

STUDY ON HAPTIC TECHNOLOGY

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Abstract: Haptics technology is the science of touch (tactile). It is the way of creating virtual touchable objects in mid-air which is a human-computer interactive method. It is about creating sense of touch through which we can create buttons, switches the virtual environment which really doesn't exist. We can't feel the texture unless we slide our hand across the material or whatever we are touching. Virtual objects are real and palpable(tangible). It links the brain's sensing position and motion of body with the help of sensory nerves within the muscles and joints. This mechanical stimulation helps to create, control of virtual objects and remote control of devices. This paper includes what is haptic technology, how it works, about its devices, advantages and disadvantages.

Keywords: 3D vision, virtual sensation, holograms, tactile.

I.INTRODUCTION

Haptic technology or haptics is tactile feedbacks that take advantage of user sense of touch by applying forces vibration and motion to the user. Haptic refers to sensing and manipulation through touch the word haptic is derived from the Greek word "haptēsthai". Haptic technology promises to have wide reaching applications as it already has in some fields for example haptic technology has made it possible to investigate in detail how the human sense of touch works by allowing the creation of carefully controlled haptic virtual objects. It has two important components tactile and kinesthetic. Tactile includes contact location, pressure, slip, vibration and temperature. Kinesthetic includes position, orientation and force. Haptic devices are capable of measuring bulk or reactive forces that are applied by the user it should not be confused with touch tactile sensors that measure the pressure or force exerted by the user to the interface. Through haptic interface human can interact with the computer through body sensation and movement several applications such as surgical training gaming etc, use haptic technology. Haptic technology has made it possible to investigate in detail how the human sense of touch works by allowing the creation of carefully controlled haptic virtual object.

II.IMPLEMENTS

Non contact haptic technology:

Non contact or mid air technology used to the sense of touch without any physical object. non contact technology has a only given to the feel to touch without any physical devices. Thus type of technology is involves interactions with the systems that are in a 3D space around the user. So thus the user is able to work on the system in 3D visions without any physical device. And also used mid air technology for sense of touching.

Medical applications:

The haptic technologies are helped to future applications. Holograms are more importance to the medical applications.

The medical industry stands to gain from virtual and telepresence surgeries with holograms methods. It is developing technology to stimulate surgery for training purposes. Haptic technology is currently developing for perform operations remotely in various locations. It is prepare to train the local nursing staffs to do the operations.

Haptic information

Haptic communication the means by which people and other animals communicate via touching. Haptic is a touch and feel of the system to know the other information's. It is the science of applying touch sensations and control to interaction with computer application. It makes the 3D environment for users convenient.

- Tactile information refers the information acquired by the sensors which are actually connected to the skin of the human body.



III.DEVICES

The device of the haptic technology was an input/output device. Such as joysticks, data gloves. Users can gather the information's from compilers applications in the form of felt sensations with visual display. We can get the feedback from visual images.

Phantom Omni haptic device

Phantom Omni haptic device provides a 3D touch to the virtual objects. When the users move his finger then he could really feel the shape and size of the 3D objects

without any touching tools than it has been already programmed. Virtual 3D space in which the phantom operators is called haptic scene.

[3] <http://bus237-haptics.blogspot.in/p/advantages-disadvantages.html>



Advantages

- Easy to handle.
- Easy to gather the information.
- Communication which would be focused upon touch and it takes advantages of the user's sense of touch and feeling.
- To interact between user and computers.
- Display the information's to 3D effects for easy to understand.
- It is aims to stimulate the sense of touch by applying motions, vibrations, and forces to the users.

Disadvantages

- Display and compute elemental sensations such as impact, friction, softness, motion and constraint.
- It is expensive
- This technology is still being rapidly introduced.
- The processing tool of these devices is limited.
- Haptic technology is at risk for being controlled by hackers who corrupt the operating systems and the memory of your haptic technological tool especially it is connected online.

IV.CONCLUSION

We finally conclude that the haptic technology is the solution for interacting with the virtual environment and used widely in many applications. Haptic device acts as an input and output device tracking user physical manipulation as an input and providing realistic touch sensations as an output coordinated with onscreen events. As technology evolves and computer power grows, haptic devices and effects evolved and get more realistic. This technology has proved that virtual objects can also be touched, felt and controlled. This technology must be made available for the affordable cost and the haptic devices must be made simpler and easier to use.

V.REFERENCES

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