

Building Ecommerce Framework for Online Shopping using Semantic Web and Web 3.0

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Abstract: E-commerce is one of the popular areas. In Online Shopping we can perform add, remove, edit, and update the product as per dealers and end users requirement. With the use of semantic web and web 3.0 the system performance will increase. The system should have proper user interface. The customers who visit online shopping system, they will have easy implementation of search item. This will increase the participation of various dealers for their product to get them online. For each Dealer have separate login and they also insert product, tracking products delivery for their products. The proposed system will use semantic web and web 3.0 Therefore, for Customer and also for Dealer it is useful. For both Customer and Dealers it shows own interface.

Keywords: Framework, Semantic Web, Ontologies, Web 3.0, Resources Description Framework (RDF), Owl, E-commerce.

I. INTRODUCTION

It is becoming a research focus about how to capture or find customer's behavior patterns and realize commerce intelligence by use of Web Semantic technology. Recommendation system in electronic commerce [1] is one of the successful applications that are based on such mechanism. We present a new framework in recommendation system by finding customer model from business data. This framework formalizes the recommending process as knowledge representation of the customer shopping information and uncertainty knowledge inference process. In our approach, we firstly build a customer model based on Bayesian network by learning from customer shopping history data, then we present a recommendation algorithm based on probability inference in combination with the last shopping action of the customer, which can effectively and in real time generate a recommendation set of commodity.

The exchange or buying and selling of commodities on a large scale involving transportation from place to place is known as commerce [2]. All this done by with help of electronics called as e-commerce. E-commerce from communication perspective is the delivery of information, products or services, or payments via telephone lines, computer networks, or any other means-commerce from business perspective, is the application of technology toward the automation of business transaction and workflows [2]. E-commerce is use for selling and buying product and service on the web. This also use for small and large business scale also. It is having lots of option for transaction of money that is credit or debit card, cash, check, services or trade. There are lots of E-commerce application such as Online Shopping, Home Banking, Supply Chain Management, Video On Demand, Online Marketing and Advertisement. Resources Description Framework (RDF) it define the language contents. Ontologies Web Language (OWL) it uses to represent the Knowledge, Information and Concepts.

II. LITERATURE SURVEY

E-commerce [1] framework is used to buy or exchange relative information via web applications and electronics device is nothing but E-commerce. This information helps to derive different application using online shopping and E-commerce. Network Security issue, is part of information security framework which applied to components that affect to E-commerce security [1]. E-commerce Security Issues, Security measures, Online Shopping, Security Threats and guidelines for safe and secure online shopping through shopping web sites these are network related issues.[1].Using this we learn that how the network security applied on E-commerce like Online Shopping. Using its different tools public key infrastructure, digital signature, encryption techniques.[2] The semantic web vision, use different kinds of ontologies for different kinds of purposed. Domain ontologies also can be used for the education and computer software field also. The tools and languages, ontology specifics, and production categories contain the information most relevant to academic and industry, so they focused on the result of this semantic web vision.[3] Web 3.0 in e-science[5], this technology developed for many aspects of scientific research ,data management ,discovery and retrieval ,to analytic workflows, hypothesis development and testing, to research publishing. Semantic web technologies for aerospace, integrated methodology to optimize knowledge reuse and sharing, illustrated with a use case in the aeronautics domain. In this domain ontologies used for knowledge capture also guide the retrieval of the knowledge extracted from the data using a semantic search system that provides support for multiple modalities during search.[4] The dawn of semantic search, this system try to augment general searches as well as systems that are trying to literally change the search experience.[5] It cover the combination of human and machine efforts and important use of semantics in search is to draw on domain knowledge in areas where searches

are difficult.[5] Semantic technology are rapidly increased and along with giving a example of Sensebot. Semantics scales up-beyond search in web 3.0[6], it supported extracting metadata from heterogeneous data and provided Mozilla browser- based faceted search. This having various fields likes abstractions and human experience, knowledge-enabled computing, intelligent processing and reasoning, integration.[5][6] The Semantic Web and Web 2.0 are two seemingly competing visions that dominate in Web research and development. This both technologies need each other in order to scale beyond their own drawbacks, in a way that enables forthcoming web applications to combine Web 2.0 principles, especially those that set off notions such as usability, community and collaboration, with the powerful Semantic Web infrastructure.[3][4][10]

