MODEL VIEW CONTROLLER BASED E-COMMERCE RECOMMENDER SYSTEM

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Abstract- The Model View Controller is a latest application development design pattern which provides loosely coupling architecture for the application development; the Model View Controller development is used in various applications for several benefits like change in one module does not affect other module at all. All modules are completely independent of each other, E-commerce need such an independent module to work with like for User Interface we can provide web interface as well as Mobile Interface as a View that may turn out as M-Commerce application. The proposed system is Model View Controller Based E-commerce Recommender System which provides Recommender facility along with other E-commerce related activities. The technology used is as Web View Java Server Pages under Java Enterprise Edition JavaEE Development for Mobile Interface Android bases Smartphone and for Java Based phones Java2 Micro Edition (J2ME) is used, as a Model MySQL Database with Hibernate as a Object Relational Mapping (ORM) tool is used and as a Controller servlet and other Java EE technologies is used for overall system development. The Recommender facility provided based on E-commerce analysis data. The view will be represented in either web application or small devise mobile applications with almost same User Interface, so the input to the recommender system becomes easy and it helps to improve recommendation with highest accuracy.

Keywords: - E-commerce, M-Commerce, Java EE, J2ME, MySQL.

1. INTRODUCTION

Model View Controller is a latest web development standard after 3 tier client server based architecture, the main benefit of the MVC is separation of module and every module acts independent module, change in one module does not affect other module. Model is refer as data part usually every application need database as a major component of the system, dataset handling refer by Model in Model View Controller system, View is an User Interface view is to provide user operation and look and feel of the system in this module the logic part is absent and focus given on the User Interface Design for example in Android the user Interface is separate View Module as a layout.xml file, the separate xml file handles all the User Interface stuff and all logical part takes care by Activity_Main.java file which is completely different than xml file, this type of separation is very much require in the various applications and it benefits a lot in the overall system development. Model View Controller is a software design pattern for implementing user
interfaces, it divide the software application into three modules interconnected but loosely coupled manner. Model View Controller concept first introduced by Smalltalk, as it known for Object Oriented research the MVC Model focus on encapsulating some data together with its processing refer as Model and isolate it from the manipulation which is refer as the Controller and presentation refer as View has to be done on a User Interface. In broad term

A Mode is an Object Representing Data or a Activity related to any particular application like for example a Database Table.

A View is related to User Interface it is a visualization of the state of Model

A Controller facilitates to change the state of the Model.

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**Fig. 1 Components of Model View Controller Pattern (Source Wikipedia)**

Fig 1 shows components of a typical Model View Controller Architecture Pattern, it also shows how these three components communicates each other, Controller is responsible for all the logic related to the change in the state of the model, and view is responsible to represent all the change state of the model, the main focus here is all three components are independent to each other with their internal working, the change in the internal working of the particular model does not affect the other component at all as it is completely independent to each other for example change in the user interface like change in look and feel of the user interface does not affect the model at all in the overall system development cycle this provide a benefits to developer to develop a software module independently.

**Fig. 2 Model View Controller (Source http://c2.com/cgi/wiki?ModelViewController)**
2. E-COMMERCE INTRODUCTION

Electronic commerce (E-commerce) is simply doing online purchase, or business on web, the process commonly refer as e-business, using Information Technology combining few terms like electronic mail (Electronic-mail) World Wide Web (www), e-commerce provides way to exchange information between individuals, parities, organizations, companies and countries. The E-commerce is totally related and depends to internet, as it is nothing but business on worlds wide web, the growth of E-commerce is totally depends on growth of internet.

The growth of internet in the past is enormous in India and other countries, the growth internet is very fast if you see last 10-15 years graph one can observe that E-commerce is taking good shape in the last 10-15 years, the growth of E-commerce is growing leap and bounds as technology progress the total revenue generated through E-commerce is increasing exponentially. The growing phase of E-commerce is well supporting by latest technology like mobile device cloud etc. M-commerce is just an extension of E-commerce to provide business on small device that can be done any time anywhere. In the E-commerce environment usually we eliminates the physical presence or focus on minimum physical presence in any of the E-commerce activity at any stage, this process of not requiring the physical presence of the participant turn out in a high level of uncertainty regarding the reliability of the service, products or providers no matter how secure the modern E-commerce systems are, the existing C2C systems such as ebay or amazon does not provide user with feedback mechanism after transactions, there are third party centralized service web sites to perform this activity[1].

