Smart Virtual Furniture Website

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ABSTRACT

This work proposes a smart virtual furniture website which provide a platform where user can determine whether the selected furniture is suitable or fit enough to available space in his/her house. It is a virtual e- commerce website for home furnishing that allows user to put virtual furniture together with his location. The customer can then decide whether to purchase the furniture or try other products. The proposed application allows users to view different items, as well as 'try' them before buying. Thus, users can choose the right colour, shape and size while they are sitting at home.

Keyword : *e-commerce, virtual , furniture website, room design, augmented reality ,interior design*

1.INTRODUCTION

Online shopping is a new business concept introduced by World Wide Web. A person can establish a business online using a website. Shop visitors can browse through a range of products and purchase products online using online payment methods. Nowadays, people are ready to buy any products just by viewing it online. This is the standard scenario for online shopping. Online shopping became popular due to many reasons such as it saves lot of time which were used to visit the actual shops. Even if they find time, due to heavy traffics and huge queues shopping becomes difficult task for the visitors, also searching particular product is easier in online shopping mode as compared to the real shops. Moreover, the technologies like augmented reality and virtual reality helped to make this shopping experience more realistic [1] [2] [4] [5].

We have proposed a system where we'll make use of augmented reality to let people see the furniture in their rooms without actually placing it there. Augmented reality (AR) enables users to add virtual objects to their physical environment, providing the ability to interact with these objects as if they were actually present[2]. AR is commonly used in various applications, including mobile applications, video games, and interactive media, to create immersive experiences that merge virtual and physical elements. This technology is typically used on devices such as smartphones, tablets, or wearable devices with cameras and sensors to capture the real world and overlay virtual content onto it. This creates the impression that virtual objects are part of the real world.The detailed comparison of AR and VR is shown in table-1. This work proposes a smart virtual furniture website where user can determine whether the selected furniture is suitable or fit enough to available space in his/her house. The main goal of designing this application is to help customer to identify how his room will look when the selected furniture is placed in that space using augmented reality.

2. PROPOSED

In the early days, it was feasible for users to purchase furniture items without going to the stores, but it was impossible to see how the item would look in their actual space. The main issue the customer has is that they need to measure themselves and make sure the product is the right fit for them. Hence there was a need of an application where customer would be able to see realistically the furniture in the framework of their home without physically purchasing and arranging the furniture in their home.

Table -1: Comparison of AR and VR

Augmented Reality	Virtual Reality
AR overlays computer-generated objects onto the real world.	VR creates a completely computer-generated environment.
AR is typically experienced through a device such as a smartphone or a pair of smart glasses that use cameras to capture the user's surroundings	VR requires a headset that completely blocks out the user's real-world environment and replaces it with a simulated one.
In AR, the user can still see and interact with the real world while virtual objects are added to the scene	In VR, the user is completely immersed in a computer-generated environment and cannot see the real world.
AR is often used in applications like gaming, education, and marketing	VR is used for a wide range of applications, including gaming, training, and therapy.

The proposed work uses AR so that the customer may try different combinations of product without having any physical movement or disturbance. It is e- commerce website for home furnishing that allows user to put virtual furniture together with his location. Here customer can check if the particular furniture will be suitable in his space by uploading image of the location where he has to place the furniture. He/She can check virtually if the furniture fits in his her space by virtually placing furniture in the different angles in the uploaded image of his room. The customer can then decide whether to purchase the furniture or try other products. The main objective of this project is to reduce time for finding and purchasing furniture which is the main disadvantages of traditional shopping.

2.1 Objective

The objectives in this works are namely:

- ● To reduce product searching time

- ● To reduce time required for thinking and decision making

- ● To provide the user a virtual representation of how the furniture will look in his space.

- ● To give customers the option of ordering the ideal furniture online.

2.2 Workflow

The flow of the proposed system is shown in the flowchart. The System contains two types of users-
1. System administrator/owner
2. Shop visitor/customer.

The administrator uses the administrative back end will add inputs, and the virtual shop will be rendered/ created for the customers accordingly. In the generated front end customers can select products and upload the image of room where he has to place the product and check the appropriate product for his room.

