

Study of Virtual Reality

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Abstract: Virtual reality is a three-dimensional technology. It is a virtual environment generated by computer, which can be travelled and interacted with by a person. It is a formation of a virtual environment presented to our senses. It has serious as well as fun uses. Technology is spreading in huge amount, as well as becoming cheaper. We can expect to see many more effective and advanced uses of this technology in future. A person using virtual reality equipment is able to look around the artificial world, move around in it, and interact with virtual features. The effect is generally formed by virtual reality headsets, which consist a head-mounted display, with a small screen in front of the eyes, but it can also be formed through specially designed rooms consisting of several large screens. Independent production of Virtual Reality pictures and videos has increased by the development of omnidirectional cameras, which are also known as 360degree camera or virtual reality camera, that have the capability to record in all directions, although at low-resolutions or in highly compressed formats for online streaming.

Keywords: *Computer Graphics, Virtual reality, Headset.*

I. Introduction

The main aim of this paper is The Study of Virtual Reality. Virtual reality is a technology generated by computer and sensory devices that create a stimulation of realistic experience, stimulation of 3D images. It creates an artificial environment to inhabit. It is widespread and used in many things like games, etc. This technology is something which makes human mind to be present somewhere, where it is actually not. It includes stimulation of our as many senses as possible. It is an immersion which states the condition of being physically present in a non-physical world. Interaction between the real world and virtual world is really important, it plays an important role. To maintain the immersion and excitement, the virtual environment should respond to real environment's user's action. Total immersion means the experience in which you forget about being in an artificial world and begin to respond as we do in a real world. Virtual reality depends on the total immersion, or can be said that it's an aim to achieve total immersion.

The virtual environment is formed on different level depending on the different platforms, like phone screen or fully immersive virtual environment etc. This full process is more immersive and interactive than the traditional mass media like television etc.

Some main components of a virtual environment:

1. The visual display.
2. The graphics rendering system.
3. A tracking system which constantly informs about the position and orientation of the user's actions.
4. The database construction and maintenance

system to build and maintain a detailed and realistic model of the virtual world.

5. A sound system.
6. Devices like sensory gloves which enable users to specify their interactions with the virtual environment.

II. History

The exact idea of virtual environment was firstly came into existence before 1950's.

In 1968, the first Head-Mounted Display(HMD) was created to make immersive stimulation application.

By 1980's, the term "virtual reality" came into existence.

In 1982, a lab was founded for virtual reality but it was closed after two years. In 1990's, first commercial released regarding consumer headsets.

In 1991, a prediction was made regarding affordable VR headsets till 1994.

In 1994, Apple released Quick Time VR, which was not able to show virtual reality and instead of which it displayed 360 photographic panoramas.

From 2000-2014, many developments took place in field of virtual reality. In 2014, Sony declared it's project for PlayStation VR.

At the same time, Google declared about Cardboard, which is a stereoscopic viewer for mobile phones.

In 2015, the virtual reality headset HTC VIVE and controllers were declared by HTC and Valve Corporation,

By 2016 minimum 230 companies were there who were developing VR related products.

In 2017, a patent filed by Sony which declared that they are

developing a similar location tracking technology like VIVE for PlayStation VR, with the potential for the development of a wireless headset.

III. Applications

Virtual Reality is widely used these days. It is used in several fields like video games, cinema, psychology, clinical therapies, education, trainings, fine art, engineering, music concerts, etc.

Movies- Virtual reality is useful in 3D movies to attempt and plunge the viewer into the movie and virtual environment.

Video Games- Virtual reality is seen in a lot of video games. Now you can physically interact with a game by using your body and motions to control characters and other elements of the game that years ago people would only imagine.

Education and Training - Education and Training is done by virtual reality because it can prepare you for many fatal jobs and put the worker in real situations without the risk of them being hurt. Doing this enables them fully train and educate themselves in almost any situation possible so that they are ready and well prepared for the job. It can give them the experience they need without actually putting them in risk.

Alteration of physical state and emotion - Virtual reality can affect one's state of mind and emotions by responding to virtual environment. It triggers the emotions, which can increase the response and can break one's feeling of presence.

Clinical Therapies - Virtual reality equipment are used in various medical therapies and thus results are important. According to recent results, healthcare can be a huge market for virtual reality.

Engineering - Computer-Aided Design is totally based on virtual reality. This allow the one to view his/her designs properly as it's final product. They can view the designs from different angles.

Heritage - Virtual reality was firstly used for heritage application in 1994. It enables the recreation of heritage sites accurately.

Urban Designing - Virtual reality programs were developed by 2010 for urban designing projects.

IV. Market Scenario

Virtual reality proves to be a different way of opportunity for the companies to reach a completely immersed audience. They have started using virtual reality into marketing campaign to reach a good amount of people and have good results of products. Virtual reality works as a potential supporter for effective work and better results. It breaks the monotonousness of traditional

media. It allow customer to have a better view of the products and how they will fit into their place. Virtual reality models helps in demonstrating designs to public and allow latent buyers to tour a space in virtual reality.

The technology regarding virtual reality is facing many problems in daily life regarding health, technical problems, safety, etc. Mainly it's causing neurological problems, vision problems and even virtual reality addiction. This is causing a great imbalance in the real environment. Virtual reality is demanding way more investment day by day, and if it is not accepted by a good number of users or customers then the whole investment will go in the vain.

Virtual reality sickness is characterised by disorientation. Virtual reality sickness can also be termed as cybersickness. Many undesirable symptoms have been instigated due to long use of virtual reality. Some common symptoms are severe headache, vomits, unnecessary sweating, postural deformities, etc.

V. Conclusion

Virtual reality is a conceptual idea. It's not just about some products with specified definitions. The concept of virtual reality was appeared long ago but now when it comes into it's right place and into people's sight. In the upcoming time, the world is going to have many more of it, for sure. It started nurturing into many things like flicks, video games, education, training, etc. It contains three things at the same time, and they are- hardware, software, and content creation. It can be a great step towards modern era of development. It will give a great rise to the next generation of computer, graphics and can change life forever. Oculus Rift, HTC VIVE, Sony PlayStation VR are most popular virtual reality headsets. Many new projects has been announced regarding VR. It can be a great technology which can define our next generation. Government has to play it's role to make virtual reality to be effective and safe. And there should be a way to deal with negative impacts and problem without restricting people.

VI. References

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