III. SEMANTIC WEB AND WEB 3.0

Semantic Web developers have adopted OWL to represent knowledge, but to achieve important objectives such as data sharing and data integration using RDF Schema alone. OWL, or a language with similar theoretical foundations, will lead the way in the semantic exploration of the Web. Currently, Web-based standards are the preferred way to represent knowledge. [3] Semantic web challenges are Ontology Engineering, Scalability, Markup Creation, Ontology Mapping and Translation.[3] Semantic Web applications are being developed for many aspects of scientific research, from experimental data management, discovery and retrieval, to analytic workflows, hypothesis development and testing, to research publishing and dissemination.[4] "The Semantic Web is not a separate Web but an extension of the current one, in which information is given well-defined meaning, better enabling computers and people to work in cooperation." It is a source to retrieve information from the web and access the data through Semantic Web Agents or Semantic Web Services.[6][15] Web 3.0, with its use of semantics and artificial intelligence is meant to be a smarter web that it will be easy to retrieve what contents user want to see so it will be save your time and improve your live. Challenges of web 3.0 are Vastness, Vagueness, Uncertainty, Inconsistency and Deceit.

It also known as "Portable Personal Web". Portable Personal Web servers to increase their efficiency in learning, research, and communication, thereby increasing productivity. It focused on the individual. It is having dynamic and static content. Examples of web 3.0 and semantic web are iGoogle, NetVibes. It is having also combination of advertisement and entertainment.

IV. PROBLEM STATEMENT AND SCOPE

This problem statement has basically 2 parts:

- Framework for Online Shopping
- Semantic web and web 3.0

The Framework for Online Shopping is nothing but customer and also for the dealer have respectively their own interface. In customer side they will visit this system.

Each and every customer have own account. If customer have already existed account then they can directly logged in page. If customer is new then they have to create their account. Search for different product if they want to buy product then they have option add to card the product. They also have option select many more quantity. Customers also have option to track their products. For payment of products have option like PayPal, cash on delivery. In order confirmation there are two parts shipping information and billing information. In dealer side they can insert their product to get them online. Each dealer have own interface.

In this Semantic web and Web 3.0 advanced search can be use that means customer wants to find specific keyword as "ke". Then result will display as related word using "key", "keybord" and others related to "ke".

V. DESIGN OF PROPOSED SYSTEM AND DATABASE

A. Admin

The admin controls the whole system dealer side and customer sides when customer wants to connect with dealer then it have to get permission through the admin.

B. Database

In this system we have two databases

- Authentication Server
In Authenticate server it will store only the login id's for both user and dealer.
- Database Server
The Database server is used to store user query as well as dealer query.

C. Processing

We use different methods for processing the data or the queries or customer and dealer i.e query processing. Selection and data items Semantic web and web 3.0 and owl, RDF. Some methods are used to process the different data items of databases.

D. Customer and Dealer

This two are main part of the system, which are responsible for implementing the different function of system. Such as add data items, sales, purchase etc. using as authorized login id. We also provide some data space for dealer for stories and processing the queries of user/customer.

E. Functionalities Of The Proposed System

- To maintain all the information regarding the dealers & products of each and every make.
- To display the detail of required product.
- To generate result regarding product depending on the user preferences.
- It provides high security.
- It requires less number of human being.
- Work becomes easy. Comparison product is made at a single click.
- Helps in getting advice and expert reviews about a particular product.

- It'll definitely help a customer in getting the product he wants to his satisfaction level.
- F. User Interaction in System
- Users can search for their specified product.
 - Users have option to comparing between products.
 - Users can buy product online. For payment they can also choose the option like CASH ON DELIVERY and ONLINE PAYMENT also.
 - Users can see also their product rating. Also they can see product video for their satisfaction.

