Sixth sense technology

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Abstract: **This research paper discusses a technology which is amusing everyone worldwide in today's time, which is "Sixth Sense Technology". Everyone are aware of the five basic senses seeing, feeling, tasting, smelling and hearing these sense was evolved from many years to sense the world around us. But by using these natural senses we cannot be perceived and analyzed the new technologies and the information that helps one to make right decision. So addition to these basic senses of mankind, there is one more sense called sixth sense.**

It is developed by Pranav Mistry a PhD student in the Fluid Interface Group at the MIT Media lab. The sixth sense device consists of a pocket projector, a mirror, a camera contained in pendent like wearable device. Without the use of keyboard, mouse we can see videos, access change, move, data simply everywhere we want, sixth sense technology change how we look at the world forever. Sixth sense technology is very interesting type of technology, which is very easy to use all type of people. It is use in educational system, this technology is all about interacting to the digital world in most efficient and direct way.

Keyword: Sixth sense technology, hand gestural interface, Education system.

1. INTRODUCTION

Now a days we have many technologies in day to day life, but people want such technologies which make their work easy and less time consuming. The 'Sixth Sense' is a wearable gestural interface that augments the physical world around us with digital information by using our natural hand gestures to interact with that information. It is also the reducing size of computing devices allows us to carry computers in our pockets and keeping us continuously connected with the digital world. There was no intermediate link between our digital devices and our interactions with the physical world. The information was limited traditionally on paper digitally on a screen. Sixth Sense Device bridged this gap, by converting intangible digital information out into the tangible world, and allowing us to interact with this information by using our natural hand gestures.

'Sixth Sense Technology' is seamlessly integrating frees information with reality, and thus making the entire world your computer. Sixth Sense grants people to use internet without a screen or a keyboard it actually acts itself as a computer and is directly connected to cloud. Lets us use any surface as a touch screen. The aim of this technology is not to change human habits but causing computers and other machines to adapt human needs. It also supports multiuser and multi touch provisions. The device has various applications such as the drawing application, mapping, reading newspaper, checking time by drawing a wrist watch etc. Other than that device is portable, it also serves as a computer and saves time spent on searching information.
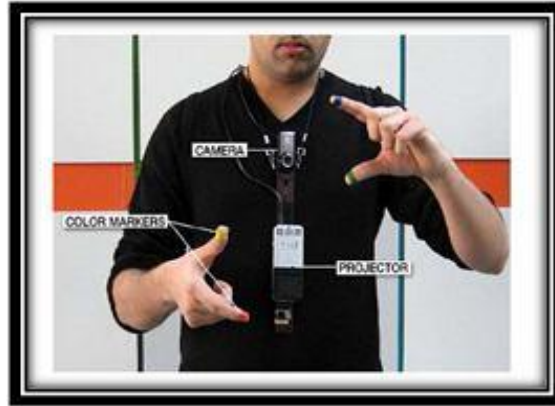
Figure 1: The Sixth Sense Device

2. LITERATURE SURVEY

The evolution of this technology traced back to the 1990's. During this period, The Steve Mann was made a wearable computer, his known as the father of sixth sense technology. The sixth sense technology (camera combined with light source) was developed in 1997. But the sixth sense name was first published in 2001. He implemented the sixth sense technology as a neck worn projector with a camera systems, he was media lab student at that time. Further development in gesture recognition was carried out by Noriaki Kuwahare, Yanhua Sun and Kuzynati Morimoto, their work concentrated on recognition of hand movements related to sign language for helping deaf people.

The all system developed by Bryce Kellogyis also an innovative step towards the development of gesture recognition for human and digital interaction. Further Development for sixth sense technology was carried out by Pranav Mistry, an Indian research assistant in MIT Media Lab. Mistry developed new applications from this technology coined the term 'wear Ur World' (wow).

 The earlier prototype has limitation because it consisted of a helmet with a large projector mounted on it which causes the problem, if the person projecting the data on wall and suddenly turns to speak with someone, then the data from the projector project over the person. This limitation was overcome by new neck worn pendent prototype. The initial prototype consisted of an ordinary webcam along with a battery of 3M projector with an attached mirror. The cost of this device was estimated roughly around $ 350. Mistry worn the device around his neck, and four colored markers (red, blue, green and yellow) placed on the both the hand. The camera recognized his hand gesture with the help of camera and software created by Mistry.

