

Virtual Reality

By Oya Metin
VA 401

Synopsis

- What is Virtual Reality?
- The History
- Types
- Implementation
- Applications
- Conclusion

What is Virtual Reality?



- Computerized simulation of natural or imaginary reality
- Illusion of being in presence of an object or within a situation
- The simulation of a real environment for training and education
- The development of an imagined environment
- Three I's: Interactivity, Immersion, Imagination

The History

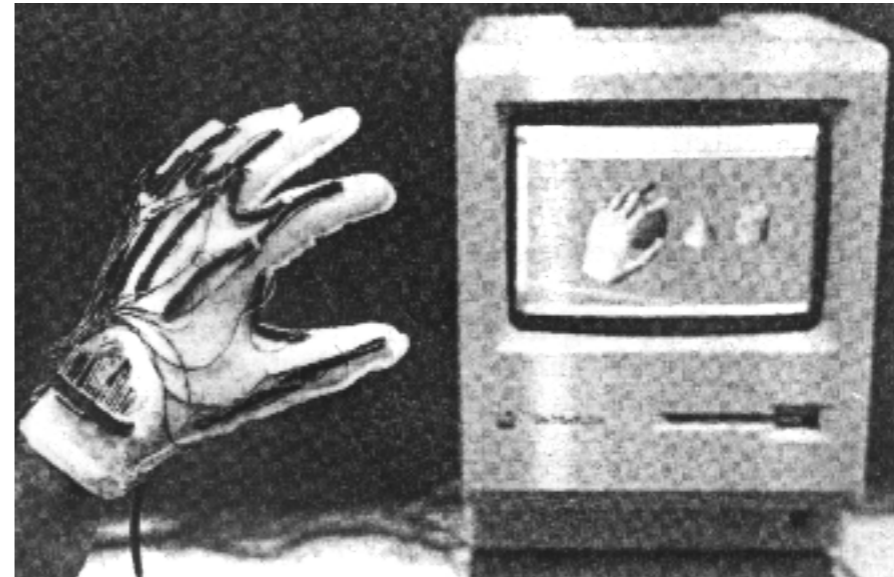
In the early 1960s the term "virtual" began to emerge within the computer industry to signify something that appeared to exist without actually existing, e.g., virtual memory.

- 1938: La Realite Virtuelle; Antonin Artaud, actor and director, describes his play
- 1955-62: Sensorama, immersive, mechanical theater by Heilig



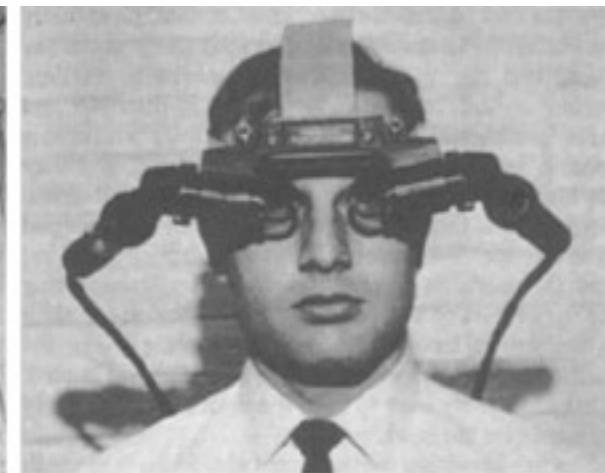
cinema with sensations of sight, hearing, smell and touch, displays 3-D images in a wide-angle view, provide body tilting, supply stereo sound, and also had tracks for wind and aromas to be triggered during the film.

- 1977: The Sayre Glove; Data Glove by Daniel J. Sandin and Thomas Defanti



Taken from [ZL87].

- 1966: The first Virtual Reality Head Mounted System by Ivan Sutherland



http://www.youtube.com/watch?v=7B8aq_rsZao

- 1978- 79: Early Interactive Computing and Virtual Reality
- 1982-89: The Data Glove; a gaming glove for the Nintendo Entertainment System.
- 1994-96: Nintendo introduces “The Virtual Boy”- a table-top video game console
- 2003: Second Life
- 2006: The Film “Avatar”-
- http://www.criticalcommons.org/Members/JLipshin/clips/AVATAR_body_transfer.mp4/view
- 2011: The Google Art Project-
www.google.com/culturalinstitute/project/art-project
- 2012: Virtual Reality Reader for eBooks



