Analysis of Users Behavior in Structured E-Commerce Website

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Abstract- Online shopping is become more common in our daily lives. Recognize user's interests and behaviour is required in order to adapt e-commerce websites to customer's necessity. The user's behaviour information is stored in the web server logs. The analysis of such statistics has focused on applying data mining techniques where a rather static classification is used to model users' behaviour and the sequence of the actions performed by them is not usually considered. So, integrating a view of the process followed by users during a session can be of great interest to identify more hard behaviour patterns. To report this issue, this paper proposes a linear-temporal logic model checking methodology for the analysis of organised e-commerce web logs. By define a common mode of plotting log histories rendering to the e-commerce arrangement, web logs can be easily transformed into event logs where the performance of users is taken. Then, different predefined requests can be performed to identify different behaviour patterns that consider the different actions performed by a user during a period. Finally, the effectiveness of the proposed approach has been studied by smearing it to a real case study of a Spanish e-commerce website. The results have identified stimulating findings that have made possible to propose some developments in the website design with the aim of growing its efficiency.

Keywords: Data mining; e-commerce; web logs analysis; behavioural patterns; model checking;

I. INTRODUCTION

In today's ever join world, the way people shop has changed. People are buying more and more shopping over the Internet instead of going traditional shopping. E-commerce provides customers with the golden chance of browsing endless product catalogues, as comparing prices, being continuously informed, creating wish list and enjoying a better service based on their individual interests. Increasing electronic market is highly contesting, featuring the possibility for a customer to easily move from one e-commerce when their conditions are not satisfied. However, discovering customer behavior and causes that director their buying process is a very difficult task. As a significance, e-commerce business analysts need to know and understand consumers behavior when those navigate through the website, as well as trying to identify the reasons that inspire them to purchase, or not, a product. Getting behavioral knowledge will allow e-commerce websites to deliver a more personalized service to customers, retaining customers and increasing benefits .Users can freely move through different product categories, follow multiple navigational paths to visit a specific product, or use various technique to buy products. [7]

II. AIMS AND OBJECTIVE

a) Aim

Linear-temporal judgment model testing approach for the examination of structured e-commerce web logs. By describing a common way of planning log records permitting to the e-commerce structure, web logs can be easily converted into event logs where the behavior of users is taken. Then, different predefined probes can be performed to identify different behavioral patterns that consider the changed actions executed by a user during a period.

b) Objective

Its main objective is to determine usage patterns annoying to explain the users' comforts. Different methods have been successfully used in the field of e-commerce, such as arrangement techniques, assembling, relationship rules or sequential patterns. In many application fields these techniques are used in combination with process mining methods. Such techniques are part of the business

brainpower field and apply exact algorithms to discover unseen patterns and relations in large data groups.

III. LITERATURE SURVEY

1)"Research on personalized recommendation optimization of Ecommerce system based on customer trade behavior data."

Nowadays complete workload and resource reduction classification of the web site of a best national Online Travel Agency. Classification is performed on server logs, including both HTTP data and resource consumption of the requirements, as well as the server load status thru the effecting. From the dataset demonstrate user sessions, their outlines and how response time is affected as burden on Web Servers rise. [6]

2) "Web-mining applications in e-commerce and e-services."

Electronic commerce offers all the right components for successful data mining (the Good). Web records, however, are at a very little granularity level, and attempts to mine e-commerce data using only web records frequently result in little exciting insight (the Evil). Receiving the data into minable formats needs important pre-processing and data conversions (the Ugly). Modules, stories, and tasks based on mining actual data at Blue Martini Software will be displayed. [3]

3) "Repeat buyer prediction for e-commerce."

A huge number of new buyers are often acquired by sellers during promotions. However, several of the attracted buyers are one-time deal followers, and the promotions may have slight long-lasting effect on deals. It is important for merchants to identify who can be converted to consistent loyal buyers and then target them to decrease promotion rate and growth the return on investment. [8]

IV. EXISTING SYSTEM

In the existing system no proper information is available. The entire user's data is stored in record which is very difficult to modify or delete. Analysing user's satisfaction towards is a very difficult and time taking task. User's activity is not properly known to the owner of the application. In the web server logs the information is not kept about customer's behavior. The most common words contained in the Web pages a buyer appointments, making the meeting explanation from these words are discover in present method text mining techniques. Text investigation and sentiment analysis are many data mining methods based on score and appraisals and buying data collection.

