E-Commerce Application using Web API and Apriori Algorithm of Data Mining

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ABSTRACT
Now a day's many business applications that utilizes data mining and text mining techniques to extracting useful business information on the web have evolved from web searching to web mining. Recently many large companies such as Google, Microsoft, Amazon, eBay have opened access to their services and data through Application Programming Interfaces (APIs).

Thus we aim to build an ecommerce web application using some of these open web APIs

General Terms
Data mining.

Keywords
E-commerce application, Apriori algorithm, web API.

1. INTRODUCTION
With the popularity of the Internet and e-business, ecommerce system provides users with more choices. At the same time, its structure becomes more complex; users often lost in the information space of a large number of goods and cannot successfully find their own needed goods. Ecommerce recommendation system directly interacts with users to help customers find their own needed goods and successfully complete the purchase process by simulating the shop sales staff to recommendations goods. [1]

Although modern computer technology and database technology have been developed rapidly, could support the store and quickly retrieve the grand scale databases or data warehouses, but these techniques was only to gather these "massive" data, and not to effectively organize and use the knowledge hidden them, which eventually led to today's phenomenon of "rich data, poor knowledge". The emergence of data mining technology met people needs. [2]

In order to improve the quality of the recommended result, the Personalized Recommendation System should identify the similarity degree of visitor's accessing behaviour so as to predict customer's interests. The key technology is to calculate the similar distance among different objects over either all or only a subset of the dimensions. This paper, first of all, analyses the commonly-used methods and points out their shortages, and then proposes an improved Apriori-Based Personal Recommendation Algorithm for E-commerce. This algorithm considers overall the minable data source, users ' Similarity Metric and Support Bound to get the data of those access web pages, construct a matrix model having relatively high purchasing power about customer behaviour, get the similar access behaviour over the all or partial property space with high

efficiency, help the customer find out the merchandise he wishes to buy through the mine of the similar pattern character between latent buyer and high buyer, promote customer satisfaction and truly promote the sale achievements for the enterprise.[3]

Web mining is the application of data mining technologies on the Internet to extract interesting, useful patterns and implicit information from activities related to WWW. Web mining technique is introduced to e-commerce recommendation system, by means of data mining technology to be used for automatically, quickly discovering the visitor's browsing patterns (e.g. frequent access web page groups, user groups, etc.) from web log data. Basing on visitor's browsing patterns, the site can efficiently and automatically dynamic adjust web pages' content, and recommend right items for each customer to provide personalized recommendation service. With the personalized goods recommendation service e-commerce system attracts more visitors. [1]
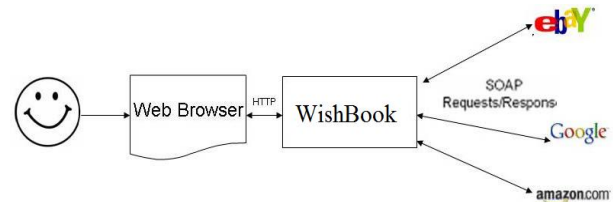
2. SYSTEM ARCHITECTURE

