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Sixth Sense Technology

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Abstract: - *This paper gives brief overview of sixth sense technology. As we human has senses to interact with world. A sixth sense is an ESP(Extra Sensory Perception) that aims at a more developed future with both the physical and digital world connected without the help of hardware devices. Steve Mann is father of sixth sense technology .This sixth sense technology provide us with the freedom of interacting with the digital world using hand gesture. This technology has a wide application in the fields of artificial intelligence. This technology has two components camera and projector camera capture the object in view ad object is recognized by webcam. Using computer vision based technique user gesture are tracked and it sends the data to the smartphones. The second component is projector, the project the visual information in any, surface including the object itself or your hand.*

Keywords: - Artificial Intelligence, camera, projector, sixth sense technology, vision based techniques.

I. INTRODUCTION

We humans, interact with world using our five senses. However, as the name suggest this technology brings forward an addition sixth sense. A sixth sense is an ESP(Extra Sensory Perception) that aims at a more developed future with both the physical and digital world connected without the helped of hardware devices. When we encounter something , someone or some place , we use our five natural senses which include eye , ear , nose , tongue , mind and body to perceive information about it, that information helps us make decision and chose the right action to take, But the most useful information that can help us make the right decision is not naturally noticeable with our five senses , namely data , information and knowledge that mankind and has gathered about everything and which is increasingly all available online. Sixth Sense Technology allow us to interact with this information via natural hand gesture. Sixth sense Technology is like making the entire world your computer.

II. SIXTH SENSES

Sixth Senses is wearable gesture based device that make numerous the physical world with digital information and lets people use natural hand gesture to interact with that information. Right now, we use our devices to go into the internet and get information that we want. With Sixth Sense, we will use a device no bigger than current cell phones and probably as small as a button on our palm to bring the internet to us in order to interact with our world. Sixth Senses will allow us to interact with our world like never before. We can get information on anything we want from anywhere within a few moments. We will not only be able to interact with things on a completely new level but also with people. Another great part of the device is its ability to scan object or even people and project out information what you are looking for.

III .HISTORY AND EVOLUTION

Steve Mann is father of sixth sense technology who made a wearable computer in 1990. Steve Mann first attempted to propose a neckworn projector and a camera combination. The idea of implementing computer technologies to daily tasks as our "6th sense" was further developed by Pranav Mistry who also appears to be an MIT student as well as Steve Mann. The first prototype of the

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sixth sense technology was actually bigger than what it looks like today and it was not working properly to use in daily life. In an article called The sixth sense technology Arjun K. R says that "They started with a larger projector that was mounted on a helmet. But that proved cumbersome if someone was projecting data onto a wall then turned to speak to friend- the data would project on the friend's face". Therefore, Mistry came up with a different and more convenient device, which is a neckworn portable camera that allows users more space for their daily actions.

FIGURE 1: Image Showing Pranav Mistry Introducing New Applications from Sixth Sense Technology

On the other hand, Mistry first tried out his idea on a simple computer mouse. First, he put two rollers into one mouse and see if he could obtain data and guide the movements of the mouse. Two rollers did not work properly so he decided to use four rollers and see if it could work better. Four rollers gave him the idea that he could use the same idea on fingers and thats what he next moved on to. The picture below shows how four rolls were tried out in Mistry's experiment.

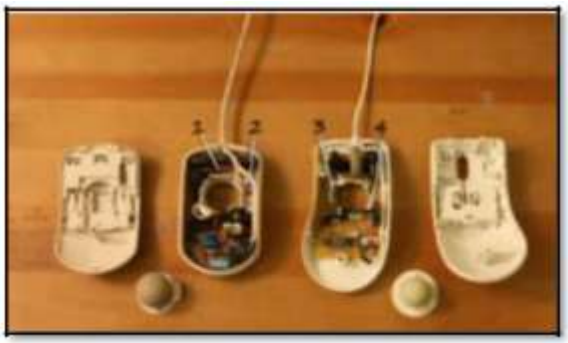

FIGURE 2:Four Roller Computer Mouse

The sixth sense technology was a bit pricey back in 1990's because the specifications that the device needed were barely entering the market and it was costly to convert them into commercial use. However, today, with the fast pace of technological innovations, the cost of this technology is getting ready to enter the commercial market which will allow people to actually use it in their daily life in a few years.