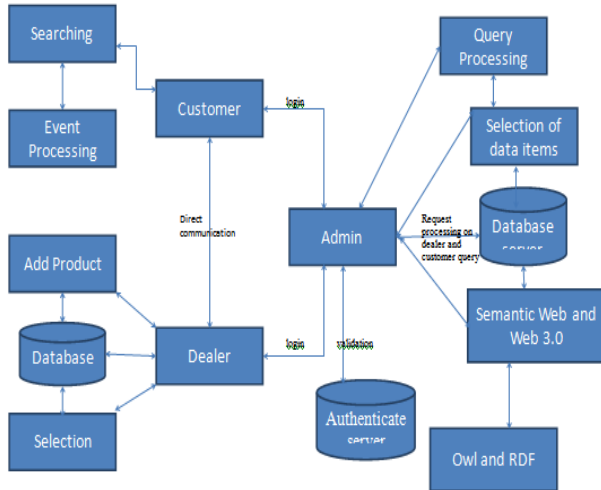


Figure 1. Proposed System Architecture

VI. MATHEMATICAL MODEL

1. Let $A = \{ \}$ be as an online shopping system.
2. Identify input as $B = \{b_1, b_2, b_3 \dots b_n\}$
Where $b_i =$ Number of item in B.
3. Identify input as $U = \{U\}$
Where $U =$ User in B.
4. Identify D as an output i.e. delivery of product.
 $A = \{B_n, U, D\}$
5. Identify Process C
 $A = \{B_n, U, D, C\}$
 $C = \{Cr, WIE, TID, PPP, RL\}$
Where $Cr =$ Processing of B and Web Information
 $EPI =$ Extracted parse information by Crawler
 $ITT =$ Identified token using token file
 $PP =$ Procedure programming for specific token
 $ST =$ NLP rule for specific token
6. $A = \{B_n, U, D, C, Cr, EPI, ITT, PP, ST\}$

A. MATHEMATICAL MODEL FOR PROPOSED SYSTEM

1. Initialize set of Token Case
 $TC = \{ \}$
2. Initialize URL
 $URL = \{ \}$
3. Initialize Dictionary
 $Dc = \{ \}$
4. Processes Q and Web Information contents
 $Pr = \{SW, ST, TN\}$

Where $SW =$ Stop word exclusion
 $ST =$ Halting
 $TN =$ Tokenization

5. Reading $TF = \{qw, sw, aw, RI\}$
Where $qw =$ Token
 $sw =$ Supportive symbolic arguments
 $aw =$ Associated response threads
 $RI =$ NLP regulation for symbols

6. Identify token or query in queue using Dictionary
 Dc and Proper noun Pn
 $Token = qw \in Dc$
 $Proper Noun = Pn \in Dc$

7. Set Master vector
 $Mv = \{qw, sw, aw\}$
Where
 $qw =$ Query word or the Token
 $sw =$ Supporting Query word
 $aw =$ Related answering strings
 $Mv =$ Master vector
Tag sentence containing Mv using equation
 $S(x) = Mv$

k
 0
 $n0$
 n is the total number of documents
 k is the total number of sentences containing master vector
 $S(x)$ is a collection of all sentences containing Mv in the entire document collection

8. Extract answer An using the equation
 $An = \lim I \rightarrow K [Tw (Si \in RI)]$
Where Si is a sentence in $S(x)$
 RI is a set of NLP rules for a specific keyword qw and
 Tw is the term weight

VII. RESULT

In this proposed system we have implement online shopping using semantic web and web 3.0 improved search latency speed _____.

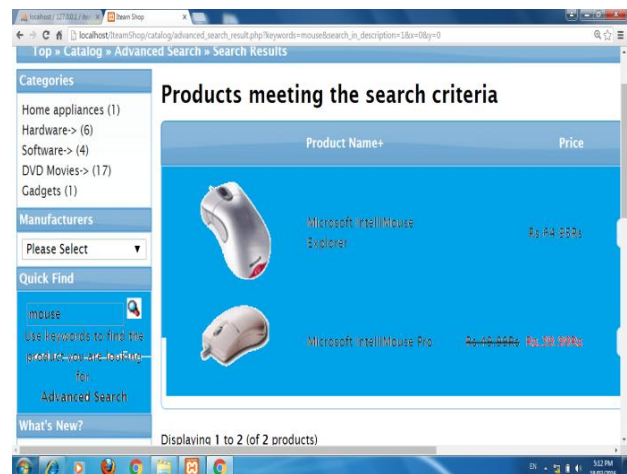


Figure 2: Screenshot of Search Method

In our proposed system there are total 200 products that can be electronics, hardware, software, home appliance, clothing. By applying semantic web and web 3.0 on search method that means on search text box if we want to search

for particular product that is mouse. So we will write “mouse” as keyword. Following figure shows that on left hand “Quick find” box in that we will give input and in center of item will be displayed.

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VIII. CONCLUSION

In E-commerce we build framework for Online shopping using Semantic web and web 3.0 ,so it is easy for dealer to sale their product on this framework and to it find's customer's behavior, patterns and realize commerce intelligence by use of Web Semantic technology.

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