Customer can view how the actual product will look when it is placed in the room. The proposed system also include feature where user can select multiple furniture product and view it in the uploaded image to decide how actually the room or space will look after placing the selected product in his space. This features help user to select the different type of product with different colour and size without actually visiting the furniture shop. After viewing the product virtually, the buyer can place a purchase order, which is then sent to the store manager or he can view and try other products.
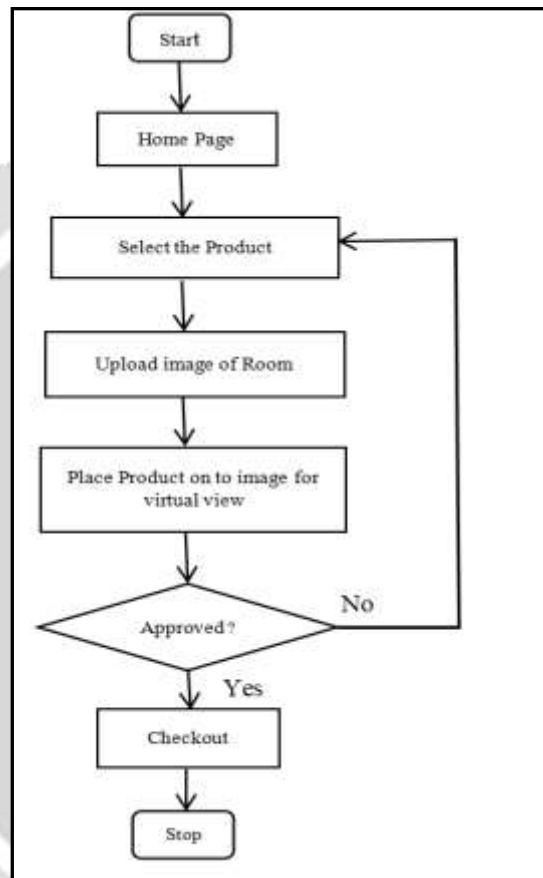

Fig -1: Flow of Control of User

3. IMPLEMENTATION

We have proposed a system that uses a virtual room planner. A virtual room planner for a furniture website is a tool that allows users to create a digital representation of a room and then add and arrange furniture within it. This tool uses advanced computer graphics technology to create a three-dimensional (3D) model of a room that users can manipulate and interact within real time.The virtual room planner typically offers a wide variety of pre-designed furniture items that users can drag and drop into the room to see how they fit and look in the space. Users can also adjust the size, position, and orientation of the furniture pieces to get a better sense of how they would look in their actual space. Additionally, users can save and share their designs with others to get feedback or to refer to when they are ready to purchase furniture for their actual space.Overall, a virtual room planner is a helpful tool for furniture websites to offer because it allows users to visualize how different furniture pieces will look in their space, which can help them make more informed decisions when purchasing furniture online.

Fig -2: viewing multiple products added at the same time

Following modules are included in the proposed system:

1. Login/Register: To enable a safe and secure shopping experience, the user has to register themselves into the application using their phone number. Upon successful registration, the user can login to the application through the login page using their phone number as the user id and the password they have entered during registration.

2. Home Page: The user is greeted with a personalized message with their name concatenated with the text "Welcome user" on the home page after a successful login. The home page features the best-selling product or any product on offer. The categories page allows the user to browse through several categories which can help them to find their required product.

3. Select Product: When user clicks on category various categories of furniture will be displayed. A product can be selected from either the view on the home page or from any of the categories. The product image, name, price and rating will be displayed.
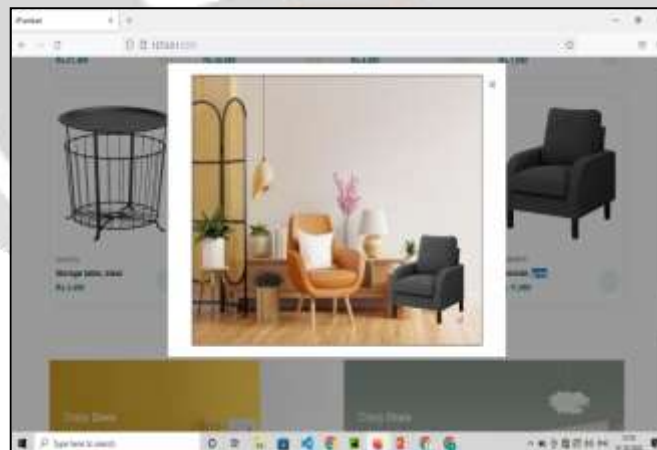

Fig -2: viewing products virtually in uploaded image

4. Virtual Room Planner: The proposed system provide virtual room planner which allow customer to create virtual representation of room and try out different furniture pieces to see how they would look in the user space. The modal box is opened when user clicks on any product. Here the customer has to upload image of the room where he has to place the furniture and the drag the furniture over the image to check if it fits or look good in the uploaded space virtually. The fig-2 shows the virtual view of selected product.

5. Checkout: After proper inspection of the product, the customer can add the product to their cart. When the add to cart button is pressed, the product is added to a cart list database, along with the information of the user who has

added it to their cart. The cart total is displayed at the bottom of the cart page. The user are satisfied with their purchase they can proceed to checkout.

4. CONCLUSIONS

We have developed a virtual home furnishings e-commerce website that allows customers to match their virtual furniture with real scenes. This system will help user to virtually view how the selected furniture will look in their home space without physically going to the shop. In future we try to implement this system by creating a recommend system using machine learning that will recommend the furniture to the customer. Customers can change the size of a product too show a virtual trial to get more information about the space. Guest can create an account and save products to a wish list. The proposed system is to the shopping cart process. It can be extended to simplify the checkout process.

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