

HOME DECOR SHOPPING USING AUGMENTED REALITY

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ABSTRACT

An augmented reality system generates a composite view for the user that is the combination of the real scene viewed by the user and a virtual scene [8] generated by the computer that augments the scene with additional information. This paper presents an innovative online shopping application of home décor using Augmented Reality. The online shopping of home décor items using augmented reality let you visualize how products will look in your home. The reason behind this push is simple, since customers cannot touch, hold or feel goods in an online store, virtual home decor shop would give customers as close to that experience as they can get and Augmented Reality offers a powerful way to do just that. The ability to provide consumers with realistic and a practical simulation in an online shopping environment builds confidence in the purchase decision, as well as enhances the discovery and efficiency of the shopping.

KEYWORDS: Augmented Reality, Consumer Tangibility, E-Commerce, Virtual Reality

INTRODUCTION

In the modern world online retailing has grown by leaps and bounds. More people today are using the ecommerce websites to shop a wide variety of items. However online shopping doesn't provide consumers with the opportunity to touch and feel the products they are considering for purchase. Since customers cannot hold or touch the products they don't always know what the quality of product they are intending to purchase will be. Sometimes the description or the photograph of the product might be inappreciably different from that advertised on the website. As a result, customers might end up with an inferior-quality item. Therefore a system is needed that deals with this inconvenience. Thus e-shopping can be taken to the next level with the help of Augmented Reality.

Augmented reality is a user interface paradigm, which mixes virtual and physical information in a single output. The system of Online shopping of home décor items using Augmented Reality allows users to see products beyond the box or showroom. Consumers can choose an item to view and watch as it virtually appears in their home in true-to-life size. Shoppers can view the furniture from [2] different angles. Customers need not wait for the arrival of the products to view their real size and the true appearance in their home.

Online shopping of home décor using augmented reality will give consumer a combined experience of both traditional retail as well as modern e-commerce. Thus the alliance of e-shopping and augmented reality will boost sales as well as enumerate the shopping experience.

LITERATURE REVIEW

This module consists of review of literature related with the impact of online marketing on consumers. Then it analyses the prevailing arguments in online marketing and factors affecting acceptance of online marketing. Further it

provides a critique review of variegated studies related with online marketing.

This is followed by highlighting the significance of augmented reality in enhancing shopping experience.

The Online Shopping Behaviour of Consumers

The growing dependence of firms on e-commerce activities and the recent failure of a vast number of dot-com companies highlight the challenges of operating through virtual channels and also emphasize the need to better understand consumer behaviour in online market channels in order to attract and withhold consumers. While carrying out all the functions of a traditional customer, in Internet shopping the customer is simultaneously a computer user as he or she interacts with a system, i.e., a commercial website. On the other hand, the physical store has been transformed into Web-based stores that use networks and Internet technology for communications [9] and transactions. In this sense, there seems to be an understanding that online shopping behaviour is fundamentally different from that in conventional retail environment.

Product Characteristics

Product characteristic is a factor that influences the consumer's intention to purchase over the internet. Product characteristic can be tangible or intangible [3], standardized or customized. In an online context, lower palpability of a product is caused by the inadequacy of physical contact and assistance in the shopping process. Consumer's intention to shop on the internet will be subsided when there is a need to seek advice from a salesperson regarding the considered product. Products such as furniture, car, and computers have the lower potential to be purchased by the consumer because it requires more personal knowledge [3] and experience.

Tangibility

Regardless of the modern online shopping or traditional offline shopping, tangibility is expected to be a factor that consumers will take into consideration during the purchasing process. Tangible products despite the fact that it is considered as standardized products, customers need to feel it and touch it to make their purchasing decisions. Consumers are particular about the tangibility of a product is because they need the security and assurance [3] of the product purchased is in a good condition and assurance of purchasing the right thing.

The Online Purchasing Process

Numerous studies frequently mention that there is a huge amount of window shopping taking place online but the number or the percentage of surfers who turn into purchasers or regular buyers are very low. This might happen because of the shortcoming of consumer intention to purchase an offering from the online environment at the outset. It might [4] also happen because of different problems that arise during online shopping driving the consumer to abandon the task in the midway Research shows that most of the people abandon their shopping carts and stop the purchasing process in the middle [10]. Therefore there is a need to turn surfers into interactors, purchasers, and finally, repeat purchases by[4] making them enter into continuous interaction with this environment.

Alternatively, some consumers accept to shop from the Internet in principle but technical complexities or ineffective systems discourage them.

The Need of Augmented Reality Technology in Online Shopping

Irrespective of the pessimistic state of events, marketers need not be hopeless about the future. Once the uncertainties consumers perceive about shopping through the web are scaled down, the environment still promises a high potential for selected consumer segments. Studies focus that tools such as the use of artificial shopping or augmented reality agents that work on behalf of consumers in the online market, are very valuable efforts enlightening the road for diminishing online shopping constraints.

AR permits the user to see the real world, with virtual objects superimposed upon it or composited with the real world. Hence, Augmented Reality supplements reality, rather than totally replacing it.

That is AR complements the real world with virtual objects that appear to coexist in the same fields or space as the real world [11]. In an AR environment, conditions, and settings, the virtual furniture can be displayed and transformed in real-time on the screen, allowing the consumer to have an interactive experience with the virtual furniture in a real-world environment. Finally, this survey proposes a new approach for applying AR technology to interior design work, where a user can view virtual furniture and interact with 3D virtual furniture data using a dynamic and flexible user interface.

