Digital Interaction with kinect: review

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Abstract: One of the most imperious research area is augmented reality. Augmented Reality (AR) is a technology which provides a communication between computer-generated information and the real world of a viewer while establishing 3D registration and real time interaction. The extensive range of application of AR and its use in various fields from games to virtual reality. As part of a wider research aiming at understanding the impact of AR on consumer psychology, this work presents a demo platform application developed for a real-time shopping experience for ornaments and attempts to define a ground base for posterior marketing research in the field. This platform will assist in exploring the previous circumstances of consumer purchase intention and in defining the way for shopping experiences with AR.

Index words: Kinect, Augmented reality, Interfaces, etc.
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1.   INTRODUCTION:

What is interface?

An interface is that portion of an interactive computer system that communicates with the user that means it provides way for communication. Design of the user interface includes any aspect of the system that is visible to the user. Because the design of the user interface includes anything that is visible to the user, interface design extends deep into the design of the communication system as a whole. A good user interface cannot be applied to a system after it is built but must be part of the design process from the beginning. An absolute design of a user interface can make good communication between user and computer. In ancient time only computer user who were specialists in computing can use computer because technology they were using is only known to them like interfaces consisted of jumper wires in patch boards, punched cards prepared offline, and batch printouts etc. Today a wide range of non-specialists use computers, keyboards, mice, and graphical displays are the most common interface.

Types of interfaces used:

The study of human computer interaction explores the dimension of research in which more advanced techniques are invented. The study of these techniques is sizzling topic of research and promising application area in today's digital world. In past years we had many techniques communicate with computer like Command line Interface (CLI) in which we communicate with computer with the help of different commands after that Graphical User Interface (GUI) which uses graphical icons to communicate with computers. Now-a-days a new interface is introduced which uses human natural behavior to communicate with computers called as Natural User Interface (NUI). The next technology appeared to us is augmented reality a way to mix virtual information with real environment by different tracking techniques that are carried out in Augmented Reality. Microsoft Kinect sensor is capable of capturing depth and color information of the user in front of it using an array of RGB and infrared cameras. It is also used for making different application using human natural behavior.

What is augmented reality?

Augmented Reality is that which allows users to interact with virtual objects in real world (touch-based, voice controlled or gesture-based). AR technology is used to embed 3D graphics into a video in such a way that virtual elements were parts of the real environment.

- Combined Virtual and Real Augmented reality (AR) needs display system that permits the user to simultaneously see virtual and real scene in a view of combination of both. Today's most display systems show only computer generated images which are insufficient for AR. So Augmented Reality (AR) needs combination of both real and virtual world.

- 3D Registration

3D Registration consists of virtual content with the right placement and 3D perspective with respect to the real in order to create great impression.

- Real Time Interaction

Augmented reality (AR) systems must need to run at proper interactive frame rates, such that it can place

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on the top of information in a real time and allows user interaction.

Augmented Reality uses computer generated graphics to add an effective layer of information operators who does manual industrial tasks. It uses camera to captures real world information which we want with different graphics from graphics system and provide instruction to the operator. These instructions are placed directly onto a video representation of the physical workspace and are displayed on a monitor.

In coming session we see the various techniques of shopping. In next, we see the advantages and disadvantages of it. After that we will see the possibility to overcome problems and suggestions for ornament shopping with good impact.

2. RELATED WORK

2.1 Online Shopping

Online Shopping is a current phenomenon which draws a great importance in the modern business environment. The progress of online shopping has opened the door of opportunity to exploit and provide a competitive advantage over firms. Present study is a descriptive study based on the detailed review of relevant studies related to the various concepts of online shopping. To explore the concept of online shopping findings revels that online shopping brings prime convenience to the consumers. Shopping convenience, immediate possession, information seeking, social interaction, and variety affects the consumer attitude towards online shopping.

Fig 2.1: online shopping

2.2 Shopping With Application

Today in some of the showrooms apps are used for viewing jewellery item on customer's photo. Using that application capture the image of customer and then the ornament will keep on the face photo of customer. This technology gives the 2D effect to customer this is not seem to be realistic.

