IRS) based on the Random Neural Network as an interface between a customer's request and the recommender systems [5].

## PROPOSED APPROACH

Online shopping is gaining popularity and recommendations have become a common aspect of e-commerce's websites.

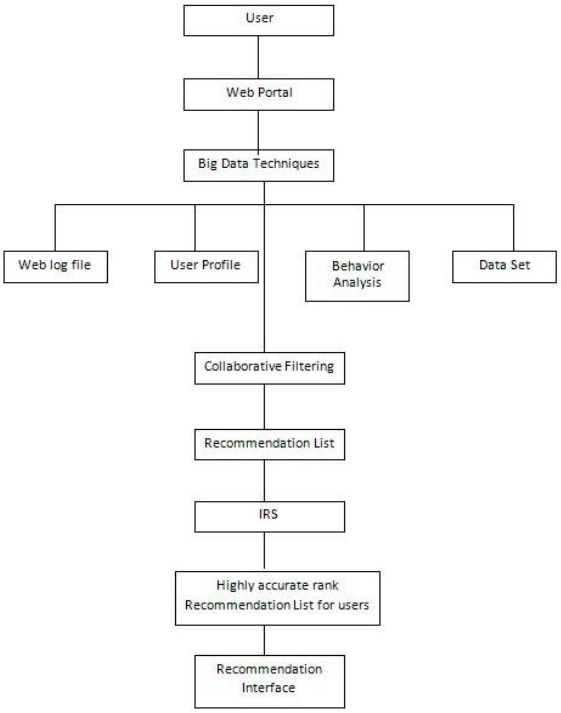


**Figure 1 Proposed methodologies**

Web users can give their opinion, reviews and comments about the items now a day the millions of users buy products from online shopping websites. E-commerce recommendation system is mainly where user's preferences and behavior are analyzed and predicting by big data techniques. Analysis and prediction is done by web log files andustomers click stream data can act as a very rich source of information. Click stream indicates the user's path through a website. Web log files store and maintain all click stream data. This data can be very helpful in providing the effective recommendation. Big Data is generated from an increasing plurality of sources including Internet clicks, mobile transactions, user generated content, and social media as well as purposefully generated content through business transactions such as customer information and purchase transactions. Big data analysis is the approach for analyzing extremely large datasets with minimum computation effort and resource requirements. Apache Hadoop is distributed processing systems can process large volumes of data.

## Collaborative filtering (CF)

A collaborative filtering algorithm is implemented in Apache Hadoop for Big Data. Collaborative filtering is a decision of making automatic predictions (filtering) concerning the interestsof a user by aggregation preferences or style info from several users (collaborating).

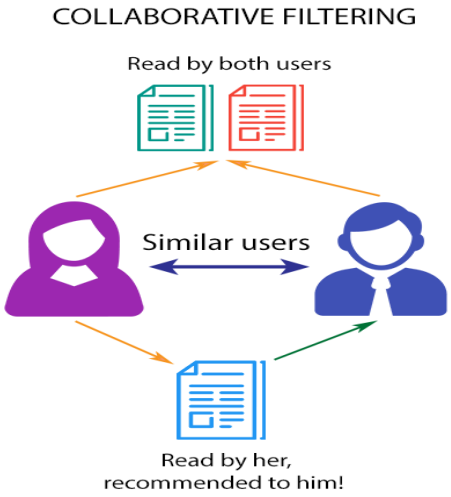


**Figure 2 Collaborative filtering**

The underlying assumption of the cooperative filtering approach is that if someone A has a similar opinion as someone B on a problem, A is additional seemingly to own B's opinion on a different issue than that of a randomly chosen person. Modern recommender systems use different similarity functions to compute similarity between users and between items. It can be used for both approaches of collaborative filtering is user-based and item based. Collaborative filtering technique takes both users past behavior and similar decisions made by other users. The effectiveness of collaborative filtering is based on user rating. This filtering method is based on collecting and analyzing massive amount of records on user's preferences, activities and behavior.

## Intelligent Recommender System (IRS)

Intelligent Recommender System is based on the Random Neural Network. IRS acts as an interface between the customer and the different recommender systems. The main consequence to the final customer is that irrelevant products may be shown with a higher rank whereas relevant ones hidden at the very bottom of the recommended list. IRS The intelligent recommender system provides to the customer a reordered list of products re-ranked. The intelligent recommender system has been implemented in a server to enable online access to customers and

validates. Customers and validators access to the Web server via a Web browser and interact iteratively with the IRS invoking PHP language.

