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SURVEY ON VIRTUAL REALITY

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Abstract: Virtual reality (VR) is a technology which allows a user to interact with a computer simulated environment, whether that environment is a simulation of the real world or an imaginary world. It is the key to experiencing, feeling and touching the past, present and the future. It is the medium of creating our own world, our own customized reality. It could range from creating a video game to having a virtual stroll around the universe, from walking through our own dream house to experiencing a walk on an alien planet. With virtual reality, we can experience the most intimidating and grueling situations by playing safe and with a learning perspective. In this paper basic terminology are discussed such as need of VR, Types of VR, Uses and Challenges of VR.

Keywords: Virtual Reality, Evolution of Virtual Reality, Challenges of Virtual Reality

I INTRODUCTION

Virtual Reality (VR) technology is becoming more perfect and immersing with the aid of computer hardware, software and virtual world integration technology, which can show the real world dynamically. These technologies can make reaction according to people's form, language and so on immediately after a real time communication is formed between people and virtual world. Virtual Reality (VR) can be defined as use of computer modeling & simulations which help a person in interacting with artificial 3D environment. There are number of uses of virtual reality in our daily life. Its not easy to working with virtual reality applications, number of challenges we have to face. The **definition of virtual reality** comes, naturally, from the definitions for both 'virtual' and 'reality'. The definition of 'virtual' is near and reality is what we experience as human beings. So the term 'virtual reality' basically means 'near-reality'. This could, of course, mean anything but it usually refers to a specific type of reality emulation.

II NEED OF VIRTUAL REALITY

Due to increasing advancement in technologies & to fulfil growing need of customers, Virtual reality is now a day's consider most immersing and efficient technologies which has not only overcome limitations of augmented reality but also made human life simpler and easier. Some of the growing needs of virtual reality are as follows:

1) Simulate the real world dynamically by use of computer software, hardware and virtual world integration technologies.

2) Can pretend to have physical presence in places in the real world as well as in imaginary worlds.

3) Without any real danger. We can be part of the action on the virtual safe environment.

4) Virtual reality can help us to visualize working environment where people cannot go especially mars or low temperature environment by making same atmospheric conditions by use of computer graphics software and use of headsets, gloves etc & make them.

III EVOLUTION OF VIRTUAL REALITY

1) Ivan Edward Sutherland (born May 16, 1938) is an American computer scientist and Internet pioneer, widely regarded as the "father of computer graphics." His early work in computer graphics as well as his teaching with David C. Evans in that subject at the University of Utah in the 1970s was pioneering in the field. Sutherland, Evans, and his students from that era invented several foundations of modern computer graphics.

The first idea of virtual reality was invented by Ivan Sutherland in 1965. He make the word virtual means the window look real.

2) Then the SENSORAMA MACHINE was developed in 1957.

3) In 1965 the Sutherland proposed solution about the artificial world construction.

4) In 1990 s the University of North Carolina proposed about pixel plane graphics engine.

5) In 1990 s NASA developed VIETUAKL WIND tunnel.

6) In 1992s CAVE automatic virtual environment developed.

IV TYPES OF VIRTUAL REALITY

There are many types of Virtual Reality, considering the following:

- Immersive Virtual Reality
- . Quick Time Virtual Reality
- . Desktop Virtual Reality
- . Hybrid Virtual Reality

4.1. Immersive Virtual Reality :

- An immersive system replaces our real world view with the images generated by computer that interact to the position and orientation of the user’s head.
- Headed Mounted Display (HMD) can be used to see such environment.
- In a completely immersive system , the user actually feels part of the environment (experiences a feeling of presence).
- Here, the user has no visual contact with the physical world.

