

Human Computer Interface-Augmented Reality

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ABSTRACT

This paper gives a concise presentation of human PC collaboration and its different late applications. It further talks about Augmented Reality, the ongoing innovative improvements, the uses of enlarged reality in different fields and its working with the contextual investigation of the latest blow in the gaming scene, 'Pokémon go', which is a game dependent on Augmented Reality.

KEYWORDS: Human Computer communication, increased Reality

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INTRODUCTION

Human Computer Interaction as the name suggests is focused on the interaction between humans and computer. Initially it emerged in the early 1980's and has been growing since then. It is considered to be a field of research in computer science, behavioral science etc. Since it involves interaction between both humans and machines, it requires supporting knowledge for machine side that is various techniques in operating system, computer graphics, programming languages etc, whereas on human side it requires linguistics, cognitive psychology etc.

Applications of HCI in different fields include:

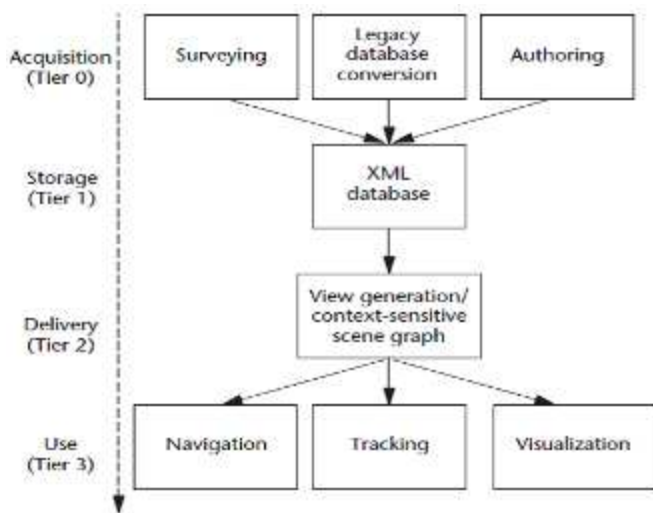
- User Customization: user can mend current applications according to their needs and create new application based on their understanding of the domain.
- Embedded Computation: computation beyond computers, thereby penetrating in each and every object around us making the environment alive.
- Augmented Reality: is a live view of the real world environment which is supplemented with computer generated sensory information.
- Social Computing: recreation of social contexts through software technology based on social psychology.
- Knowledge Driven: semantic gap existing between humans and computers can be addressed through Ontology.



AUGMENTED REALITY:

Amplified reality is attractive the view of reality by supplement virtual objects using technology. Using AR technology the environment in the region of a person can become greatly more interactive and digital. Apart from sense of sight AR applies to all senses, such as hearing, smell, and touch. The most common example seen nowadays is the cricket score that we see on our television screen. It may also include removal of real objects from real environment. Supplementing of real objects in virtual environment is called Augmented Virtuality.

Various types of hardware components are required for the functioning of augmented reality are processors, sensors, display and input devices. Smart phones often use camera, GPS and other sensors.



Recent technological developments in AR are:

- I. Head worn display: These devices are worn on head providing image display in front of their eyes. Generally two types of HWD's exist optical see through (AR spreading over a transparent display) and video see through (captures videos from a head worn camera shown on a opaque display).
- II. Hand seized display: such devices provide video see-through increase by using hand held devices or flat board LCD displays with attached camera.
- III. Projection display: These devices project virtual objects directly on the object to be augmented.
- IV. Head mounted display: (HMD) devices are paired to a headset.
- V. Spatial Augmented Reality: It augments real world scenes without using special display devices such as monitor, HMD's etc.
- VI. Input devices: Augments real word using speech recognition (translation of speech into computer instruction) or gesture recognition (interpretation of body movements through sensors).

APPLICATION OF AUGMENTED REALITY:

Augmented Reality has numerous applications in commercial as well as in industrial fields, some of them are listed below: Architecture: With AR, designed arrangement can be superimpose and can be visualize on the proposed site before the actual structure of the arrangement and thus helping in improving the proposed plan. Sports: AR is used to track ball trajectories in Cricket and Lawn Tennis to take lbw and inside/outside decision respectively. Camera: We get various camera options appearing as icons on real time image when we switch on the camera on our smart phone and can superimpose objects such as garland, spectacles, frames etc. on real time object which is probable through AR. Military: AR is used to display attributes such as flying speed, altitude, target location, wind direction etc. on transparent wearable devices of pilots. Medical: AR can be combined with X-Ray or MRI to give a single complete view. Mobile Applications: AR is used in beauty apps such as Makeup Genius, social networking apps such as snapchat, and games such as Pokémon Go.

HOW IT WORKS: Augmented reality takes a real world scene with the help of camera on device and superimposes images, videos or sounds on the real world scene. AR works in two ways, first based on positioning of markers which is identified by the software on the device and then the content

hidden in the marker is displayed and second way is to identify the location of device through GPS and displays the content according to the field of view of the device.



FUTURE OF AUGMENTED REALITY:

Systems in future that will allow human computer interaction will require technology to interpret human gestures and movements including complexity of motions like joint movements. New systems that can mimic human brain and systems that are capable of deep learning have been developed by researchers. These systems can even understand endless complexities of joint angles.



CASE STUDY: POKÉMON GO

Pokémon Go is a mobile game inspired from cartoon TV series Pokémon. It is a free game based on location-based augmented reality developed by Niantic in 2016 for iOS and Android devices. It broke all the records in merely 14 days of getting launched and was downloaded by more than 30 million people and is expected to surpass other apps to become the most used app. Pokémon go is based on technology of location-based markers Augmented Reality. People roam around different places in search of Pokémon. What makes this app most interesting among all is its feature of Augmented Reality. As soon as a player finds a Pokémon

the AR mode turns on, which results in additional effects to appear on the screen. Turning on the AR mode results the camera to turn on and the animated Pokémon appears on the screen along with the real life background. in addition, it has special property that addition sound, animation and other effects. This feature not only entices kids the most but also adults and gives them an experience of gaming at another level.

CONCLUSION:

Since the past three decades, Augmented Reality is emerging as one of the most powerful technologies in the field of computer science. It has added a new dimension in the world of computing. With its capability of superimposition it has been contributing to entertainment, education, medical sciences, commercial, sports, military etc. With the rapid development of Human Computer Interaction and its ability to interpret three dimensional human gestures, it will lead Augmented Reality to an exceptional level.

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