METHODOLOGY

Tangibility

One of the major disadvantages of traditional ecommerce system is that we do not get the feel of the products displayed on the website. To overcome this drawback we are using augmented reality.

A web camera or a mobile camera will capture the consumer's physical environment and then integrate it with virtual object or the 3D models of the products in real time. User can then interact with the products to determine if the products are suitable.

Interfaces

The user interface of the system is made as simple and user-friendly as possible. In order to accomplish this we are using bootstrap. Bootstrap has a responsive interface. Bootstrap adapts to the change in platforms with super speed and efficiency. All styles are consistent throughout the platform and are also mobile-friendly. They actually look quite nice even despite their simple nature. Not only does Bootstrap offer styling for almost every element a typical website or web application requires, but also provides a great documentation with varied examples and demo that only make it easier for even someone new. Bootstrap comes equipped with many elements that are being considered the future of design itself.

We are also using animate.css which provides numerous browser animations, thus making it more users friendly for the customers viewing the website.

IMPLEMENTATION AND ANALYSIS

An Augmented Reality e-commerce assistant system for furniture and other home décor commodities is designed to provide consumers with more realistic and practical product experiences and interactions. With the development of an Augmented Reality e-commerce portal, online consumers can bring a product into their own physical environment and even try out and visualize the product in their physical environment while shopping from their computers. Similar to the traditional e-commerce systems, our online shopping portal using Augmented Reality requires the Internet as the

elementary user interaction platform. In addition to this our Augmented Reality online shopping portal, also needs a camera to capture the consumer's physical environment and then integrate and blend it with virtual objects in real time.

Modules

The modules used in this software are as follows:

- **Login:** The Login module allows any customer to login to the system. The customer has to enter his user name and password in order to get logged in.
- **Registration:** This module is for the users who do not have their account. Here user is allowed to create an account to login. The account creation is done by filling the registration form with user details such as name, phone, email etc.
- **Product:** This module has information regarding the furniture and other home décor commodities such as its name, model, colour, price information, its features etc. Only registered users can purchase the product.
- **Augmented Reality:** This module displays items in real size by projecting a visual replica though the camera on a smart phone. One can reposition the items to any angle to view the furniture in one's home space. In order to use this feature user has to download an android application available on the site and also download and print the provided marker by pointing the camera towards the marker user can view the required model.
- **Filter:** This module helps the customer to ease his search based on his budget or interest. The filter can be applied on different categories like model name, model number, colour, price etc.
- **Cart:** User can select any number of home décor products and add to the cart. One can also remove the products from the cart if one dislikes it later.
- **Payment:** This module describes the payment done by the customer. The payment information can include information like the product purchased, quantity, mode of payment (cash on delivery, net banking) etc.
- **Inventory:** This gives the details regarding the products available for sale.

EXPERIMENTAL RESULTS AND DISCUSSIONS



Figure 1: Customers Login Page

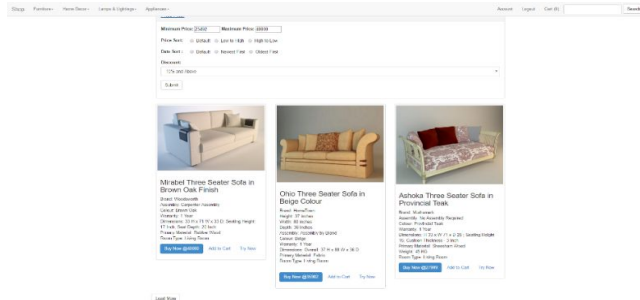


Figure 2: Display of Product for Sale

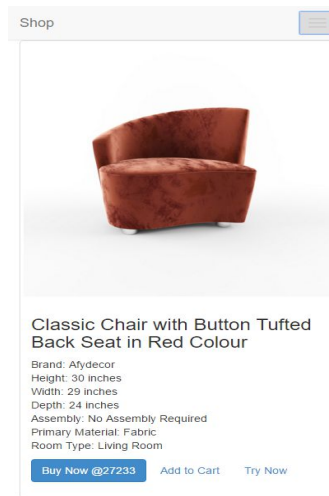


Figure 3: View of Page on a Mobile Phone



Figure 4: An example of Augmented Reality with Transparent Glass Effect



Figure 5: Augmented Reality for a Sofa

SOFTWARE REQUIREMENT

Vuforia SDK

Bootstrap

animate.css

Unity SDK

Android SDK

Autodesk Maya 2012 or Blender

ADVANTAGES OVER TRADITIONAL SYSTEM

Allows customers “try” before they buy with a 3D product preview

Customer Satisfaction

Combines traditional retail experience and e-commerce

Increases online conversion rate and reduced returns lead to an improved company's profitability.

Enhances brand recognition.

CONCLUSIONS

Augmented reality marketing and retail are quite new, though we can see the significant growth of successful campaigns over the recent years. Retail is a very fascinating field to explore Augmented Reality because the results can be seen in real and present figures, live feedback from the customers and often get viral exposure due to its novelty. The examples described above talk for themselves [7]. We anticipate new impressive campaigns in augmented reality retail and soon it will become a crucial and a vital tool in the marketing technology set.

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