virtual reality

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What is virtual reality?

- A satisfactory definition may be formulated like this: "Virtual Reality is a way for humans to visualize, manipulate and interact with computers and extremely complex data.”
- This technology is more seen like something magical, with endless possibilities. The reality is quite an other story. The constraints that we must face are numerous .

Definition by psychological effects

- . Using a psychological or behavioral framework one can define four progressive levels of virtual reality

1. **level one virtual reality**

   it is a computer-generated environment wherein human participants do not act like they are in the real world and never forget that they are not in the real world.

level two synthetic reality

- it is a computer-generated environment wherein human people act like they are in the real world, but never forget that they are not in the real world.

level three simulated reality

- It is a computer-generated environment wherein human subjects behave like they are in the real world and momentarily forget that they are not in the real world.

4.level four synthetic reality

- it is a computer-generated environment wherein human subjects behave like they are in the real world and consistently believe that they are in the real world.
- We can understand the virtual reality according

To its application

The application of virtual reality

- There are various applications of virtual reality; some one present here.

1. Head mounted display
2. Data glove
3. Head tracking
4. I smeller

HMD

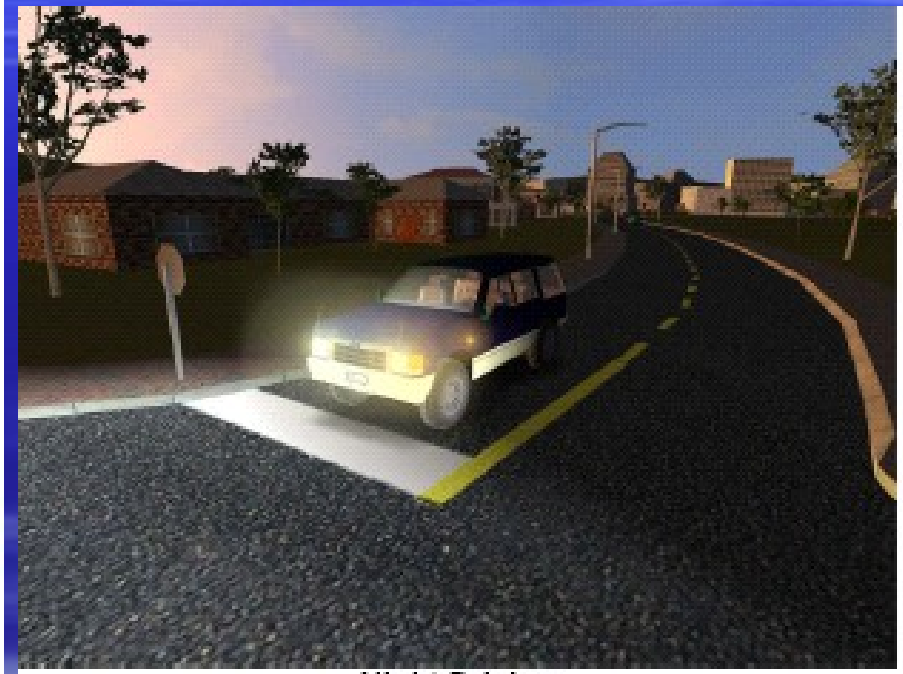
- HMD is an acronym for Head Mounted Display, which is a set of goggles or a helmet with tiny monitors in front of each eye that generates images seen by the wearer as being three dimensional. A true HMD includes a device for tracking the users head movements and orientation. In other words, it tracks what direction the user is looking. Most HMDs will track yaw, roll, and pitch and some will even track the users head translations, a full six degrees of freedom (6 DOF).
- Many HMDs also have 3D sound headsets as part of the unit. Unconstrained objects have six different directions or rotations they are able to move within including forward or backwards, up or down, and left or right; these are called translations. Objects can also rotate around the principal axes, which is roll, yaw, and pitch.


