Sixth Sense Technology

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Abstract- *It's the beginning of a new era of technology where engineering will reach new milestones. Just like in the science fiction movies where display of computer screen appears on walls, commands are given by gestures, the smart digital environment which talks to us to do our work and so on, these all will be possible very soon. You imagine it and sixth sense technology will make it possible. Isn't it futuristic? Now it's time for sci-fi movie directors to think ahead because the technology shown in there fiction movies soon will become household stuff. Before few years back it was considered to be supernatural or tantalizing imagination. But now it has been made possible. Thanks to Pranav Mistry, a genius who introduced mankind to this futuristic technology.*

Keywords- Smart digital environment; Fiction movies; Super natural or Tantalizing; Futuristic technology

I. INTRODUCTION

Sixth Sense is a wearable gestural interface that upgrades the physical world around us with advanced data and lets us utilize common hand motions to communicate with that data. Steve Mann is father of sixth sense who made a wearable computer in 1990.The Sixth Sense Technology was first implemented as the neck worn projector with a camera system. He was a media lab student at that time. Then his work was carried forward by Pranav Mistry, a PHD student in the Fluid Interfaces Group at the MIT Media Lab. It is based on the concepts of augmented reality and has well implemented the perceptions of it. Sixth sense technology has integrated the real world objects with digital world. The fabulous 6th sense technology is a blend of many exquisite technologies. The thing which makes it magnificent is the marvelous integration of all those technologies and presents it into a single portable and economical product .It associates technologies like hand gesture recognition, image capturing, processing and manipulation, etc. It superimposes the digital world on the real world.

Sixth sense technology is a perception of augmented reality concept. Like senses enable us to perceive information about the environment in different ways it also aims at perceiving information. Sixth sense in fact, about comprehending information more than our available senses. And today there is not just this physical world from where we get information but also digital world which has become a part of our life. This digital world is now as important to us as this physical world and with the internet the digital world can be expanded many times the physical world. God hasn't given us sense to interact with the digital world so we have created them like smart phones, tablets, computers, laptops ,net books, with the digital PDAs, music players and other gadgets. These gadgets enable us to communicate with the digital world around us. But we're humans and our physical body isn't meant for digital world so we can't interact directly to the digital world. For instance we press keys to dial a number ,we type text to search it and so on. This means for an individual to communicate with the digital world he/she must learn it. We don't communicate directly and efficiently to the digital world as we do with the real world. The sixth sense technology is all about interacting to the digital world in most efficient and direct way. Hence, it wouldn't be wrong to conclude sixth sense technology as gateway between digital and real world. Before Wear Ur World (WuW) came there were other methods like speech recognition software, touch recognition etc., which empowered us with direct interfacing.

This WuW or sixth sense device invented by Pranav Mistry is a prototype of next level of digital to real world interfacing .It comprises of a camera, a projector, a mobile cum computing device and colored sensors which are put on the fingers of a human being. The device efficiently senses the motion of the colored markers. Using them it provides us the freedom of directly interacting with the digital world. This technology enables people to interact in the digital world as if they are interacting in the real world.

## II. ASSOCIATED TECHNOLOGIES

AUGMENTED REALITY- This system generates a composite view for the user that is the combination of the real scene viewed by the user and a virtual scene generated by the computer that augments the scene with additional information . Augmediated reality system based on 3D camera self-gesture sensing [2013]

GESTURE RECOGNITION- It is a technology which is aimed at interpreting human gestures with the help of mathematical algorithms. Gesture recognition technique basically focuses on the emotion recognition from the face and hand gesture recognition . A Sixth Sense Technology for Gesture Recognition [2018]

COMPUTER VISION- It is a field that includes methods for acquiring, processing, analyzing, and understanding images and, in general, high-dimensional data from the real world in order to produce numerical or symbolic information, e.g. ,in the forms of decisions. Sensing The Sixth Sense Technology [2012].
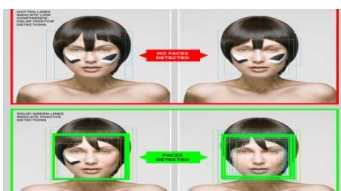
RADIO FREQUENCY IDENTIFICATION- It is basically an electronic tagging technology that allows the detection, tracking of tags and consequently the objects that they are affixed to.A review on Sixth Sense Technology [2018].
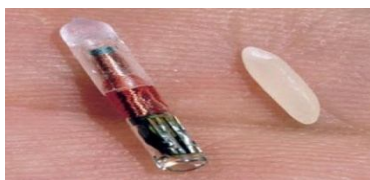
III. WHY CHOOSE SIXTH SENSE TECHNOLOGY?

          Humans take decisions after acquiring inputs from the senses. But the information we collect aren't enough to result in the right decisions. But the information which could help making a good decision is largely available on internet. Although the 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 help in synthesis of bots that will be able to interact with humans.

IV. COMPONENTS

CAMERA- It captures an object in view and tracks the user's hand gestures. It sends data to smart phone and acts as a digital eye, connecting you to the world of digital information.


PROJECTOR- It projects the visual information on any surface, including the object itself or your hand. It contains a battery inside with 3hours of battery life. A tiny LED projector displays data sent from the smart phone on any surface in view-object, wall or person.

MIRROR- The usage of the mirror is significant as the projector dangles pointing downwards from the neck.