V. COMPARATIVE STUDY

SR NO.	PAPER TITLE	AUTHOR NAME	METHOD	ADVANTAGE	DISADVANTAGE
1.	Analysis of user's behavior in structured e-commerce websites.	Sergio Hernandez.	Analysis of users' behavior in structured e-commerce websites.	It is useful in future analysis to increase sell ratio, & offers.	It depends on customer activity customer needs to add product to the cart to analyze.
2.	Research on personalized recommendation optimization of E-commerce system based on customer trade behavior data	Jiao, Ming-hai, et al.	Personalize Recommendation system.	Fuzzy theory to deals with user behavior.	It mainly provides the users interest because another products are less seen by customer which impact on sell.
3.	Online search and buying behavior in consumer markets.	Holland, Christopher P., and Gordon D. Mandry	A novel methodology	To analyses the requirement from different 15 countries.	It not much useful for new product & marketing.
4.	Web-mining applications in e-commerce and e-services.	Ting,I-Hsien.	Trace-Driven Analysis	The major benefit of e-commerce over conservative marketable activities is the information clearness while people can freely share their views and remarks.	(SECON) facilities, which not only permit users to conduct e-commerce transactions but also contribution users to share material as in the other SNS like Twitter.

VI. PROBLEM STATEMENT

As e-commerce progress percentage is rising exponentially the data which is produced is wonderful. Project goal is to collect easy and every activity of user and to store in it proper format. Project not only covers the data which is generated by the user but also perform data mining operation on the collected data. The data mining tasks contains arrangement clustering etc. The outcome will suggest some meaningful pattern or logic which will help in growth of organization.

VII. PROPOSED SYSTEM

E commerce websites offer customers with a wide variety of directional choices and activities: users can easily move through different product categories, follow many directional paths to visit a particular product, or use different tools to purchase products. Propose here a approach for using it in structured e-commerce websites.

The goal is to analyses the usage of e-commerce websites and to discover customers' difficult behavioural outlines by means of checking temporal logic methods describing such performance against the log model. At the beginning, web server logs are pre-processed to extract the detailed hints (orders of events of a user session). Events can be user or system activities performed when a customer visits a product or product category page.

The reason behind the large number of accesses as first choice to collections should be carefully analysed. The effectiveness and the interest of using secondary section as the entry point for the website should be studied. The importance of the Offers section should be promoted within the website to attract both new and regular users.

VIII. ALGORITHM

STEP 1: Load the Dataset for Mse
        MSE = large number;
STEP 2: Initialize the Cluster Centroid
        Select initial cluster centroids.
        {mj}jk=1;
STEP 3: Compare the Values of Old Mse
        To Mse. OLDMSE = MSE;
STEP 4: Initialize New MseTo Zero
        MSE1 = 0;
STEP 5: Apply For Loop For K-Means
Clustering Algorithm To Generate 3 Different Clusters Of Histories   Low Risk, High Risk And Average Risk As Per Their Critical Values.
for j=1 to k
mj=0 nj=0
STEP 6: Apply Genetic Algorithm To Medium And High Risk Cluster.
for i = 1 to n
for j = 1 to k
Compute squared Euclidean distance d2 (xi, mj);
STEP 7: Until the obtained results are repeated. Calculate formed Euclidean distance d2 (xi, mj)
STEP 8: End for Loop and Find the Closet Centroid mj to xi
STEP 9: Evaluate The Fitness Of Each Transaction And Perform Elitism Selection To Generate New Population.
STEP 10: Perform Elitism Selection To Generate New Population.
mj = mj+xi
nj = nj+1;
MSE1 = MSE1 + d2 (xi, mj)
STEP 11: Perform Single Point Crossover.
mj = mj/nj
STEP 12: Perform One Bit Flip Mutation. MSE = MSE1;
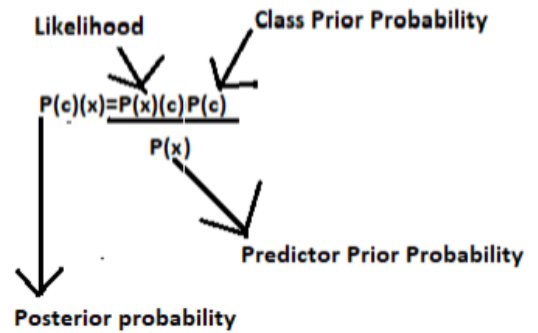while (MSE < OLDMSE)