IV: PURPOSE OF SIXTH SENSE TECHNOLOGY

Humans take decisions after acquiring inputs from the senses. However, the information we collect are not enough to result in the right decisions. However, the information, which could help making a good decision, is largely available on internet. Although the

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information can be gathered by connecting, devices like computers and mobiles but they are restricted to the screen and there is no direct interaction between the tangible physical world and intangible digital world. This sixth sense technology provides us with the freedom of interacting with the digital world with hand gestures. This technology has a wide application in the field of artificial intelligence. This methodology can aid in synthesis of bots that will be able to interact with humans.

Sixth Sense Technology allow us to interact with digital world using hand gestures. This technology has a wide application in the field of artificial intelligence. This methodology can aid in synthesis of bots that will be able to interact with humans. The sixth sense prototype implements several application that demonstrate the usefulness, viability and flexibility of system.

V. CONSTRUCTION

Sixth Sense technology comes with a pocket projector a mirror and camera contained in wearable device. Both the projector and the camera are connected to mobile computing device in the user's pocket. The projector projects visual information enabling surface or on wall, while the camera recognizes and tracked user's hand gesture using computer vision based technique. The software program process the video stream data capture by the camera and tracks the location of the coloured markers at the tip of the user's.

VI. TECHNOLOGIES RELATED TO SIXTH SENSE DEVICES

6.1 Augmented Reality

Augmented Reality is a term in which "a live direct or indirect view of a physical real-world environment whose elements are augmented by virtual computer-generated sensory input such as sound or graphics" (Sharma, 2012) . Basically, a user is able to see the facts and artificial information about a certain place, picture, sports game, weather "in real time and in semantic context with environmental elements".The augmented reality is a visualization technology that allows the user to experience the virtual experience added over real world in real time. Augmented reality adds graphics, sounds, hepatic feedback and smell to the natural world, as it exists

6.2 Gesture Recognition

Gesture recognition can be considered one of the first technological innovations that understands the motions of humans and therefore it is somewhat similiar to the 6th sense technology. Gesture recognition is a "computer interaction through the drawing symbols with a pointing device cursor" which throws the keyboard and mouse into the trash with its technology. It is a technology, which is aimed at interpreting human gesture with the help of mathematical algorithms. Gesture recognition technique special type of hand glove, which provide information about hand position and flux of the fingers.

6.2 Computer Vision

Computer vision is the technology in which machines are able to interpret necessary information from an image. This include image processing, image analysis, machine vision. Computer vision is the automated extraction of information from images. Information can mean anything from 3D models, camera position, object detection and recognition to grouping and searching image content.

6.3 Radio Frequency Identification

Radio-Frequency Identification (RFID) is the use of radio waves to read and capture information stored on a tag attached to an object. A tag can be read from up to several feet away and does not need to be within direct line-of-sight of the reader to be tracked. Frequency identification system transmit the identity of an object wirelessly, using radio magnet waves. The main purpose of this technology is to enable the transfer of a data via a portable device.

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VII. FUNCTIONING

The hardware that makes Sixth Sense work contains a camera, a mirror and a projector and is connected to a Bluetooth of the smart phone that can slip comfortably into one's pocket. The camera recognize individuals, images, gesture one makes with their hands, information is sent to the smartphone for processing. The downward facing, projector the image on to the mirror. Mirror reflects images on to the desired surface.