## RESULT AND DISCURSION

PHP is a programming language for building dynamic, interactive Web sites. As a general rule, PHP programs run on a Web server and serve Web pages to visitors on request. 100 web log records from internet dataset source. Collection of web logs which are in raw or unprocessed form. Collection of internet logs that area unit in raw or unprocessed type. The project using PHP &Mysql for 100 users, 100 products and its data set collected from Mysql database. First analysis the data from various customers such as filtering their information, customer interest, preference, web log, and click stream, etc. The big data techniques are used to manage ecommerce data and it provide scalability of Ecommerce website. Collaborative filtering is denoting recommendation list. It is filtering and similarity to user and item from take user and item dataset of Mysql database. Finally IRS is providing rank for recommendation list to highly accurate services of the product recommendation.

**Table 1 Recommendation list**

| | | PRODUCTS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **S.NO** | **USERS** | **Item1** | **Item 2** | **Item 3** | **Item 4** | **Item 5** | **Item 6** | **Item 7** | **Item 8** | **Item 9** | **Item 10** |
| 1. | AAA | | 1 | | 4 | | 2 | | | | |
| 2. | BBB | 2 | | 3 | | | | 2 | | 1 | 2 |
| 3. | CCC | | | | | 3 | 1 | | | | |
| 4. | TTT | | 1 | 2 | | | | | 1 | 1 | |
| 5. | EEE | 1 | 1 | | | | | | | | 1 |
| 6. | SSS | 1 | | | | 2 | 4 | 2 | | | |
| 7. | GGG | 1 | | | 3 | | | | 1 | 3 | |
| 8. | FFF | | 1 | | | 1 | | | | | |
| 9. | XXX | 1 | | | | | | 1 | 3 | 1 | 1 |
| 10. | YYY | | | | | 1 | 1 | | | | |
| **TOTAL RATING** | | 6 | 4 | 5 | 7 | 7 | 8 | 5 | 5 | 6 | 4 |

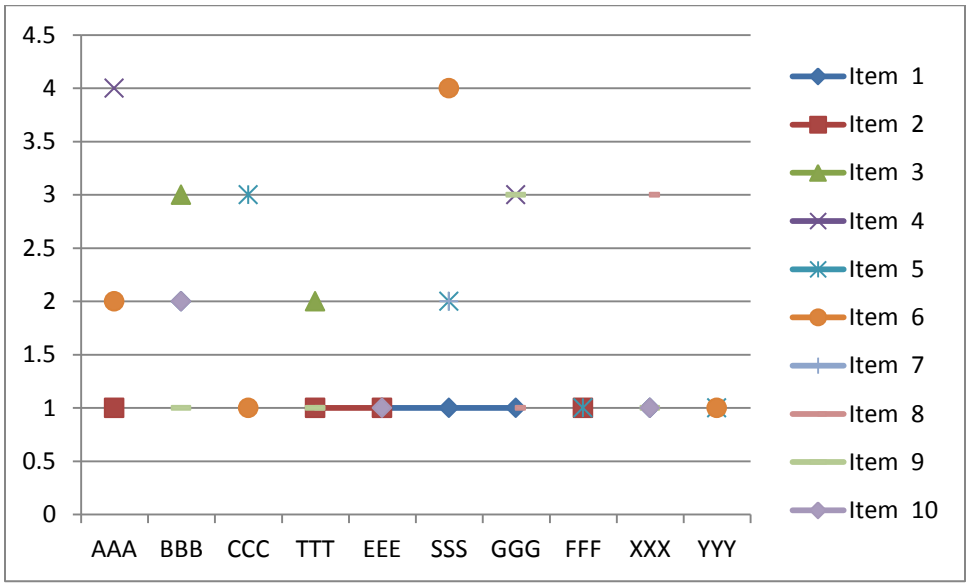


**Figure 3 Rating for Items**

## CONCLUSION AND FUTURE WORK

Nowadays most of the purchasing of the items that are needed for the daily basis can be got through the online mode. There are many shopping websites like Amazon, Flip kart, snap deal, Shop Clues and many more. People in going to the shops to buy the shopping items without wasting much energy that are need can purchase it through online shopping websites. The Online Shopping method is the web application that allows the users to shop online without going to the shops to buy it. That will help in saving the energy and time needed to do the shopping by going to the shops. Any shopping website that is provided will be able to attract many customers only if the items purchased will be delivered on time.

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