Sixth Sense Technology – Applications & Security Threats

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Abstract— In this paper we have worked on the new technology named sixth sense technology, its various applications and security threats. It's a new technology that provides user with the digital information of the physical world around him just with some of its wearable interfaces. In real life individuals make use of their five natural senses to make judgements, decisions or to take actions based on what they see, or come across, etc. With the help of this new born technology one can watch videos, move data, access things without any use of keyboards, mouse etc. One can communicate with just use of their hand gestures.

Key words: Sixth Sense Technology, Security Threats, Digital Information, Wearable Interface, Hand Gestures

I. INTRODUCTION

'Sixth Sense' is a wearable gestural interface that augments the physical world around us with digital information and lets us use natural hand gestures to interact with that information.[4] The plane surface is used as an interface to interact by the sixth sense device. Equipment's like projector, camera, mirror, coloured caps, and mobile are used to make a sixth sense device. With the help of these equipment's we can interact with the physical world by the digital information. Sixth sense device projects what we see with the help of camera and projector. It lets us interact with this information with the help of hand gestures. The software processes the captured data and tracks the locations of coloured markers.

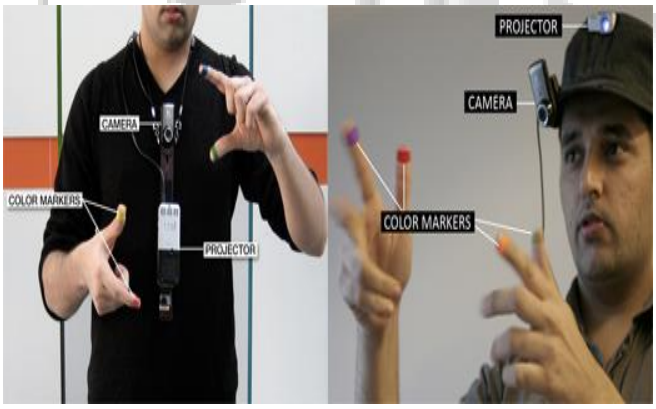

Fig. 1: Sixth Sense Equipment

II. EXISTING SYSTEM

Earlier many technologies evolved which use to augment reality with the use of graphics, audios and various other enhancements. These augmented realities were not able to create the virtual reality but they use to just blur them just to show the difference between the real and the one generated using technology. Sixth Sense technology overcomes this scenario by making the real things look real technologically also. Previous technology was based on the five human senses.

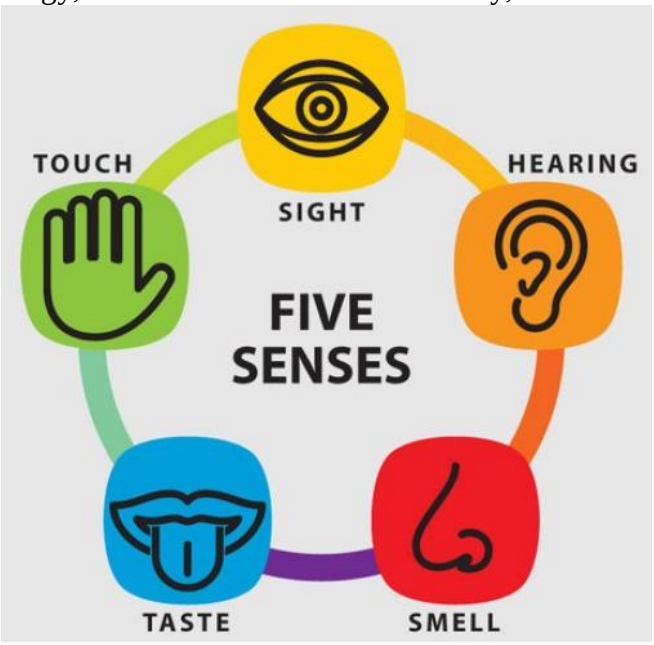

Fig. 2: Human Senses

III. PROPOSED SYSTEM

The proposed Sixth Sense technology made the augmented reality look real. It was made so with the help of camera and projector. Projector used to projects what we use to see on the surfaces and thus allows us to interact with it with the help of natural hand gestures. The software captures the location of the hand gestures with the help of coloured caps worn. Pranav Mistry, of Indian origin, a PhD student in Fluid Interfaces Group at the MIT Media Lab is the mastermind behind the Sixth Sense technology.[2] Movies like 'Robocop' and 'Minority Report' inspired him to create his view of a world not dominated by the computers, human robots and digital information rather build a technology with Human gestures which is portable enough to carry and to make the world more interactive and workflow much easier.[2]

