

VIRTUAL EDUCATION AND LEARNING SYSTEM

D.Niranchana

Department of Computer Science,
Sri Krishna Adithya College of Arts and Science
Coimbatore-641042,Tamil Nadu,India.

D.Aldrine Douglas,

B.Sc(Computer Science),
Department of Computer Science,
Sri Krishna Adithya College Of Arts And Science,
Coimbatore-641042,Tamil Nadu,India.

N.Anurag,

B.Sc(Computer Science),
Department of Computer Science,
Sri Krishna Adithya College Of Arts And Science,
Coimbatore-641042,Tamil Nadu,India.

Abstract: You will probably never go to Mars or else swim with dolphins, run an Olympic 100 meters. But if virtual reality ever lives up to its promise, you might be able to do all these things—and many more—without even leaving your home. Unlike real actuality (the real world in which we live our life), VR means simulating bits of our world (or completely imaginary worlds) using high-performance computers and sensory equipment, like headsets and gloves. Apart from games and entertainment, it's long been used for training airline pilots and surgeons and for helping scientists to figure out complex problems such as the structure of protein molecules.

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I.INTRODUCTON

Virtual reality (VR) is that used to experience objects through our computers that don't actually exists. From that simple explanation, the idea doesn't sound mainly new. When you look at an wonderful Canaletto painting, for example, you're experiencing the sites and sounds of Italy as it was about 250 years ago—so that's a kind of virtual reality. In the same way, if you listen to ambient instrumental or classical music with your eyes closed, and start dream about things, isn't that an example of virtual reality—an experience of a world that doesn't really exist? What about losing yourself in a book? Surely that's a kind of virtual reality?

If we are going to value why books, movies, paintings, and are not the same thing as virtual reality, we need to define VR clearly. The purposes of this easy, article, I'm going to describe it as:

A credible and interactive 3D computer has created the world that you can explore so you can sense you actually are there, both spiritually and bodily[1].

Putting it another way, virtual reality is essentially:

A. Believable

You actually need to sense like you're in your virtual planet (on Mars, or anywhere) and to keep believe that, or the *illusion* of virtual reality will disappear.

B. Interactive

As you move around, the VR world needs to move with us. You can watch a 3D motion picture and be transported up to the Moon or down to the seabed—but it's not interactive in any feel.

C. Computer-generated

Only the powerful machines which are with the powerful 3-dimension computer graphics, are fast enough to make

credible, interactive, unusual worlds that change in real-time as we move around them.

D. Explorable

A Virtual Reality earth needs to be large and exhaustive enough for you to walk around through. Even though sensible a work of art is, it shows only one scene, from one viewpoint. A book that can describe a huge and complex "virtual real world," but you can only really explore it in a linear way, exactly as the creator describes it.

E. Immersive

To be both credible and interactive, VR needs to engage both your body and your mind. Paintings by war artists can give us glimpses of argument, but they can never fully express the scene, sound, smell, taste, and feel of clash. You can play a flight simulator game on your home Personal Computer and be lost in a very realistic, interactive experience for hours, but it's not like using a real flight simulator (where you sit in a hydraulically operated imitate of a real cockpit and feel actual forces as it tips and tilts), and even less like flying a plane.

II.VIRTUAL REALITY AND EDUCATION

Learning is one more area which has adopted virtual reality for teaching situations. The advantage of this is that it enables large groups of students to interact with each other as well as within a three dimensional environment.

It is capable to current multipart data in an easy way to students which is both fun and easy to learn. Plus these students can interact with the objects in that environment in order to discover more about them.

A. Virtual reality astronomy

For example, astronomy students can learn about the solar system and how it works by physical engagement with the objects within. They can move planets, see around stars and track the progress of a comet. This also enables them to see

how abstract concepts work in a three dimensional environment which makes them easier to understand and retain. This is useful for students who have a particular learning style, e.g. creative or those who find it easier to learn using symbols, colours and textures.

B. One ideal learning scenario is medicine

Virtual reality can be used to build up surgery simulations or three dimensional pictures of the whole human body which the students can explore and improve their imagination. This has been used in medical schools both in the UK and abroad.

