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## AI multi-agent shopping system

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### ABSTRACT

*An AI based multi-agent shopping system where system is fed with various product details. The system allows user to register and enter his details about a particular product. The system records all the details provided by user and checks for various items matching his search. The system comes up with a list of items best suited for user needs. The system also suggests other related items that the user may like. The system suggests these items which are likely to be bought by the user based on his previous purchases. The system handles multiple users at a time and provides accurate results. Current e-shopping systems use the Internet as its primary medium for transactions. E-shopping has grown in popularity over the years, mainly because people find it convenient and easy to buy various items comfortably from their office or home. This paper has proposed a personalized e-shopping system that helps customers to purchase quality goods and gets suggestions from the system to provide better results.*

**Keywords**— E-Shopping, Related Products, Multi-Agent, Suggestions

### 1. INTRODUCTION

Multi Agent Shopping System is a project developed to aid consumers, retailers and owners in buying and selling of goods. It is a process of buying goods and services from merchants who sell on the internet and people can purchase anything from companies that provide their products online. E shopping is been widely practiced mainly as it helps people to buy various items comfortably from their office or home. One of the most advantages of online shopping is the availability of products whenever and wherever we need as it reduces the need for waiting for long time in queues to purchase one product. The unpredictable growth of the internet users in world opened a new business opportunity to the whole world. Shopping activities over the internet have been growing in an exponential manner over the last few years. One of such environments in which there is a prominent job for the agents would be e-shopping in which a user is able to give those agents the responsibility of buying and selling, instead of searching the e-shopping himself. The owners sell their goods effectively and the required time frame

and attract customers for purchasing more products online. The system developed initially acquires the customer's need and interact with users through online. Thus, help is smooth conversation and product transaction with the customers.

One can find their product on many portals but not all can find related products. Related products and best recommended products are key element of any online shopping. It's one of the important aspects as customers can add items along with related items also to the cart, by doing this they can now order as a set. This helps the user to make use of application more effective. In today's world also another important aspect is customers get choices for any product they choose and get confused while selecting. This can be solved by comparing products and price. Filtering based on price and categorizing into sub category makes the best use of application in better manner.

### 2. LITERATURE REVIEW

Online shopping has found rapid growth for the fast-paced world in the present context. Fashion is the key word for today's teenagers. Online shopping is making things much easier in terms of time. In the present context, searching of products in online portals need much of user's effort for manually searching the products the user desires. This paper deals with how easy it would be if the whole of fashion world is under a single click. To overcome the older context of searching products manually, an algorithm is proposed which is a fusion of auto tagging and geo tagging along with the other features such as crawling, feature extraction and filtering technique. The output of this system provides more efficient search results where the user can shop their desired products.

Shopping effectively through online portals by single click. The output of their system provides more efficient search results and overcome the older context of searching product manually. [1]

The prosperity of electronic commerce has changed the traditional trading behaviors and more and more people are willing to conduct Internet shopping. This paper proposes a personalized shopping model, which makes use of agent technology to enhance the automation and efficiency of

shopping process in Internet commerce. Based on the agent technology, the shopping model integrates knowledge-based decision-making method and preference acquiring method to provide decision support for automatic shopping. In order to maintain a conversation with multi-suppliers, the commodity ontology is also utilized to support sharable information format and representation. [2]

The utilize of Operator Innovation to Back Ecommerce operation, particularly in mechanizing the buying and offering handle is so promising and is worth of victory. Electronic commerce develops quickly over the Web. The data on web gets to be more energetic and heterogeneous. Hence, computer program specialists are required to supply a solid working structure as they offer assistance construct conveyed frameworks. The approach proposed in this paper could be a multi agent robotized cleverly shopping framework whose point is to display ideal arrangements to enhance and encourage e commerce. It may be distributed framework, where human clients are able to appoint their assignments to operators, which is able at that point to do the shopping work on their sale and display them the comes about. Buyer clients and the dealer can be organizations, companies or people. The proposed approach is illustrated by a test execution done utilizing e commerce to shop and have an effective online transaction between trader and consumers and both be benefited from such a platform. [3]

### 3. EXISTING SYSTEM

In traditional system, customers have to manually go to shop to purchase a product which becomes a tedious task. The existing system is less user friendly as suppose a customer wants a product which is very much necessary and the product is not available in the nearby shops and he has to travel miles to get that product, the traditional system wouldn't serve the purpose. Also it is difficult for a user to identify a required product and the shopping process is time consuming. The main disadvantage of the existing system now is we have to maintain social distancing amidst this pandemic and it would be difficult to go to a shopping complex and purchase products directly.

