Theories theorists in virtual reality

Science, Computer Science

VR technology has gained recent popularity as a consumer product in the last few years, however it has been around for decades and in the public radar since the 80’s.

The emergence of computer graphics has revolutionized the way in which we conduct a large portion of our modern day work, including architecture, engineering, interior designing etc., without which it would be hard to imagine how these disciplines would effectively operate. The computer graphics boards enables all this. The interest in forming new realities came from computer games where the user was able to visualize unique dimensions and experiences which are not real and have not been conceived.

The world of three-dimensional graphics is nearly limitless in borders or constraints and is only limited to the fourth dimension: our imagination. (Virtual Reality: History, Applications, Technology and Future by Tomasz Mazuryk and Michael Gervautz). However people are always looking for more. They want to be part of the world and interact with it instead of just viewing a series of images on two-dimensional space.

This rationale brought about the concept of VR. The first idea was presented by Ivan Sutherland in 1965 who said: “ Make that (virtual) world in the window look real, sound real, feel real, and respond realistically to the viewer’s actions.” (Virtual Reality: History, Applications, Technology and Future by Tomasz Mazuryk and Michael Gervautz, Vienna University of Technology, Austria). Ivan went on to propose an artificial world with interactive graphics, force-feedback, sound, smell and taste. Ivan also

created the first Head Mounted Display (HMD) which had suitable head tracking capabilities and window view that was linked to the user's head position and orientation.

Fast forward a decade, in 1975 Myron Krueger created an Artificial Reality where silhouettes of users were projected onto a large screen and were then able to interact with one another due to image processing techniques based on their positions in 2D space on the screen. (Artificial Reality II, By Myron Krueger, 1991)

VPL Research was the first company to manufacture commercially available VR devices in the form of a DataGlove (1985) and Eyephone HMD (1988). The DataGlove was a full-body suit outfit fitted with sensors to measure the movements of arms, legs and trunk for use in Virtual Reality simulations. The Eyephone HMD immersed the user in VR world and could track head movements. (Virtual Reality Systems for Business, by Robert J. Thierauf, pg 75, 1995).

In 1992, CAVE (Cave Automatic Virtual Environment) was invented by Cruz-Neria and a group of scientists at the University of Illinois. (Stepping into Virtual Reality By Mario Gutierrez, F. Vexo, Daniel Thalmann, pg 135) This was a new type of VR experience where, instead of using an HMD, a series of stereoscopic images were projected on the walls of a room (with the user wearing LCD shutter glasses) to create the VR environment. This assured superior quality and resolution of viewed images and a greater field of view compared to the conventional HMD systems. This method also allowed users

to directly share the experience with other users which cannot be done using an HMD.

Theories/Theorists in Virtual Reality

(I have not found anything on VR theorists yet)

Here I need to mention the ‘ founders’ of VR

Applications of VR

The multitude of VR applications have arisen due to the unique and intuitive way of the human-computer interaction that happens during the experience.

The simulated environment can be watched and manipulated in the same way as the real world by the user, therefore many VR applications such as architectural walkthroughs, data visualisations, and manufacturing industries were developed as a collaborative medium to enhance the real life feel of the user experience and aid in the work being carried out. The entertainment sector has also greatly benefitted from VR experiences.

Architectural walkthroughs were the first attempt to use VR as a visualisation tool. Users can visualise buildings and designs which are under development to understand and draw out added details which could have originally been missed or overlooked. The benefit of VR over conventional computer graphics is the feeling of presence and sense of spatial awareness in a virtual building which cannot be achieved even by the most realistic still images or animations (Virtual Reality: History, Applications, Technology and Future by Tomasz Mazuryk and Michael Gervautz, Vienna University of Technology, Austria). The environment can be viewed under different

lighting conditions and at different angles to get a better appreciation of the overall design the user is attempting to create. Users can even walk through building of old or destroyed building which have been re-created to experience them, which no one else will be able to physically do.

Scientific data visualisation is another key area for VR systems. Data can be visualised in three-dimensional space and can be manipulated by the user as they see fit. An example of this is in virtual wind tunnels developed at NASA Ames' Research Centre (Virtual Reality: History, Applications, Technology and Future by Tomasz Mazuryk and Michael Gervautz, Vienna University of Technology, Austria). Using a VR programme, scientists have managed to input and influence streams of virtual smoke in the airflow around a digital aircraft model to show the aerodynamics and behavior of the airflow around the aircraft. The advantages of this are clear, they provide very useful assistance in determining any faults and inconsistencies in the airflow and does now require building an actual aeroplane model which would be costly and time consuming.