the Virtual Boy by Nintendo



The Types Of VR

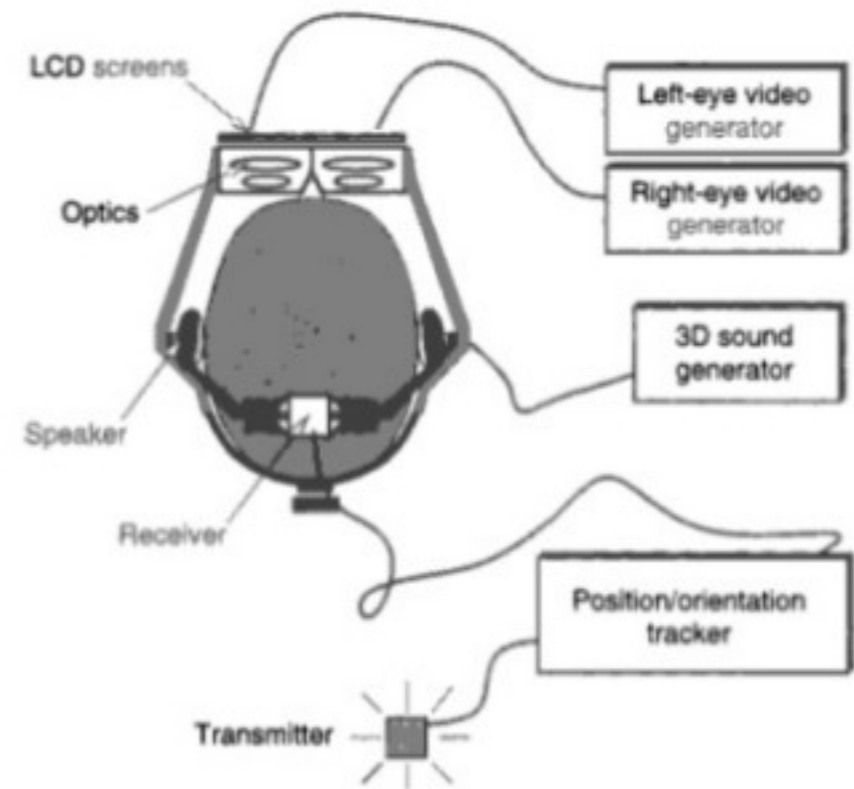
- **Immersive Virtual Reality System:** Partial and Full immersion
- **Non- Immersive Virtual Reality System:** WOW/ Window on World
Virtual: Computer Monitor to display visual world
- **Telepresence/Hybrid systems:** Augmented reality systems; links the remote sensors with senses of human operator in the physical world
- **Mirror Virtual Reality:** Merging the telepresence and VR systems, users bodily movements control the model

Implementation

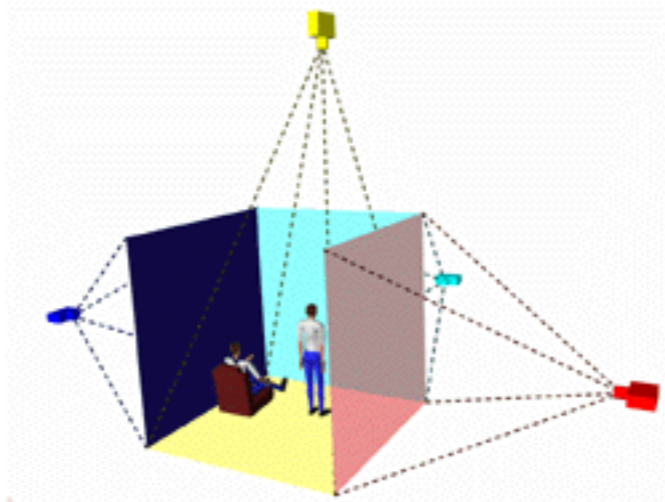
- Head-mounted displays



head-mounted
display: oculus rift



- World- fixed displays; CAVE; <http://www.youtube.com/watch?v=Gb9ayYGM-4c>



cave; give an illusion to be in a virtual world- 3 to 6 walls



- Hand-held displays



Applications



- Flight Simulations
- Military Training; for training purposes
- Medical; a new approach to research, exposure therapies
http://www.youtube.com/watch?v=CQgKEp_NhHk
- Games; Second Life
- Movies; The Matrix- <http://www.youtube.com/watch?v=j6oBbBfhgYE>

Today's Devices

- Oculus Rift; higher field-of-view, head-mounted visor, user can feel as in the game
- Sixtense STEM System; Motion Tracking & Input- July 2014- can be used to physically pull and contort the world and its objects with your hands
- Virtuix; Physical Movement Input- <http://www.youtube.com/watch?v=p94Mly8UJsc>



Conclusion

References

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