The existing system can be overcome by a new system which allows the customers to shop easily amidst this pandemic crisis by introducing online shopping. The customer, retailers can have online communication and the user can purchase any product comfortably from their home itself. By introducing a new system it would help the customers to save time and money as the existing system is been replaced by many online selling companies.

### 4. PROPOSED SYSTEM

There are large numbers of commercial Online Shopping websites offering large number of products tailored to meet the shopping interests of large number of customers. These online marketplaces have thousands of products listed under various categories. Problem:

The basic problems with the existing systems are the non-interactive environment they provide to the users.

- The use of traditional user interfaces which make continuous post backs to the server; each post back makes a call to the server, gets the response and then refreshes the entire web form to display the result. This scenario adds an extra trade off causing a delay in displaying the results
- A search engine that would display the results without allowing the users to further filter the results based on various parameters.
- Use of traditional and non-user friendly interfaces that are hard to use.

In the proposed system customer need not go to the shop for buying the products. He can order the product he wish to buy through the application in his Smartphone. The shop owner will be admin of the system. Shop owner can appoint moderators who will help owner in managing the customers and product orders. The system also recommends a home delivery system for the purchased products. The customers get recommendations based on previous searches, previous purchase type.

### 5. METHODOLOGY

The system consists of two parts. A web application which can provide the online shopping service and an android application for the customer to access the web service from his Smartphone. Web application should be able to help the customer for selecting his item and to help the owner in managing the orders from the customers.

As online shopping became a trend nowadays the regular shops are losing their customers to online brands. Customers have effortless shopping experience and saving time through shopping online. For competing with those online brands, if shops are providing an online portal where their customers can shop through internet and get the products at their doors it will increase the number of customers.

To provide a web portal for online shopping of products in an existing shop. When an online shopping cart is implemented for customer to purchase product in an efficient manner. The system should provide a reliable environment to both customers and owner. All orders should be reaching at the admin without any errors. The android application is designed for user friendly environment and ease of use. Implementation of the system using CSS and html in front end with JSP as back end and it will be used for database connectivity. And the database part is developed by SQL. Responsive web designing is used for making the website compatible for any type of screen.

### 6. EXPECTED RESULTS

The project developed provides customer satisfaction by helping recommendations based on previous searches made by the user, the type of products purchased and the quality of the product being purchased. The user can log in and view products, search products and add them to cart, the user should be able to place purchase and they can see shipping details where the good is dispatched. The admin can manage payment, add different category of goods like electronics, wearable for men and women of all category. The project developed satisfies customers and helps the owners get more profits and have trust worthy customers.. Below are some snapshots of the results we got.