Along with the E-commerce growth M-Commerce and wireless communication technology is being use in E-commerce and give rise to mobile E-commerce, one can find the pattern for mobile users behaviors such as their locations and purchase transaction in mobile E-commerce and provide service to the mobile commerce uses by applying weight frequent pattern and periodical pattern for prediction of purchase behavior of mobile user can be taken, one can have efficient mobile commerce pattern mining algorithm may designed for similarity inference models and develop prediction strategies for future enhancement.[2]

3. RECOMMENDER INTRODUCTION

Recommendation is a system with software tools an algorithmic based to help in decision making particularly in E-commerce or M-Commerce, in E-commerce this is refer as Recommendation
System [RS] to give purchase related advice to the customer. Recommendation is just giving advice to the user to make decision, e-commerce sites require good Recommender System, Recommender in E-commerce systems have become business relevant in filtering as information available in internet to present useful product recommendations to the user in other words it helps user to do purchase online. The recommendation referred as static most of times, new products are introduced in the market from time to time whereas old ones vanish over the period of time this is a common phenomenon in today’s business environments. Hence, the products offered in a web application tend to change always, and the recommendations have to base on the currently offered range of goods. However, traditional collaborative filtering suffers from few problems like sparse data problem and the lack of scalability. Therefore, new recommender system technologies are needed to address the issues like sparse data problem and quickly produce high quality recommendations especially in large scale mobile environment. As the amount of information in E-commerce and M-commerce grows explosively filtering irrelevant information but finding useful contents and reliable sources has gained more importance. Recommender system has become a classic tool that interlinks users with information content and sources this issue need to address separately. Collaborative filtering (CF) is such a personalized recommendation technique that has been very promising both in research and industry.

Recommender Systems referred as (RSs) are nothing bunt software tools and techniques providing suggestion for item to be use for user [4, 5, 6] it also helps in decision making for the user to make decision related to E-commerce and M-Commerce. The main goal of the Recommender system to generate recommendation results for users based on user parameters like price, particular specifications etc, and needs for example Amazon, Netflix designed such a successful Recommender systems in the past The various ways like Collaborative Filtering system or Content Based Filtering may be considered for the better results[3]. Recommender system is now becoming an integral part of E-commerce as well as M-Commerce system many portal, big E-commerce application already using it for various purpose the Amazon is using recommender system to attract customer’s recommender system learns from a customer and recommends that he or she find most appropriate and valuable as compare of different range of the product with same category or price range, we can analyze how recommender system helps E-commerce process to increase sales we arrange several sites. The recommender system for e-commerce system, many of the largest commerce web sites are already using recommender system to help their customers find product and purchase the author focuses on how recommender system help E-commerce sites increase sales, and analyze few sites which uses recommender system, One can compare few e-commerce site and how they are using recommender system, Recommender systems used by e-commerce sites to suggest the products to their customers, the products can be recommended based on certain criteria like overall rating, based on analysis of the past behavior of buying customers which gives idea and prediction for future buying probability of the customers. If one can do some analysis according to the case study these techniques are part of personalization for each customer, recommender system automate the personalization for each customer. Paper discuss the few recommender system examples like Amazon.com, Eyes, Amazon.com Delivers, Book Matcher, Customer Comments, CDNOW, MyCDNOW, eBay, Levis, Moviefinder.com, Reel.com, MovieMap all the above recommender system discuss in brief and provide a summary in tabular format after that recommendation taxonomy is discussed by the author. The paper provides e-commerce opportunities for recommender system.
4. PROPOSED MODEL VIEW CONTROLLER BASED RECOMMENDATION SYSTEM

The Proposed system is based on the user rating mechanism to perform past e-commerce transactions analysis as well as customer feedback and maintenance analysis, the algorithms is analyze the past performance of the product from the user analysis who purchases the product, based on that the various product of the same category will be compared and finally the recommender system recommends best suited product to the customer who wants to buy or interest in the same category of the products. The user rating mechanism is simple View interface which is either a Web interface as a Java Server Pages JSP pages which is developed and deploy under Net beans Environment with Glassfish server, the another interface is Mobile or tablet interface which is either Java based J2ME jar application deploy in java Enabled phones, as customer purchase the product the application will be downloaded to the customer freely from the developers web site, another Smartphone interface is Android based User Interface to give user rating about any particular product. The Model is considered as database developed in MySql database and Controller is different servlet java code files which take care the analysis in the recommender system and provides the analysis result in both textual format as well as graphical format.

The proposed system of recommendation is simply based on user rating mechanism to perform the recommendation from the past experience and feedback of the user, however the mechanism is strengthen to provide the simple user interface to provide rating input by the user from mobile as well as web application based on his or her mobile number. The User can simply perform user rating and feedback comment from his small devise and system can use this data from further analysis in the recommendation system.

Fig 1 Simple Block diagram of Proposed Recommender System

Figure shows the simple block diagram of the recommender system, the system use user rating and other analysis factor and based on that some mathematical analysis will be done at server side that majorly includes higher rating, lower price, good feedback and less value for maintenance and service. All this factors will be evaluated and finally accurate product will be suggested to the customer, the system provide best possible result to the user before e-commerce.
transaction it is common that user like to compare different product with proper analysis with limited period of time, the proposed system is exactly shown that result in this way.

5. CONCLUSION

The Model View Controller Based E-commerce design shows various benefits in the overall development of E-commerce system, the result shows that using the MVC pattern the development is easy, reusable and maintainable. The recommender system needs the changes in the business logic for e-commerce systems the proposed system uses architecture in such a way that the future changes incorporated very easily in the system.

6. REFERENCES