Dual VGA LCD Panels
Hi-Fi Removable Headphones
Lightweight, ergonomic design for maximum comfort
One touch Controls for brightness, volume, 3D Settings, & Power
With a variety of Available cables, connect your V920 to almost any video source
Power via USB when connected to a PC
2 AA batteries = 4 hours of playtime


Proview

The hmd used for learn the driving

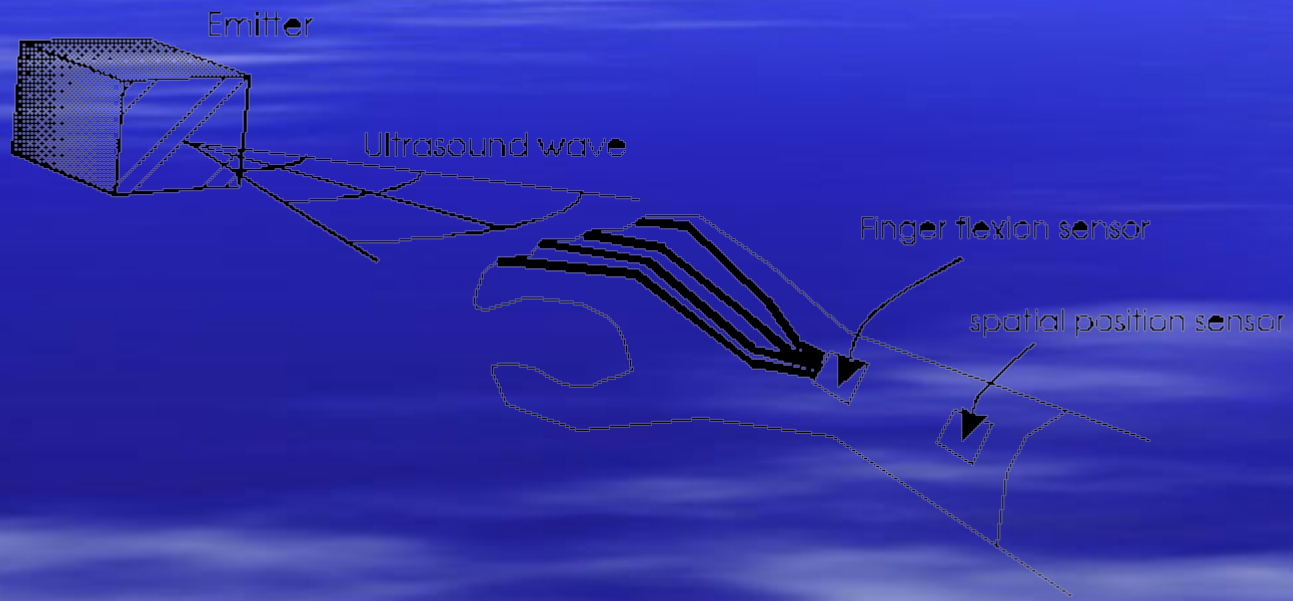
Sub-Urban Driving with Autonomous Entities



