VIRTUAL REALITY – THE FUTURE REALITY

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Abstract- We are surrounded by technological mixes in today's culture. These developments have also brought us a majority in our daily lives. Gradually, such diverse technologies are combined to provide us with new skills and services. And the cornerstone of this convergence is most often a computer. That is the case with a so-called augmented reality device and is a very complicated mix of a broad spectrum of technology.

The Virtual Reality technology assimilates sophisticated input and output tools by encouraging users to communicate and observe digital reality as if it were in the present world. A virtual reality software often allows the consumer to search and interact in three dimensions with a digital or artificial environment created by the designer. The user does routine things like throwing a tennis ball or floating in space as exceptional within the simulated universe. And only a hand gesture or a smile can all these items come in. Virtual reality is a three-dimensional computer-centered interactive environment that simulates reality. Virtual reality takes us into an imaginary universe much like our own. To construct a framework in the increased truth, principles of spatial frameworks and machine graphs must therefore be created which are linked in effect to mathematics, physics, nature and human psychology.

Keywords: Energy, renewable, nonrenewable, alternative energy technology, fossil fuel.

1. INTRODUCTION

Virtual Reality (VR) technology is becoming increasingly usable and embedded in the physical world, using computer devices, software and interactive technologies. Innovations like this are immediately responding to the real-time contact between individuals and the virtual world according to type of persons, language and so on. In recent years, researchers and businesses have therefore gained a great deal of interest in this technology. Virtual reality can be defined as using the modeling of computers and simulations that allow an individual to connect with the artificial 3D world.

A 3D simulated universe displays the nature of sun glasses, masks, goggles or suits of the body, and retrieves knowledge through certain interactive devices. That is, virtual reality can be represented in order to simulate presence physically in an artificial or virtual setting and construct a believable universe by using computer graphics. VR technology is a comprehensive, real-time technology which enables the device to sense user-specified inputs automatically and to change the virtual world instantaneously.

Fig. 1.1 Virtual Reality

2. THE STRUCTURE OF VR TECHNOLOGY

Digital perception refers to the use of a computerized digital experience that users can actually interact with the natural environments technology through a range of special equipments that provide user feedback into the world.

VR technology helps people use the natural ability for observing or operating simulated objects in the world and offers real time vision, sound, touch and other normal and intuitive feelings. Three parts: visibility, gratitude to the virtual reality: humans, machines and surroundings:

By building a sensorial experience of view, sound, touch, smell and taste, a machine can create reality that can be a real reflection of the physical experience and also an area of abstract definition.

System is the simulator and interactive three-dimensional equipment that utilizes three-dimensional sensor arms, three-dimensional keyboard users, such as the usage of the device. In fact, the environment sensing equipment, such as cameras and sensors, is configured. Citizens in the world are virtual participants who process the data of activity through the computer, which can offer intense feelings.

A basic network of virtual reality includes six components: virtual reality and process processes created by computer, software creation processes and virtual reality linked to ideologies and technologies, man-machine input and output interaction tools, user interface.

3. NEED OF VIRTUAL REALITY

Increasing innovation in technology and increasing consumer needs; Virtual Reality is becoming now the most realistic and effective applications which not only address the inconvenience of virtual life but also simplify and facilitate life on this planet. Some of the growing needs of virtual reality are:

- Modeling the physical world dynamically with computer software , hardware and virtual reality integration technologies.
- Can assume that both in actual and in virtual situations there is strong existence.
- We can be part of the virtual safe environment activity, no real threat.
- Virtual reality allows us to envisage working conditions in which people do not have the opportunity to go in particular on sea or low temperature areas by using the use of computer graphics tools by using headsets, gazebo, etc.

4. WORKING PRINCIPLE OF VIRTUAL REALITY

VR works on the ensuing code:

- It first tracks actual motions in the real world and then draws a machine to the simulated environment that represents these gestures. Digital update World (to the real-world user) is sent into production.
- In this scenario, the data is sent back to the computer on the head. Thus, the consumer becomes "steeped" in the virtual universe as if he were in the space itself, as his movements are what he can do in digital worlds.

5. FORMS OF VIRTUAL REALITY

5.1 Digital Virtual Reality

- The built-in interface replaces our real-world view by computer images which interact with the user's head frame.
- This area can be shown with Headed Mounted Display (HMD).
- The user felt a part of the world in a completely immersive interface (feels an awareness).
- There are no visual experiences between the consumer and the physical environment.

5.2 Virtual Reality Not Immersive

- On the other side, though, the non-immersive approach helps the consumer to grasp the real environment visually, yet to gaze at the simulated universe by means of certain digital devices including visual workstations etc. Often it is called a semi-immersive device.
- The semi-immersive augmented environments are the advanced simulators for airplanes, ships and vehicles. The car, bridge or driving seat is a physical model in which the experience of outside space is machine-generated (usually projected).

5.3 Digital Reality Hybrid

- This helps the user to view the real world with simulated images overlaid by the vision.
- These devices are often called "enhanced devices for virtual reality."

6. TECHNICAL ASPECTS

6.1 Method of Entry

- It monitors input devices like a mouse, joystick, 3D tracker location (glove, wall, body-track), voice recognition etc. Some glove systems also include a knowledge of gestures.
- The objective is to move the synchronized data to the rest of the network from the source devices.