This technology is used in the Tara's jewellery shop. This gives good effect but not effective as a current phenomenon which has developed a great importance in the modern business environment. And another example recently in used is lens kart. This application is used for glasses n specs.

Fig 2.2: lens kart application for specs

2.3 Tesco Scan As You Shop

This is now come in some of the larger Tesco stores, and it can be very useful. Using your club card details, you pick up the handset and scan items, then scan as you add items to your trolley. In theory, this speeds the process up, but the disadvantage is you still have to wait to catch an assistant's attention if you want to buy some booze. Still, it's useful to keep a running total of costs as you do your grocery shopping.

Fig 2.3: shopping with tesco machine

3. LIMITATIONS

There are some hurdles with the online shopping these are:

- In online shopping the impossibility of product testing the moment when you touch and feel the thing you want to own, it is something lost. In case of clothes and

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shoes, you can touch the item and easily understand that how good or bad a material it has been made of. When it comes to gadgets, during a real shopping experience, you can try them out and know if they are working properly.

- Online shopping makes it very difficult to exchange items as well, in case of discrepancies. There are many Problems with complaints, product return

- Miss use of personal data is the main uncertainties regarding on-line shopping. Privacy and security risk emerges frequently as a reason for being wary about internet shopping. Shopping convenience, immediate possession, information seeking, social interaction, and variety affects the consumer attitude regarding online shopping.

- As internet does not come free of cost. Many of us have a specific internet scheme, as a result of which, we have to shell out a fixed amount at the end of every month or before using internet. The scheme allows us to have unlimited internet access in return for the fixed amount of money but what if somebody does not have such a scheme ? In that case, every time you open a page on an online shopping portal to choose a specific item, you may get charged for it. Make sure that the internet usage cost does not topple the price of the purchased item itself. Be economical and be wise.

- Many websites may deliver your orders without charging the shipping cost but many of them do not do that. A number of websites, as a part of a smart marketing stunt, do not include the shipping cost while giving out the price of an item. It may be minutely mentioned at the end of the screen which many would not even notice. The valuable gets delivered at your house and you are asked to pay more than what you are assembled for. You have no option but to oblige with it. Shipping costs in most cases raise the price of an article and you may end up buying it at a rate more than the market price.

- As we do shopping on internet, there are no chances to hanging out with friends and family while shopping. Usually when you go out shopping to a market-place, our ambling does not remain restricted to shopping of only one kind of thing. Like when a person is trying to select a top but roving eyes of person may get enamored by a chunky piece of jewellery put on display. As a result of that, we end up buying both and a lot many more which may be useful. In case of online shopping, that cannot be a possibility as you do not have more than one screen to concentrate on each time. Shopping for clothes and jewellery is usually a full-day plan but you restrict for few hours with online

shopping. We eat at our favorite food-joints and indulge in a lot of gossiping besides shopping. Regrettably, online shopping does not offer such a thing so far but who knows online shopping and hanging out simultaneously can become a reality soon. Till then, we have to wait.

4. SUGGESTIONS & FUTURE WORK

In current era ,a new idea have been progressing all over the world this new idea is all about the new technology invented called augmented reality which interact with the human naturally as human survive in real world. one of the device that create an augmented reality environment around the human is "kinect" .Kinect is developed by the Microsoft in 2010 and named as XBOX. Previously this device is only used for the gaming purpose only. Today kinect is not bound up to gamming purpose instead it is used for various purposes like medical, commercial, education etc.

Fig 4.1: Kinect Device

Features of the Kinect for Windows SDK:
- Capturing and processing the color image data stream
- Processing the depth image data stream
- Capturing the infrared stream
- Tracking of human skeleton and joint movements of human
- Human gesture recognition
- Capturing the audio stream
- Enabling speech recognition
- Adjusting the Kinect sensor angle
- Getting data from the accelerometer
- Controlling the infrared emitter

This paper aims to create an augmented reality environment. This requires real-time tracking of the user pose as well as realistic virtual ornaments. For the pose tracking the Microsoft Kinect sensor is used which gives more complete and accurate tracking of the user pose than the marker based

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or image feature based tracking which is traditionally used in augmented reality applications [1]. For the jewellery create a 3D models that can be rendered into the scene. The focus of this project is on realistic interaction between the user and the virtual jewellery.

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