Night Driving

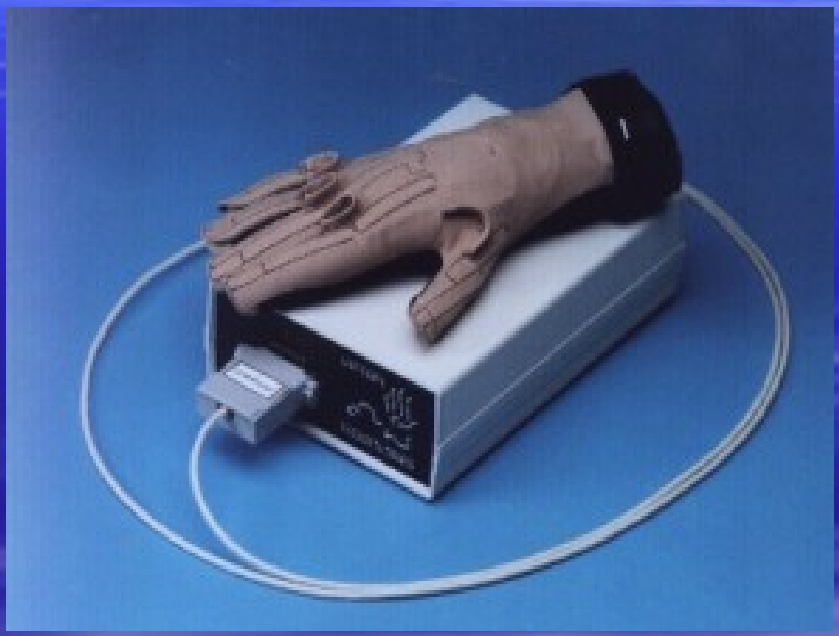
Virtual reality data glove

- An other important component is the VR glove. This peripheral is very useful to interact with objects in a virtual world. This goes well with the original idea that VR should allow a natural interaction of a simulated world
- They use trackers and some form of bending sensors on each fingers. There are various methods of determining the position and the spatial orientation of an object.


Emitter
Ultrasound wave
Finger flexion sensor
spatial position sensor

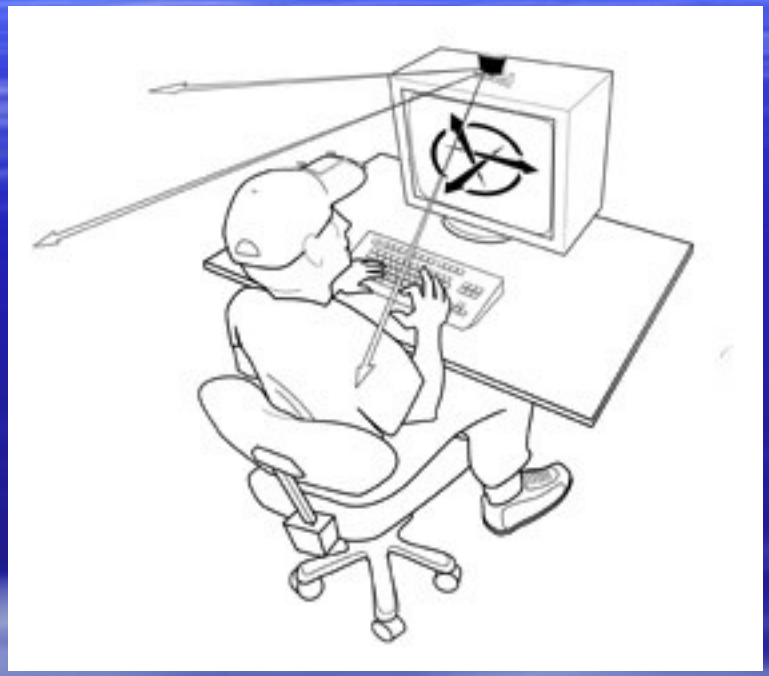

Video cameras
Stereoscopic imagery analysis computing center
x,y and z coordinates of the light points on the glove to the VR system
Light sources on the glove

- This method makes use of a stereoscopic analysis, correlating pixels common to two images, seen by two offset cameras. As with ultrasounds, this technique requires an unobstructed line-of-sight so that the cameras can "see" the dots to be triangulated into 3D spatial positions. The triangulation consists of correlating given points on two images.
- By this method that provides users total intuitive interaction with 3D and virtual environments, such as games, websites and educational software



Head tracking

- Head tracking is a precision, six degree-of-freedom positional and angular head tracking device. The first three "degrees of freedom" are coordinate movements along the X, Y, and Z axes. A mouse is a 2-D peripheral, detecting movement along two of the three axes previously mentioned. Head tracker detects movement in all three, as well as rotation on those axes.



- Head tracker can detect the movement of your head and translate that to computer control, For example "looking up, down, left, right" emulates the cursor control of your desktop mouse. Moving your head "toward the monitor or away from the monitor" is also detected and can be programmed to be computer control functions. Moving your head "up", "down", "left", or "right" are also detected and can become computer control functions.

