



Customer Focused Ecommerce web designing Based on Augmented Reality

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Abstract—Augmented Reality commonly used on the E-Commerce web design to establish e-shopping and make it more interesting for Customers. Proposed system is an another approach of designing and creating Augmented reality for E-Commerce by using Omni-directional panoramic image. It create the Virtual Reality can be made by create 3D real time interaction environments to get as close as possible to the real world. To generate the 3D Virtual Reality, a high performance computer is needed. To view 3D Virtual Reality on e-Commerce web site also consume a large amount of Internet bandwidth. These problems will obstruct the chance of getting customers who can't provide the high performance computer and high-speed Internet bandwidth. This paper proposes another approach of designing and creating Virtual Reality for e-Commerce web site by using omni-directional panoramic image. The panoramic image can be made by collect continuous images of the surrounding environment and combine them together. The omni-directional panoramic image can be used create the Image Base Virtual

Reality (IBVR) which interacts with customer as expected in other Virtual Reality.

Keywords: *Virtual Reality, Omni-directional image, Image Base Virtual Reality*

Introduction:

e-Commerce, the market on the internet, is web sites that created to be a meeting room for merchants and customers or service providers and customer. There're many techniques to be considered which one should be on e-Commerce web site for interesting customers. There also are problems in e-Commerce web site too, one of them is customer's uncertain in product or services on the web site since customer cannot see or touch the product they're going to pay for, then the new way to solve the problems was introduced. Virtual Reality is a new invention that let customers walk and see through the Virtual store, almost make them feel like walking in real store which is fun and more interesting for the customers.

We proceed the paper along with 3 objectives.

- Bring the characteristic of real store to use in Virtual

store design. - Optimize the advantages of being Virtual to empower the customers to do what they cannot in the real store. - Personalize Virtual store, since customers have different interested. In the following sections will show you how Virtual Reality deals with the 3 objectives of succeeding reach wide range of customers without high performance computers.

Virtual Reality

Virtual reality (VR) is an interactive computer-generated experience taking place within a simulated environment. It incorporates mainly auditory and visual feedback, but may also allow other types of sensory feedback. This immersive environment can be similar to the real world or it can be fantastical.

Current VR technology most commonly uses virtual reality headsets or multi-projected environments, sometimes in combination with physical environments or props, to generate realistic images, sounds and other sensations that simulate a user's physical presence in a virtual or imaginary environment. A person using virtual reality equipment is able to "look around" the artificial world, move around in it, and interact with virtual features or items. The effect is commonly created by VR headsets consisting of a head-mounted display with a small screen in front of the eyes, but can also be created through specially designed rooms with multiple large screens. Other forms of VR include augmented reality and mixed reality systems. VR systems that include transmission of vibrations and other sensations to the user through a controller or other devices are known as haptic systems. This tactile information is generally known as force feedback in medical, video gaming, and military training applications.

Designing Navigation

To approach the navigation map, we begin with marking the spots that represent the viewpoints in the online store. When the customer reaches the viewpoint, the spot that represent that viewpoint will change its color to remind the customer that (s)he is here. Turning around in IBVR responses the merchants' demand that want the customers to see the unplanned product and if they are interested in any product around, they can click on that product which is made to be hotspot linking to the product's details easily. The navigation map also work as short cut to every view point in the online store to response the demand of expert user that want to reach everything as fast as they click. When the customers click on the spot on the navigation map, they will be transferred through the shortest path to reach the target, so they can have a little look on their way too.

Acquiring and maintaining customer models

In order to acquire customer's information, we use 3 methods: 1) Ask for typical information such as gender, age, education, work or more specific information such as interested product category, store decoration, song in store, etc. 2) If some information was leave blank by customer, we can use information from marketing database to predict and fulfill those blank information about customer's interest, preference and behavior. For example, customers in the 20-30 ages usually interest in new model of mobile phones and also change theirs often. 3) Records every user's actions in IBVR web site into database, usually the data that is collected is actions between buying product in the shop such as product was seen, put in the basket or purchased. This information helps us to measure the merchandise effectiveness.