4.2 Non Immersive Virtual reality:

- On the other hand , non immersive system leaves the user visually aware of the real world but able to observe the virtual world through some display device like graphics workstation etc. It is also called as semi immersive system.
- Advanced flight, ship & vehicle simulators are semi immersive type of virtual reality. The cockpit, bridge or driving seat is a physical model, where as the view of the world outside is computer-generated

4.3 Hybrid Virtual reality

- It allows the user to see the real world with virtual images superimposed over this view.
- Such systems are also called as “Aug-mented virtual reality systems”.

V USES OF VIRTUAL REALITY

There are number of uses of virtual reality such as followings

i) Virtual Reality in Military:



Figure1: Use of Virtual Reality in Military

Combat training plays an important role in training new recruits in the Army, Navy and Air force. The ability to obey orders without question and respond instantly to a situation is a key part of combat training and is carried out from the start. Virtual reality is used as part of that training. Soldiers need ...

ii) Virtual Reality In Education: The biggest study conducted into the research and useful in medical science, sports, and 3D educational images etc.



Figure 2: Use of Virtual Reality in Education

iii) Virtual Reality in Entertainment: The entertainment is most important in our daily life, the virtual reality is used in such as theaters, museums, discovery centers, gaming and films etc.

Virtual Reality in Entertainment

- ▶ The entertainment industry is another industry with the most advocates of virtual reality
- ▶ Some examples of virtual reality in Entertainment
 - ▶ Virtual museums
 - ▶ Theatre
 - ▶ Virtual theme parks
 - ▶ Gaming
- ▶ Recent advances in VR Gaming
 - ▶ Oculus Rift
 - ▶ Omni and Cyberith




Figure 3: Use of Virtual Reality in Entertainment

VI CHALLENGES OF VIRTUAL REALITY

Like many advantageous technologies; besides opportunities, applications, second life, there always exist unavoidable challenges and disadvantages too. In fact use of virtual reality technologies offer both technical and cultural challenges. We can try our level best to minimize these challenges rather than trying to completely avoid it. Reasons of these unavoidable challenges are:

Technical challenges:

- All features or functions of virtual environment can only be streamed by streaming all data to the user live over the Internet with minimal local caching of frequently used data. This means that user must have a minimum of 300kbit/s of Internet bandwidth for basic functionality, and 1Mbit/s for getting better performance.
- Due to the proprietary communications protocols, it is impossible to make use of a network proxy or caching service to minimize network load when many people are all using the same location. For ex: when used for group activities in company or schools.
- Cost is another challenging issues; as these technologies are newer, they are more costlier due to which many small/medium scaled people can't afford it.
- As technologies are growing at rapid rate, many people are still unaware of such new technologies, along with its advantages, disadvantages and applications. Hence awareness has to be created among the people by conducting free seminars and demonstration.
- In addition to appropriate internet bandwidth and interfacing charges, there are several membership charges too. For ex: For virtual learning, premium account is necessary to purchase land and to create sustained and safe learning environment for the students.

Cultural challenges:

- Liability issues are still question in virtual world. As we know that private land need to be purchased for virtual learning and this private land are restricted to only authorized users. However users in public area may have to suffer violence or disruptiveness.
- There are many unsolved legal issues surrounding like virtual violence, sexual harassment, virtual assault.
- Everyday billions of people connect in these worlds to socialize, shop and learn. Unfortunately, many laws breaker also joined this virtual world and many criminal activities are taking placed. common criminal cases which are occurring everyday are money laundering, sexual harassment, exchanging of child abuse environment and terrorist attack etc.
- Inventory loss issues is still present; inventory loss in which items in users inventory including those things which have been paid for can disappear without warning or enter a state where they will fail to enter in a world when requested (Giving an "object is missing" database error). This loss is although much less in past years, but still it's existing.

VII CONCLUSION

In this paper we define the meaning of virtual reality and its history. And also define different uses of virtual reality, the virtual reality is used in number of applications, we study the number of challenges working with virtual reality. Virtual reality is now involved anywhere. This technology gives enormous scope of 3D world. It has many applications from development to entrainment.

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