I smeller

- In Oakland, Calif., Digi Scents, Inc. is developing a digital scent device, called the **ISmell**.
- A prototype of the iSmell Personal Scent Synthesizer is shaped like a shark's fin, and it will be connected to your PC through a serial or universal serial bus (USB) port. It can be plugged into any ordinary electrical outlet. Here's how it works:

Prototype Designs (Edited by EdgeReview)

- DigiScents has indexed thousands of smells based on their chemical structure and their place on the scent spectrum.
- Each scent is then coded and digitized into a small file.
- The digital file is embedded in Web content or e-mail.
- A user requests or triggers the file by clicking a mouse or opening an e-mail.
- A small amount of the aroma is emitted by the device in the direct vicinity of the user.

- The iSmell can create thousands of everyday scents with a small cartridge that contains 128 primary odors. These primary odors are mixed together to generate other smells that closely replicate common natural and manmade odors. The scent cartridge, like a printer's toner cartridge, will have to be replaced periodically to maintain the scent accuracy.

Use of virtual reality in human life.

- There are a lot of ways in which virtual reality (VR) may be used for entertainment purposes. Virtual reality fun (“virtainment”) spans virtual reality games, three-dimensional movies, artificial pets (“virpets”), artificial reality television, and alternative fun usages.
- But virtual reality is not used only for entertainment . It is also used other useful work like **medicine .sports. Disabled Children,**

Use of virtual reality in medicine

- A major progress area for artificial reality usages is the discipline of medicine. Virtual reality is used in numerous ways for medical diagnosis, treatment, instruction, and analysis. Virtual-reality applications help surgeons to identify and remove malignant tissue. Medical robotics (“medibotics”) with simulated reality interfaces enable microsurgery with greater accuracy than conventional surgical means.
- . Virtual reality can improve patients with brain damage to regain the capacity to perform tasks by retraining damaged regions of the brain or by knowledge to use new areas. For people with chronic sensory impairment, virtual reality may help as well. For example, blind people may be prepare for a setting environment by education on a simulated model of that setting equipped with auditory and tactile cues.

Virtual reality in sports.

- Virtual Reality (VR) will likely be used for sports in many ways. First, VR will likely provide improved instruction and instruction for participating in traditional sports.
- Athletes as already using artificial reality as a higher practice tool.
- Golfers practice their swing in artificial golf applications. Bobsled teams practice moves in synthetic simulations under different simulated tracks andconditions

Virtual Reality Games for Teaching Seriously Emotionally Disturbed and Learning Disabled Children

- Some people have learned how to mange this conflict in pro-social, constructive ways. Many others respond destructively, with discouragement, withdrawal, or even violence. Students who are Seriously Emotionally Disturbed (SED) or experience the frustrations of Learning Disabilities (LD) are particularly vulnerable and more likely to handle conflicts inappropriately. However, with assistance they can learn to internalize the strategies of good conflict management. These strategies include accurate listening, clear explanations, humor, postponing, compromising, seeking assistance, negotiating, and so on. When students practice positive responses to conflict, improved mental health and learning are likely to follow.

The physiological dangers of this technology

- Since the debut of this technology, certain symptoms have appeared which denote a physiological disorder. As a result of the devices used and their performances, people have experienced secondary effects in the prolonged exposure to a virtual world.

- an HMD helmet, a glove, or a slow computer can cause some to experience seasickness and vomiting. Others are unable to focus adequately once they return to the real world, and after a while can regain some hours, according to the length of the immersion. Accommodation, that is to say the action of adjusting the focal distance of the eye's crystalline, is a function of the human brain which is relatively simple to reprogram, at least temporarily. If a candidate is exposed for a sufficiently long time to a conflicting situation regarding vision, the brain will try to adapt to this new situation in order to obtain a clean image.As emphasized in the preceding pages, the tactile glove and the computer also cause physiological

Conclusion

- Thus, is it not surprising that a lot of people still think of synthetic reality primarily in terms of entertainment -- even though it is increasingly used in education, medicine, engineering, product development, investigation, information analysis, real estate, and numerous other applications.

Prototype Designs (Edited by EdgeReview)