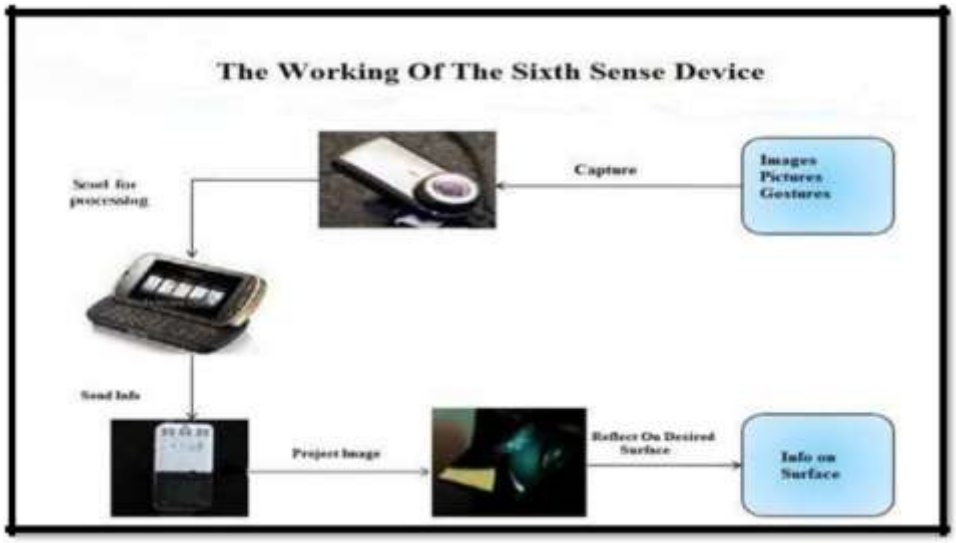

FIGURE 3:The Working of The Sixth Sense Device

VIII. CHALLENGES

8.1 Hardware Limitation- The prototype in the lab have not been assembled into a compact device. Which user on daily basis can use.

8.2 Software Limitation- dependency on image processing challenges and accurate positioning along with synchronization are the main obstacle before implementation.

8.3 Security and privacy- Hacking information from Facebook, taking picture in public, a person could even obtain information about a total stranger in public due to face recognition algorithm of device.

8.4 Safety Concern- safety concern about wearing the device while driving and brightness of projector on user's eye.

8.5 Away from Reality- Excessive dependence on technology may take away from real world where no physical surface touch is available to feel.

IX. ADVANTAGES

9.1 The device is portable and accessible anywhere.

9.2 This technology is multi-touch and multi-user interaction.

9.3 Formation of real world and digital world.

9.4 Mind mapping is possible.

9.5 Software is made open source.

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X. CONCLUSION

Sixth sense devices are very much different from the computers; this will be a new topic for the hackers and other people also. First thing is to provide security for the sixth sense application and devices. Lot o good technologies came and died due to the security problems. There are some weakness that can reduce the accuracy of the data. Some of them were the on palm phone keypad.it allow user to dial a number on palm. Sixth Sense Technology required some hardware improvement and involvement with user.

REFRENCES

[1] Rao, S.S.Communication and computational Intelligence (INCOCCI) , 2010 international Conference.
[2.] http://www.prnavmistry.com/projects/sixthsense/
[3] http://en.wikipedia.org/wiki/SixthSense
[4] http://www.engineersgarage.com/articles/sixth-sense-technology
[5] IEEE international symposium on wearable computing.
[6] WUW-wearble ur world , proceeding of CHI EA 09 Extended abstract on human factor in computing system pages 41114116, ACM new York.
[7]. https://blog.metavision.com
[8] .https:///www.ijsr.net/archieve
[9]. https:///www.ijsr.net/archieve/v3i12/u1vcmq1nzc=pdf.
[10]. Sixth sense technology, 2014 , centria university of applied science.
[11]. MIT media lab technical report 260, December 1994.
[12]. IEEE computer, vol.30, no. 2, Feb 1997.
[13]. IEEE ISWC P.177.
[14]. ISBN 0-385-65825-7.HARDCOVER.
[15]. An anatomy of new bionic senses by james geary , 2002.