Proposed System

Design the Augmented Reality E-Commerce site to convert the normal E-Commerce website to marketplace. The augmented reality technology, customers who shop online the chance to view the product in form of a model they can interact with in the same manner. It gives the customers a better feel of the product

Augmented Reality

Augmented reality (AR) is an interactive experience of a real-world environment where the objects that reside in the real-world are "augmented" by computer-generated perceptual information, sometimes across multiple sensory modalities, including visual, auditory, haptic, somatosensory, and factory. The overlaid sensory information can be constructive (i.e. additive to the natural environment) or destructive (i.e. masking of the natural environment) and is seamlessly interwoven with the physical world such that it is perceived as an immersive aspect of the real environment. In this way, augmented reality alters one's ongoing perception of a real-world environment, whereas virtual reality completely replaces the user's real-world environment with a simulated one. Augmented reality is related to two largely synonymous terms: mixed reality and computer-mediated reality. The primary value of augmented reality is that it brings components of the digital world into a person's perception of the real world, and does so not as a simple display of data, but through the integration of immersive sensations that are perceived as natural parts of an environment. The first functional AR systems that provided immersive mixed reality experiences for users were invented in the early 1990s, starting with the Virtual Fixtures system developed at the U.S. Air Force's Armstrong Laboratory in

1992. The first commercial augmented reality experiences were used largely in the entertainment and gaming businesses, but now other industries are also getting interested about AR's possibilities for example in knowledge sharing, educating, managing the information flood and organizing distant meetings. Augmented reality is also transforming the world of education, where content may be accessed by scanning or viewing an image with a mobile device or by bringing immersive, marker less AR experiences to the classroom. Another example is an AR helmet for construction workers which display information about the construction sites. Augmented reality is used to enhance natural environments or situations and offer perceptually enriched experiences. With the help of advanced AR technologies (e.g. adding computer vision and object recognition) the information about the surrounding real world of the user becomes interactive and digitally manipulable. Information about the environment and its objects is overlaid on the real world. scanning or viewing an image with a mobile device or by bringing immersive, markerless AR experiences to the classroom. The main tools to augmented reality are computer vision, devices capable of handling heavy computations, and intuitive interfaces to provide the user with a natural and easy-to-use way to interact with the AR system. These tools are described in this section. Augmented reality is used to enhance natural environments or situations and offer perceptually enriched experiences. With the help of advanced AR technologies (e.g. adding computer vision and object recognition) the information about the surrounding real world of the user becomes interactive and digitally manipulable.

Information about the environment and its objects is overlaid on the real world.

Proposed Algorithm

MIN_MATCHES =15

```
Cap= cv2.imread('scene.jpg', 0)
Model= cv2.imread('model.jpg', 0)
# orb keypoint detector
Orb= cv2.ORB_create()
# create brute force matcher object
Bf= cv2.BFMatcher(cv2.NORM_HAMMING, crosscheck=True)
# compute model keypoints and its descriptors
Kp_model, des_model=orb.detectandcompute(model, None)
# compute scene keypoints and its descriptors
Kp_frame, des_frame=orb.detectandcompute(cap, None)
# match frame descriptors with model descriptors
Matches=bf.match(des_model, des_frame)
# sort them in the order of their distance
Matches=sorted(matches, key=lambda x: x.distance)
if len(matches) > min_matches:
# draw first 15 matches.
Cap= cv2.drawMatches(model, kp_model, cap, kp_frame,
Matches[:min_matches], 0, flags=2)
# show result
cv2.imshow('frame', cap)
cv2.waitKey(0)
else:
Print "not enough matches have been found - %d/%d"%
(len(matches),
Min_matches)
```

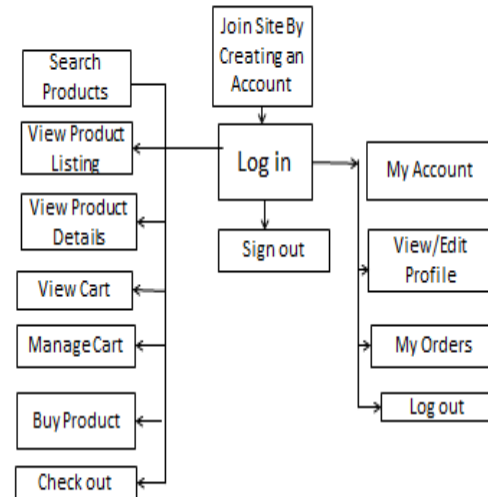
SYSTEM ARCHITECTURE

A system architecture or systems architecture is the conceptual model that defines the structure, behavior, and more views of a system. An architecture description is a formal description and representation of a system, organized in a way that supports reasoning about the structures and behaviors of the system. A system architecture can consist of system components and the sub-systems developed, that will work together to implement the overall system. There have been efforts to formalize languages to describe system architecture; collectively these are called

architecture

description

languages.



Conclusion and Future Work

This paper presents an alternative way of designing the Virtual store on a web site and also introduces an example of IBVR online store. In addition, we also study method to improve the Virtual store effectiveness using IBVR. Today, more IBVR related programs have been released, which shorten the process and reduce the time to implement the Virtual store much like normal web site construction.

The authors are implementing the full experiment to gather customers' behavior on IBVR store and other types of Virtual store which may produce some interesting results soon. This system is user friendly and easy to understand. Admin can see all detail regarding to product sales. User can discuss about product by writing to AI Bot. It is robust and secure system.

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