Fig. 1 User Home Page

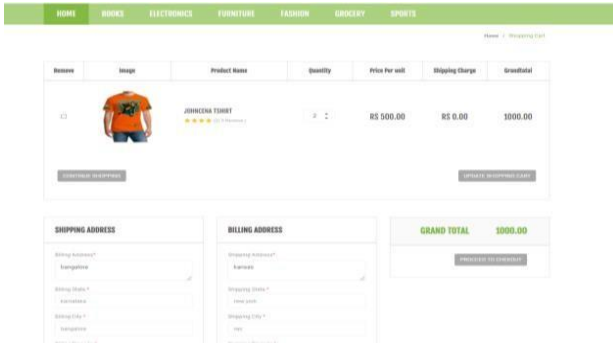


Fig. 2 Cart Details

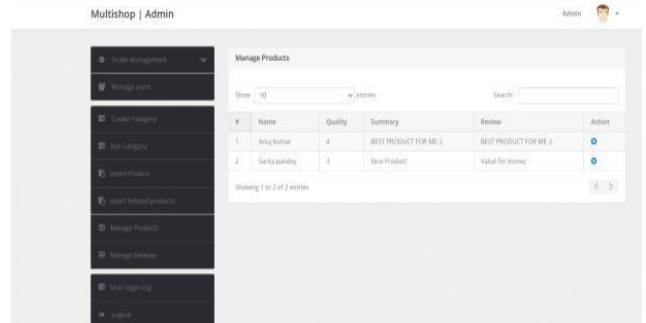


Fig. 7 Manage Reviews

RELATED PRODUCTS

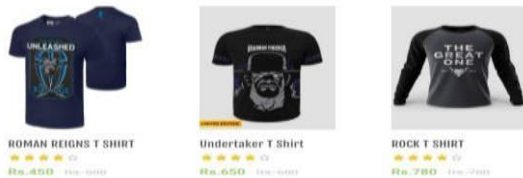


Fig. 3 Related Products

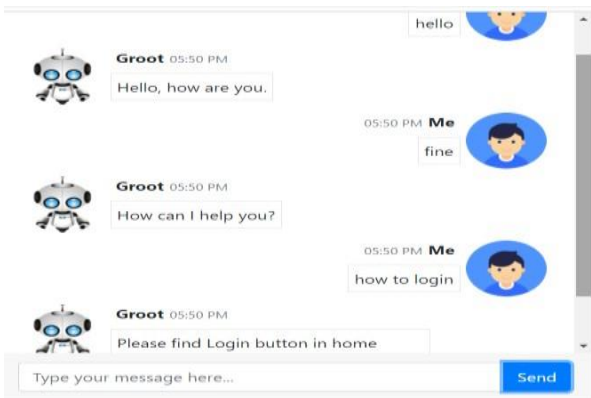


Fig. 4 Chat Bot

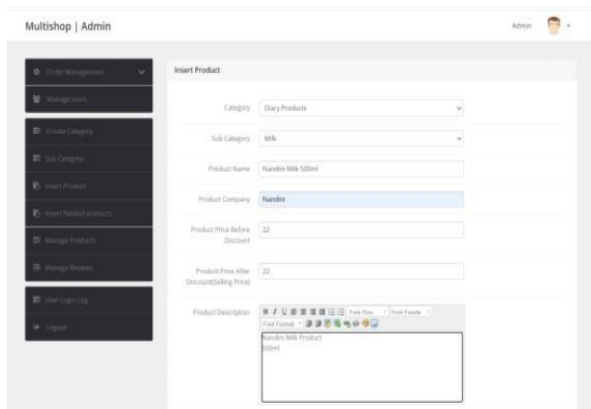


Fig. 5 Add Product

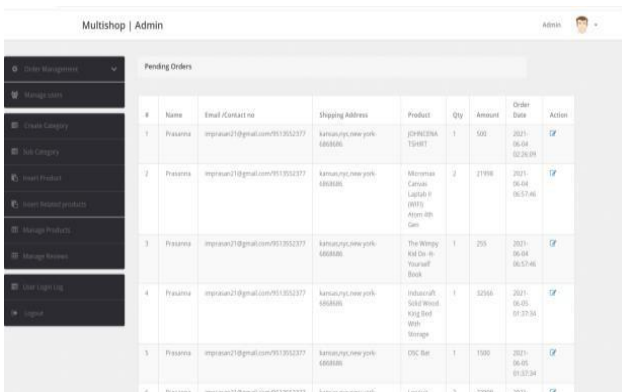


Fig. 6 Manage Orders

7. FUTURE SCOPE

Future modifications to further improve the project can be done by implementing cash back offers to the customers. By doing this, the customers will have a whole new experience while shopping. Furthermore, we can develop models for price predictions and help the admin sell more products by being aware of the market trends. We can have a voice assistant to enhance searches and also implement a search based on uploaded image by the customer. The future scope of the project can be implementing real time cash payment and have credit or debit card option while shopping.

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