IV. DESIGN AND WORKING

Sixth Sense device are made up of camera, speech IC, mirror, wearable projector, mobile device. It acts as a computer and the information is stored on the web, is connected to cloud. There are three ways for speech recognition and language understanding.[4]

1) Multipurpose processors intended for embedded applications.
2) Customised integrated circuits for speech recognition and language understanding.
3) Implementing speech recognition and language understanding as part of larger integrated circuit in the device.

Projector and camera are connected to the mobile with the help of Bluetooth. Projector projects what we see on to the surface like wall, etc. Hand gestures is captured by the camera. The location of the moving coloured caps which are

on the finger tips is captured. Recognition is made using Computer Vision Technique. These gestures act as input to application which is projected by the projector. The projector projects on a surface. This surface can be wall, table or even your hand.

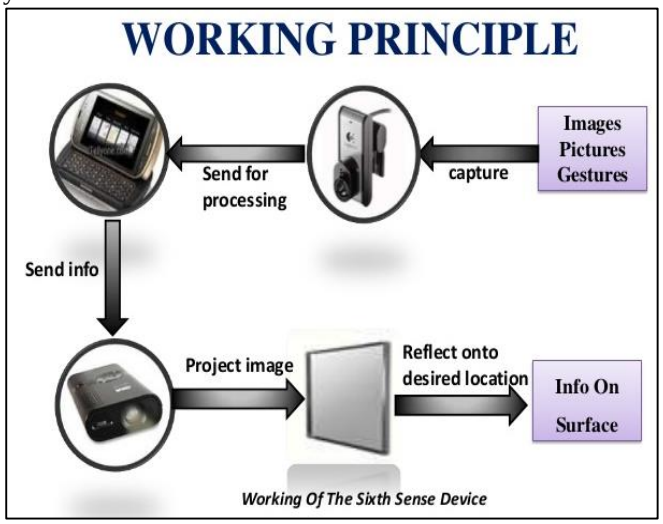

Fig. 3: Working Principle of Sixth Sense

V. VARIOUS APPLICATIONS OF SIXTH SENSE TECHNOLOGY

There are many sixth sense applications. We can use sixth sense to project a keypad on hand and also can make a call from it. One can also use maps by projecting them on a physical surface and can even zoom in and out. We can watch videos on newspaper. That is the device identifies the article in the newspaper and provides us with latest related information, videos, etc. We can also create a wrist watch on our hand and can know the correct time. The drawing application of this device lets the user draw on any surface by tracking the tips movements of the user's index finger.[3] By looking at the ticket we can know whether or not his/her flight, train is in time or delayed.

Fig. 4: Sixth Sense Technology Applications

VI. SECURITY THREATS

Sixth Sense technology is not yet launched in the market as it has some Cyber warfare threats. Cyber War are any virtual conflict initiated to attack on enemy's computer and information system.[2]

1) Privacy Issues: As using sixth sense just with the use of finger tips one can click the photo of any object or a person without intimating. Thus may lead into misuse.
2) Health Issue: As we're projecting these images on surfaces, everyone can see it. It may damage one's eyesight as projection is done mainly in dark. The device should be able to shift its projection techniques during different times of the day.
3) Cyber Security: This technology may really be a trouble if one can share its device with others sixth sense device as one can manipulate and affect others device with malwares. As malware is a software it may be used to collect sensitive, confidential data, credentials.

VII. FUTURE ENHANCEMENT

One of the most important enhancement required to this technology is to overcome all security threats as it may lead to huge problems. Pranav Mistry is working on this to overcome these threats. Pranav Mistry said- "This prototype needs some serious engineering and programming."[3] The device should come up with some important features which may be useful for disabled persons. The device must be cheaper. This technology must be implemented in various domains.

VIII. CONCLUSION

This technology is developed to integrate the physical world with the digital information. Sixth Sense will be a boon for disabled person as it may act as their 5th sense. This technology will bring a revolutionary change to science and technology.

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