

# AN OVERVIEW OF THE VIRTUAL REALITY

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## **ABSTRACT:**

Virtual Reality (VR) means experiencing objects or things through our computers that actually don't really exist. Virtual Reality is already becoming a very in demand concept, and with so many new cameras and devices, it can be easy to feel left behind. That's because VR is still relatively new technology.

VR can also be defined as a believable, interactive 3D computer-created world for you to explore and to get the feel that you are really there, both physically and mentally.

**KEYWORDS:** Introduction Virtual Reality , Types of VR, Architecture of VR system, Applications of VR and Current problems & Future work

## **INTRODUCTION:**

Virtual Reality refers to a high-end user interface that involves real time simulation and interactions through multiple sensorial channels

Virtual Reality is able to immerse you in a computer generated world of your own making:

- A room
- A city
- The interior of human body.

With VR, we can explore any uncharted territory of the human imagination.

In 1950s,flight simulators were built by US Air Force to train student pilots.

In 1965, a research program for computer graphics called “The Ultimate Display” was laid out.

In 1998, commercial development of VR began.

In 1991, first commercial entertainment VR system “Virtuality” was released.

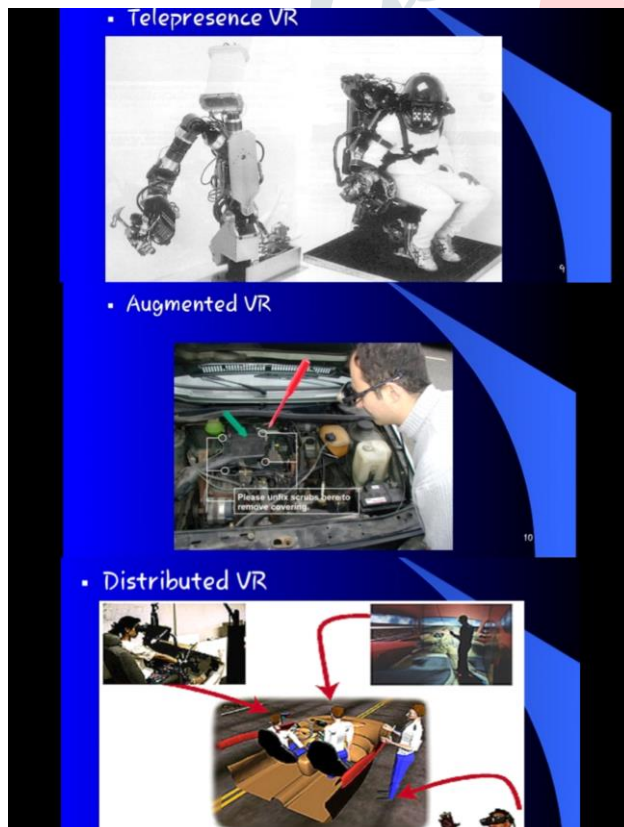
### **TYPES OF VIRTUAL REALITY:**

- Telepresence
- Augmented Reality
- Distributed VR

**TELEPRESENCE:** A variation of visualizing complete computer generated work. Used for performing operations in dangerous environment.

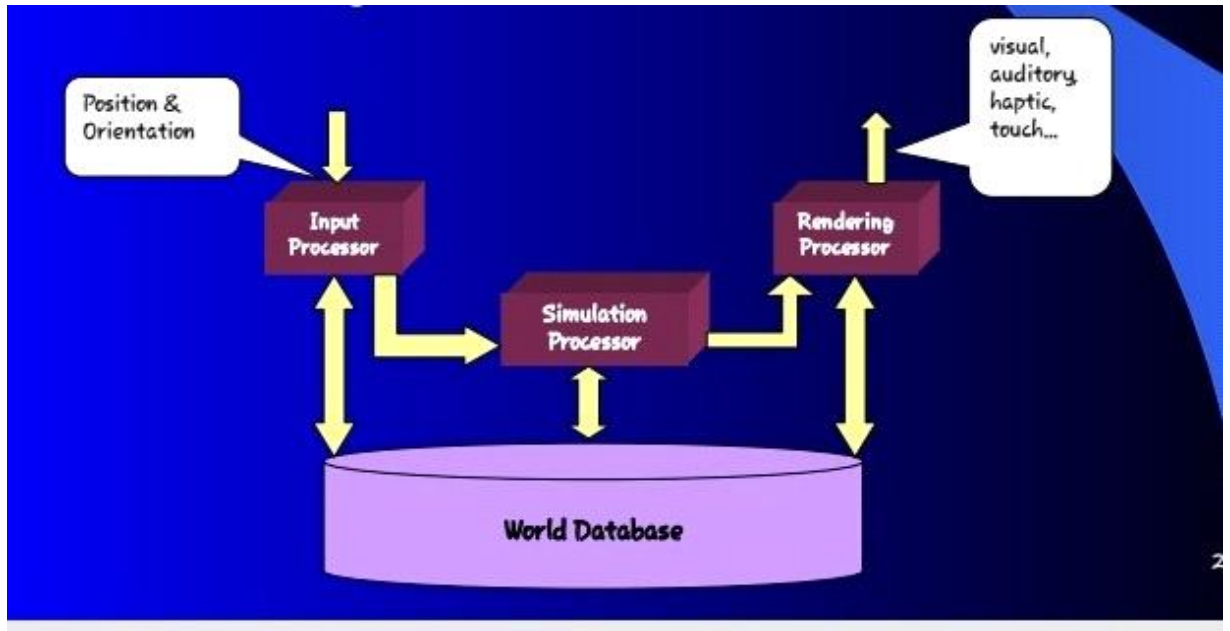
**AUGMENTED REALITY:** The seamless merging of real space and virtual space. Integrate the computer-generated virtual object into physical world.

**DISTRIBUTED VR:** A simulated world runs on several computers which are connected over network and the people are able to interact in real time, sharing the same virtual world.



## ARCHITECTURE OF VR:

Input processor, Simulation processor, Rendering processor and world database.



**Input Processor:** Control the devices used to input information to the computer. The object is to get the coordinate data to the rest of the system with minimal lag time. Keyboard, mouse, 3D position trackers, a voice recognition system, etc.

**Simulation Processor:** Core of a VR system. Takes the user inputs along with any tasks programmed into the world and determine the actions that will take place in the virtual world.

**Rendering Processor:** Create the sensations that are output to the user. Separate rendering processes are used for visual, auditory, haptic and other sensory systems. Each renderer take a description of the world stat from the simulation process or derive it directly from the World Database for each time step.

**World Database (World Description Files) :** Store the objects that inhabit the world, scripts that describe actions of those objects.

## APPLICATIONS OF VR:

### **Medicine:**

- Practice performing surgery.
- Perform surgery on a remote patient.
- Teach new skills in a safe, controlled environment.

### **Manufacturing:**

- Easy to modify ,
- Low cost High efficient

**Education & Training:**

- Driving simulators.
- Flight simulators.
- Ship simulators.
- Tank simulators.

**Entertainment:**

- More vivid
- More exciting
- More attractive

**Current problems :**

- Cybersickness / simulator sickness
- Low-fidelity
- Expensive
- Lack of integration between application packages

**Future work:**

- High-fidelity system
- Cost-saving
- Collaborative
- High-level contact between participants in distributed VR

**Conclusion:**

Virtual Reality is a virtual environment or world in which users can interact, and can fool our senses into believing what we hear, touch, and of course see. By using cutting edge software and hardware, Virtual Reality will definitely impact a wide range of industries, and undoubtedly most notably - the entertainment industry.

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