3. WORKING

The hardware components are coupled in a pendant like mobile wearable device**.**
- Camera
- Projector
- Mirror
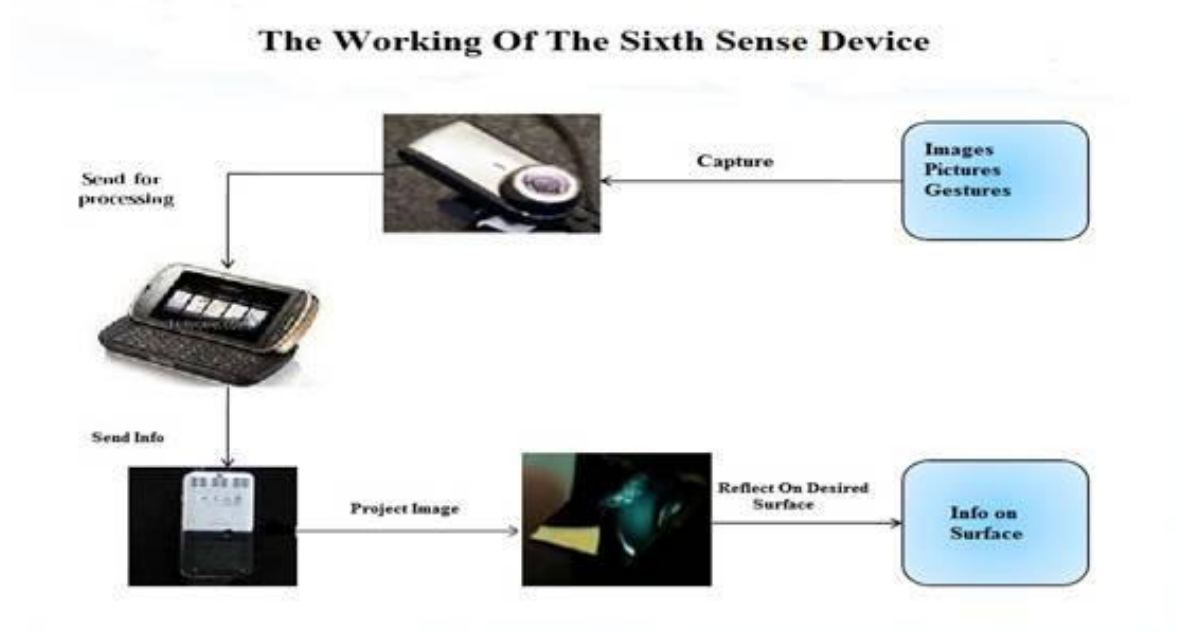- Mobile Component
- Color Markers

Figure 2: Working of Sixth Sense Device

The Sixth Sense Technology works as follows:

Camera captures the graphics of the object in prospect and tracks the users hand gestures. There are four color markers placed at the tip of user's fingers. By using the user's fingers with red, yellow, green and blue colored tape helps the camera to recognize the hand gestures. The movements and arrangement of these markers are expound into gestures that act as an interaction instruction for the projected application interfaces. The smart-phone searches the web and interprets the hand gestures with the help of the colored markers placed at tip of the fingers. The information that is interpreted through the smart-phone can be projected into any surface. The mirror reflects the image on to a entreat surface where we want.

4. VARIOUS APPLICATIONS

There are various applications of Sixth Sense that demonstrates the efficiency, viability and flexibility of the system.

➢ Make a Call: This technology empowers the user to call without use of the dialer. The dialer will be projected as soon as user brings the palm in front of the device. The user does not need a mobile phone to make the call rather than the virtual keypad it projected on the palm.

➢ Get Flight Updates: The device can also inform the user whether the flight is delayed or is on time by looking at the ticket.

➢ The Map: The map application allow the user to search a map that displayed on a nearby surface by using our hand gestures, which is similar to the gestures supported by Multi-Touch based systems allowing the user to zoom in, zoom out or by using spontanious hand movements.

➢ 3D Drawing Application: The 3D drawing application of this device lets the user draw on any surface by navigate the tips movements of the user's index finger.

➢ The Clock: The user only needs to make a gesture of a circle on the wrist and the clock with current time will be projected on the user's hand.

➢ Motion Capture: Using fingers the user can capture images and no need to carry an extra gadget. The box crated by fingers act as a frame. These photos can be edited also or shared with people.

➢ BookInformation:Forbookloversithadprovedtobeafortunatebecauseasyoujustopenanybookandfindtheratings andreviewsofthebook,alsomovetoanypageandgetadditionalinformationofthatbook.Similarly,wecangetinfor mationaboutanyproductalso.

➢ Video Newspapers: This device also recognizes articles in the newspaper, recall the latest related stories from the internet and then display them on pages for user. It had absoleted to dictionary and encyclopedia.

4.1 ADVANTADES

- o The device is portable
- o It supports multi-touch and multi-user interaction
- o It is connectedness between world and information
- o Data access directly from machine in real time
- o Mind map the idea anywhere
- o It is an open source
- o Cost effective

4.2 DISADVANTAGES

- Exposure of rays on surfaces like human arms can lead helth problem.
- Projection is better in the night time and dark areas rather than morning time and light aras.

4.3 SIXTH SENSE WITH PRESENT SCENARIO

In order to have greater application with sixth sense technology, it is important to compare it with current scenario considering example of education system. Table below show that comparison between present scenario with sixth sense environment.

Table 1 Comparison between sixth sense technologies and present Scenario.

Sr no.	Content	Sixth Sense Technology	Present Scenario
1	Library	Information about any book is available within seconds, as soon as the camera recognizes the book	Time consuming process for
2	Classroom	Instantly accessible data using internet, visually enhanced learning	Traditional board-chalk teaching approach
3	Student Attendance	With the help of audio recorder, teacher has to do only start the system and rest of the work is done by sixth sense	It involves teacher calling out names and students importantly getting their respective attendance marked
4	Student Information	Instantly updated, easily accessible	Waiting in a line at college office, prone to error made by administration staff

5	Notices	Get copies of any notice and related information by using gesture	Keep going and checking the notice every time

5. CONCLUSION

The sixth sense technology can be used as a replacement of the 5thsenses for handicapped peoples. This can provide easy control over machineries in industry. This will have different application for different developers just depending upon imagination and what he wants. So, considering its widespread applications the inventor Pranav Mistry has decided to make its software open source. This will open everyone to make their own application depending upon needs and imagination.

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