IX. MATHEMATICAL MODEL

a) P(c|x) is the class of posterior probability   (c, target) known predictor (x, attributes).

b) P(c) is the class of prior probability.

c) P(x|c) is the probability given of predictor class which is likelihood.

d) P(x) is the previous probability predictor.

$$P(c)(x) = \frac{P(x)(c)\,P(c)}{P(x)}$$

$$P(c)(X) = P(X2)\big|(c) : P(X2)\big|(c) : P(X2)\big|(c) \; *P(c)$$

1. Clustering Module:

Clustering algorithms are usually used to discover the groups of sessions displaying a related performance or some common interests.

2. Behavioural Module

Behavioural knowledge will permit e-commerce websites to send a more personalized facility to customers, holding customers and growing benefits.

3. linear-temporal logic Model

Linear temporal logic or linear-time temporal logic is a modal temporal logic by modalities denoting to time.
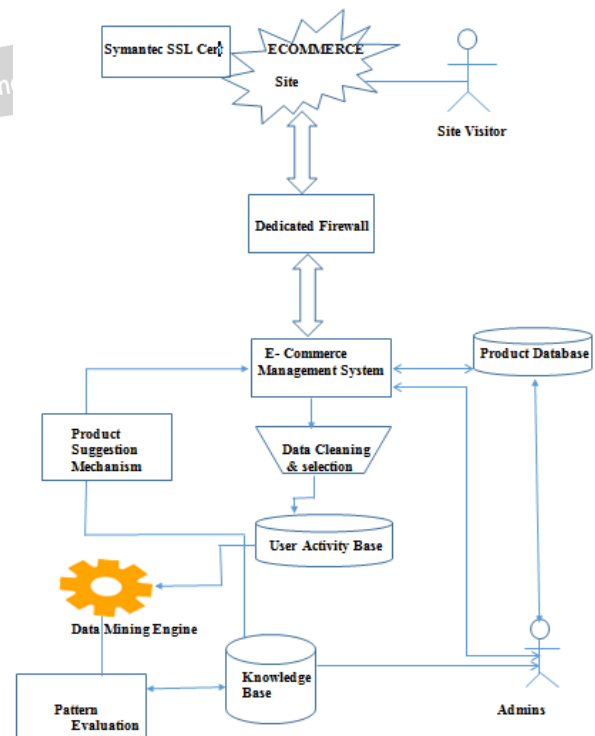
X. SYSTEM ARCHITECTURE

Fig: System Architecture

Description:

Above fig Show how data will take and get processes for making a proper decision for e commerce business. E-commerce management system take all information of user from website domain and website record then that data will forward for data washing and selection to get valuable data then it takes as a input for Data mining Engine to perform data mining techniques on collected records. Data mining engine evaluate pattern for given data and store in Knowledge Base On bases of knowledge based product suggestion mechanism apply on E-commerce management system. Knowledge base is also display (accessed) to the admin to take specific action for increasing sells of the product.

XI. ADVANTAGES

The business specialist can use a set of (predefined) temporal logic arrangements to formulate demands that could support him to discover and know the way clients use the website.

Study defines the way raw logs have been processed, how the traces have been removed, how user's behavioural patterns have been expressed and tested against the log. Also offer with some likely clarifications of the results got for the queries as well as some probable activities which could help in the re-design of the website whose goal is to improve it.

XII. DESIGN DETAILS

Fig: Analyst Login

XIII. CONCLUSION

Thus we have tried to implement the paper "Sergio Hernandez", "Analysis of user's behavior in structured e-commerce websites", IEEE Access 5 (2017). The conclusion of this paper is to record user's activity to detect and monitor the user's behavior by this website get to know the product ranking which product got highest sale this week, how many users are adding product in cart with the help of data mining technology.

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