COLOR MARKERS- It is at the tip of the user's fingers. Marking the user's fingers with red, yellow ,green and blue tape helps the webcam recognize gestures. The movements and arrangements of these markers are interpreted into gestures that act as interaction instructions for the projected application interfaces.
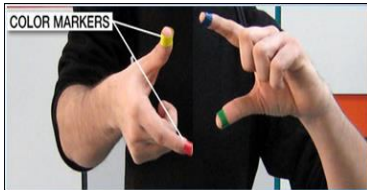
SMART PHONE- The mobile devices like the smart phone are used to handle connection to the internet. Using mobile internet data and voice can be communicated across the world either by transmitting or by receiving it.

V. WORKING
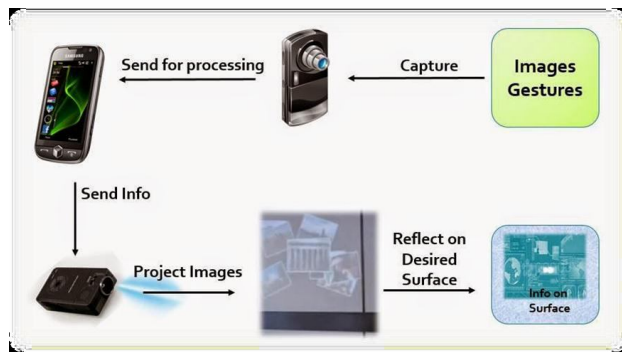
The sixth sense technology uses different technologies like gesture recognition ,image processing, etc. At present the commercial product isn't launched but the prototype is made using very common easily available equipments like pocket projector, a mirror, mobile components, color markers and a camera. The projector projects visual images on a surface. This surface can be wall, table, book or even your hand. Thus, the entire world is available on your screen now. When user moves their hands to form different movements with colored markers on the finger tips, the camera captures these movements. Both the projector and the camera are connected to the mobile computing device in the user's pocket. Recognition is made using computer vision technique. These markers act as visual following fiducials. The software program processes this video stream data and interprets the movements into gestures. The gestures are different from one another and are assigned some commands. These gestures can act as input to application which is projected by the projector. Since, the projector is aligned downwards for compactness; therefore images would be formed at the user's feet if mirror wasn't used. The mirror reflects the image formed by the projector to front. The entire

hardware is fabricated in the form of a pendent. The entire product cost around $350 and that also because of projector. It works very similar like a touch screen phone with entire world as the screen.

VI. APPLICATIONS

➢ **Fingers as brush:** The user can draw anything on paint with the assistance of his fingers. This drawing can be 3D also. Hence, no need to use mouse.

➢ **Capture photos with fingers:** Using the fingers the user can capture photos hence, no need to carry an additional gizmo. The box created by the fingers act as frame for capturing photo.
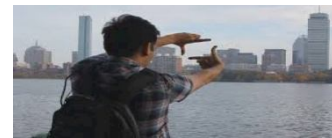
➢ **Read books easily:** Check out the ratings of the book you are going to buy, it checks the ratings from the internet and another amazing thing is that it reads the book for you.

➢ **Video Newspaper:** Like the video newspapers of Harry Potter this technology identifies the news headline and then projects the relevant video.

➢ **Check your flight status:** Just place the ticket in front of the projector and it checks its status from the internet.

➢ **Clock:** The user just needs to make gesture of clock and the watch will be projected on the user's hand.

➢ **Mapping:** This can be done anywhere with the features of zooming in or zooming out.

➢ **Palm is the new dialer:** This technology enables the user to call without using the dialer. The dialer will be projected on palm and the user can dial the number using other hand.

VII. MERITS

- Sixth Sense is an user friendly interface which integrates digital information into the physical world and its objects, making the entire world your computer.
- Sixth Sense does not change human habits but causes computer and other machines to adapt to human needs.
- Data access directly from machine in real time
- It is an open source and cost effective and we can mind map the idea anywhere.
- It is gesture-controlled wearable computing device that feeds our relevant information and turns any surface into an interactive display.
- It is portable and easy to carry as we can wear it in our neck.
- The device could be used by anyone without even a basic knowledge of a keyboard or mouse.
- There is no need to carry a camera anymore. If we are going for a holiday, then from now on wards it will be easy to capture photos by using mere fingers

VIII. DEMERITS

- The projector runs on batteries for power control where routinely need to put.

- Exposure of beams on surfaces like human arms can prompt medical issues.
- This innovation will influence the equipment showcase and will bring about less income being created and bring down the money inflow.
- Excessive utilization of innovation can cause habit and can hamper public activity as well. It will in-turn lessen humanness.
- We need to give right guidelines.
- It can influence the vision of the client on account of its particular and better use at evening time and in dull zones when contrasted with mornings and splendidspot.

IX. CONCLUSION AND FUTURE ENHANCEMENT

Relate with the data through regular hand motions and empowers you the entire world at your fingertips-literally. Transparency between client limit for getting to data about everything around us and this is ordered under wearable computing. Recognize the item and give data about it and offer opportunity to get to. This technology has seamless applications. This can be used as a replacement of the 5th senses for handicapped peoples. This can provide easy control over machineries in industry. This will have different application for different developers just depending upon how he imagines and what he wants. So, considering its widespread applications the inventor Pranav Mistry has decided to make its software open source. This will enable individuals to make their own application depending upon needs and imagination. As this technology will emerge may be new devices and hence forth new markets will evolve. Some existing devices and technologies will be discontinued but one thing is guaranteed it will write a new chapter in history of science and technology.

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