6.2 Method Simulation

- This phase is the basis of a virtual reality system. It can control interactions, model physical law and evaluate the state of the universe.
- It is a discreet cycle that is iterated once and for all stages or time frames. In the final analysis, this mechanism determines what to do in the fictional setting.

6.3 Method to Render

- This process creates sensations that give output data to users or other network processes.
- Diverse rendering procedures, such as:
- Auditory depiction
- Test kind
- Haptic version

7. DEVICES USED FOR VR TECHNOLOGIES

Devices used to achieve virtual reality are as follows:

- Mounted Head Show
- Hedgehog
- Mannequins
- Mouse in 3-D
- Ball in Vacuum
- Video and shadows
- Articulated appreciation
- Ecological sensors
- Full body configurations

7.1 Head Mounted Display (HMD)

HMD is a helmet-like tool or face label with audible displays as well as visual displays. In HMD, the projector ray feeds images the user wears to small displays inside the helmet. HMD consists of two small displays with an optical panel and a miniature monitor. The two components take the pictures from the screens and have a stereoscopic image. Others use a single larger monitor, but without stereo vision, to provide better resolution.

HMD offers visual photos by constantly tracking the location and orientation of the user eye. This helps audiences to look around the simulated world around them and to maneuver. HMD's have however cables that prevent our movement.

Fig. 7.1 Head Mounted Display

7.2 3D Mouse

A 3D mouse has two parts vertically & horizontally. There are buttons for each segment. With various variations on these buttons, the user will create several rental locations in the 3D environment.

Fig. 7.2 3D Mouse

7.3 CAVE

A virtual reality interactive facility to explore and communicate with spatially interacting worlds is the Cave Automated Virtual Environment (CAVE).

The CAVE consists essentially of four screenings on which images in a special immersive style are projected.

In addition, a closer impression of being in the virtual universe is given by means of the ceiling projection.

Furthermore, projection on all six surfaces of a room enables users to rotate and look everywhere. This enables users to understand full immersion in the simulated world.

Fig. 7.3 CAVE

8. IMPLEMENTATION

In several various fields, computer technology is presently utilized, two of the most significant areas of use are as follows.:

- Company
- Exercises
- Design and engineering
- Education
- Changing in entertainment
- Education and lecture
- Design and prototyping architecture
- Framework for professional sports
- Digital output framework
- Applications by the military
- Mobile Software and Games
- Business of defense
- Ergonomics and an study of human factors
- Museum and display of art
- Evaluation of concept (virtual prototyping)
- Maintenance & Planning
- Visualization of the definition & data
- Distribution and marketing
- In dangerous conditions activities
- Culture, recreation, etc.

9. CHALLENGES

There are still opportunities, technologies, existence, unavoidable barriers and disadvantages. Now, the application of hardware for augmented reality is both scientific and political. Instead of striving to kill them entirely, we will do our utmost to minimize such barriers.

Fig. 9.1 Challenges in VR

These inevitable barriers are caused by:

9.1 Technical Challenges

- Only through a live transmission to the user of all data live via the Internet, with limited local caching of commonly used data can all virtual environments functions or functions be accessed. For core functions, users need to have a network capacity of a minimum of 300kbit / S, and for higher results, 1Mbit /s.
- A network proxy or a caching tool cannot reduce network loads when many users access the same platform due to proprietary communication protocols. For instance: when used for business activities or for school activities. Price is another challenging issue; because it is fresh, it is costlier and often small to medium sized individuals are reluctant to do so.
- There are also other maintenance fees, in addition to the usual Internet connection and device costs. For example: Virtual learning needs premium account to purchase land and create a safe and healthy educational setting.
- In order to build the right virtual environment, high-performance communication or high-powered computer systems are required.

9.2 Society/Cultural Challenges

There are still questions concerning conflict problems in the western world. We recognize that private property needs to be bought for virtual research, so only authorized participants have this private land. However, people can experience violence or disturbance in public places.

Many legal problems, such as virtual violence, sexual abuse and virtual harassment, have not yet been resolved.

In these worlds, billions of people connect everyday to socialize, shop and learn. Unfortunately, many lawbreakers have now invaded this simulated environment and numerous illegal acts take place. Common crimes that occur frequently involve money trafficking, sexual assault, exploitation of children and terrorism attacks, among others.

CONCLUSION

- The future of increased reality depends on the presence of technologies that solve "large" problems in the virtual world.
- We expect VR to become the primary residential facility in our homes and on work in the coming years as further testing is carried out. When machines become stronger, they can create visual images that represent life more realistically.
- This could also probably be connected in future to computer phones. Nippon Telegraph and NTT design a device in Japan to show one user with VR techniques a 3D image of others. Therefore, the future is virtually real, and its advantages will also be huge.
- More and more research has demonstrated the value of greater user engagement and previously impossible application, from an evolutionary and artistic viewpoint.
- Use of augmented reality technology for health, architectural, manufacturing, testing, installations, entertainment etc.
- Virtual technologies have therefore gradually started to move from abstract know-how to realistic.

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