The use of VR in medical field is discussed in a sequence of separate articles in the healthcare section.



C. Virtual reality and tech-savvy children

Then there is the fact that children today are familiar with all forms of technology and use these at school as well as at home. They have grown up with technology from a very early age and unlike adults, do not have any fear or hesitation in using it. Plus we live in a technological society. So it makes sense to implement virtual reality as one of several forms of technology in order to educate tomorrow's technological elite. The Learning system has moved on from books, pencils and pens to the use of interactive technologies to help impart knowledge and understanding[2].

III. VIRTUAL AND AUGMENTED REALITY

A. Augmented Reality

Augmented reality is not exactly VR but falls under its category because a lot of similar technologies are used. The purpose of augmented reality is not to immerse the user in a completely virtual world but to add virtual elements to the real world in realtime either visually or using audio.

Augmented reality combines features of a virtual environment with the real world. Most often, the augmentation is visual, with a user sporting an eyepiece connected to a wearable computer and positioning equipment. By tracking where the user's head is and what he is seeing, the computer is able to overlay graphics and text onto his vision.



This technology has a lot of potential application for mobile workers who are not behind a desk. Everything that we would otherwise need to access on a computer screen could be automatically integrated with our view of the real world. However there are currently not a lot of commercially viable systems that have been widely adopted and it still remains a focus for further research and development.

B. VR as an aide to deep Learning

Researchers in science and medical fields are already making great use of immersive technology. Although augmented simulations and views inside the body are obviously great tools for learning, something as simple as experiencing the world from the perspective of an elderly patient with dementia can have an enormous lasting impact on a medical student's approach.

The empathic response triggered by a 360 video is so much more powerful than reading case studies alone.

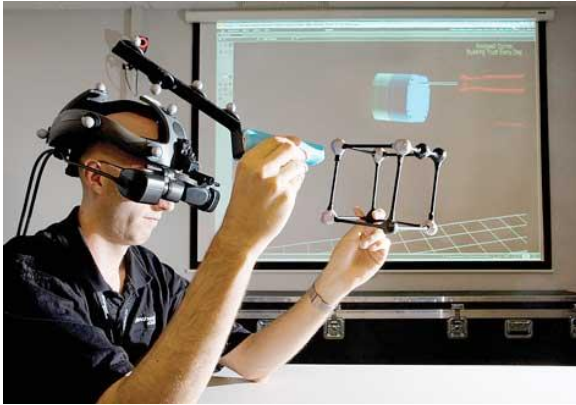
C. New Media and Arts Applications

Implication for the arts are just as profound. Immersive, 360-degree photography and videography have enormous potential as new forms of media.

ClassVR allows students to easily load self-created content onto headsets through a simple web portal. Empower your students to build immersive, multi-perspective films, give them the tools to tell stories in new ways and portray the world from limitless perspective[3].

IV. EDUCATION AND TRAINING

Some of the most effective applications of VR are in the field of education and training. Different kinds of VR simulators have been developed to safely train people for real-life situations. Airplane pilots train extensively on VR simulators before they take the controls of a real plane. In addition to flight simulators virtual reality is also used to simulate combat situations, sea navigation, space exploration, truck driving, fire fighting, medical surgeries etc. Simulators used for education and training provide a more detailed virtual environment and are more complex than those used for entertainment purposes. This also makes training simulators a lot more expensive.



The military has been one of the more avid users of VR simulators and thanks to extensive research funding has aided development of this technology. One of the more recent innovations for VR simulators is the VirtuSphere which enables unrestricted physical movement in a virtual world. The VirtuSphere platform consists of a large hollow sphere that sits on top of a base and allows the sphere to rotate 360 degrees. Wearing a wireless, head-mounted display, users can step inside the sphere to fully interact in immersive virtual environments.

The VirtuSphere enables 6 degrees of freedom – one can move in any direction; walk, jump, roll, crawl, run over virtually unlimited distances without encountering realworld physical obstacles.



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