Fig. 1: System Architecture

3. SYSTEM FEATURES
1. Secure registration and profile management facilities for user.

2. Secure Login for a user.

3. Central control over the information of user for administrator.

4. Maintaining database of Wish list.

4. ANALYSIS MODEL
4.1 DFD level 0 user registration

Fig. 2: DFD level 0 user registration
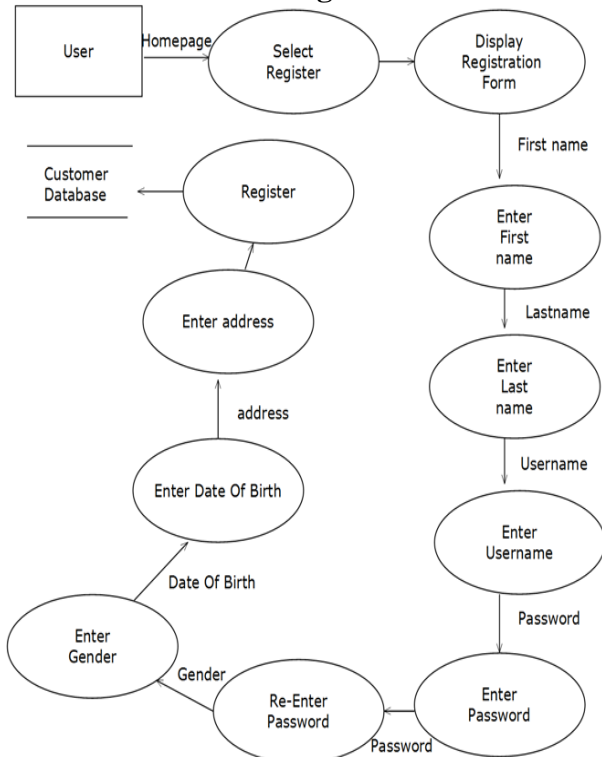
4.2 DFD level 1 user registration
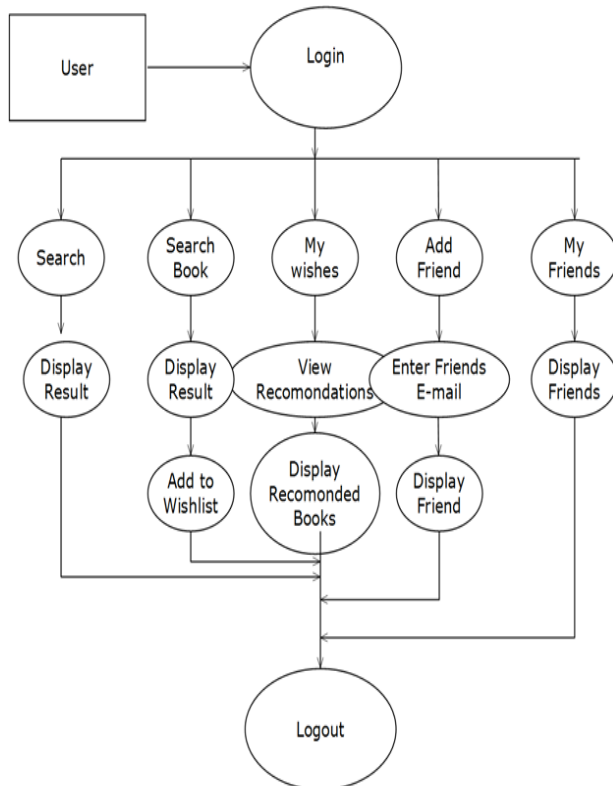

Fig. 3: DFD level 1 user registration.

4.3 DFD wish book

Fig. 4: DFD wish book

5. MATHEMATICAL MODEL

5.1 Association rule

Let $I = \{i1, i2....in\}$ be a set of *n* binary attributes called *items*.

Let $D = \{t1, t2...tm\}$ be a set of transactions called the *database*.

Each transaction in T is set of different items, let T $\subseteq$ I

rule is defined as an implication of the form

$(X => Y)$ where X,Y $\subseteq$ I and X $\cap$ Y = {Onion,

potato} => { Burger } found in the sales data of a supermarket wwould indicate that if a customer buys onions and potatoes together, he or she is likely to also buy hamburger meat.

5.2 Algorithm for association rule

Apriori is designed to operate on databases containing transactions (for example, collections of items bought by customers, or details of a website frequentation).
Find all the item sets with the support greater than the minimum support which is called frequent item. Based on the above obtained frequent set, all the association rules will be generated, and for each frequent item set A, all non-empty subset a of A will be found. Generate association rules from frequent item sets once the frequent item sets found from the transaction database, the next step is to generate association rules from them. That is, to produce strong association rules to meet the minimum support and minimum confidence, and the confidence of the obtained association rules can be calculated by using the following formula.

$Confidence\ (X => Y) = \delta(X => Y) / \delta X * 100\ \%$
$= support\ (X\ Ù\ Y) / support\ (X) * 100\ \%$

6. ACKNOLEDGEMENT

7. CONCLUSION

The software we are going to design definitely more helpful to the vendors and customers also. The complexity of the paper work will be reduce and provide the future to E-commerce.
Benefit of the software is:-
➢ Faster buying/selling procedure, as well as easy to find products.
➢ Buying/selling 24/7.
➢ More reach to customers, there is no theoretical geographic limitations.
➢ Low operational costs and better quality of services.
➢ No need of physical company set-ups.
➢ Easy to start and manage a business.
➢ Customers can easily select products from different providers without moving around physically.

8. REFERENCES

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