SIXTH SENSE TECHNOLOGY – A STEP AHEAD

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ABSTRACT

Due to technological advancement and industrial uprising, the World has shrunk into a global village. Internet makes the communication in real time. Technical advancements in the field of computers and electronics moved the world towards the field of sixth sense technology, a wide and active field that has prompted remarkable technological advancements. It has drawn the attention of many researchers. This technology enables the user to connect with the internet indefatigably. Sixth sense technology works on the ethics of gestural recognition and image processing. The Sixth Sense technology will modernize the world in all aspects, the job which take few minutes now will be carried out in few milliseconds due to sixth sense technology. This technology will give humans the freedom to use computer anywhere and anytime, the entire world will be a digitalized due to this technology. This technology could be utilized by anybody without even an essential information of a console or mouse.

I INTRODUCTION

As we know that a human being using five senses there are eye, ear, nose, tongue, mind and body to perceive information and perform actions. But today new technology sixth senses technologies help perform this type of action easily. Sixth sense technology is interacting the physical world around as with digital information. A sixth sense technology tries to combine the real and the digital world which today exist as two separate but equally important entities. It uses simple devices such as mirrors, projector, camera and etc. It works as the wearable devices that are hanged around the neck of a person and thus the projection starts by the mean of micro projector attached to device. It is based on the concept of augmented reality and has well implemented the perception of it. Sixth sense Technology bridge the gap by bringing intangible digital information out into the tangible word and allowing us to interaction with this information via natural based gestures. Through a sixth sense technology we can get information on anything from anywhere within a few minutes.

II NEED FOR SIXTH SENSE TECHNOLOGY

Sixth sense technology is a technology that can be used to take the real world object into digital world with a minimum effort and a higher accuracy. Sixth sense technology is a mini projector which is built with camera and a cell phone which act as the computer and connect to the cloud, here all the information are stored on the web. This

sixth sense technology can also obey hand gestures in the infamous minority report. This is a magic each and everywhere we want, it's a gateway between digital and real world. To the help of sixth sense technology we can access or manipulate the information using fingers.

1) If need to make a call then we are extend our hand on front of the projector and number will appear for to click.
2) If need to know the time then draw a circle on wrist and a watch will appear.
3) If want to take a photo then just make a square with fingers and highlighting what want to frame and the system will make the photo.

a) BASIC REQUIREMENTS

Software: The sixth sense technology software will be open sources, as for as this seems to be a little set of items there will not be user interfaces or much advances program for the users . There will be much harder and secured coding inside the device to make sure the security of the software. The prototype system runs on windows platform and majority of the code is written in C++ and C#. Uploading newer versions as it is being developed this will also include a mobile version.

Hardware: In sixth sense technology uses camera, mobile component, mirror component, projector and colored marker as the components as shown in figure 1.
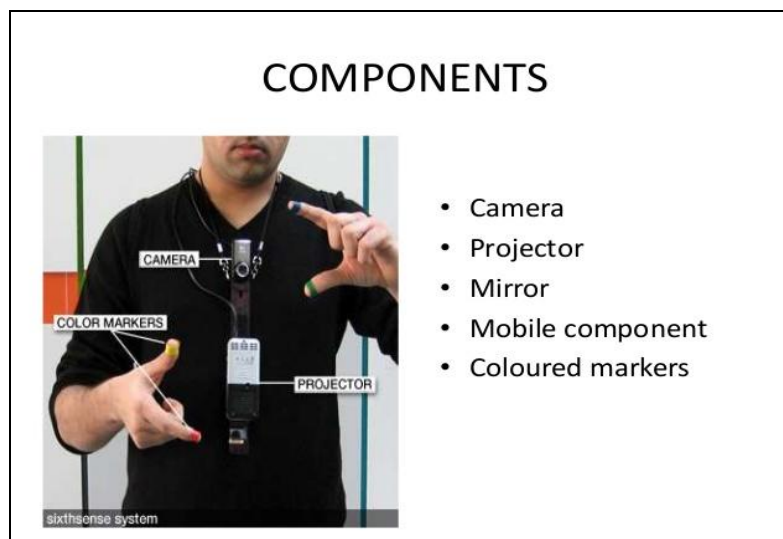

Figure 1 Components of Sixth Sense Technology

- **Camera** - It captures the image of the object in view and tracks the users hand gestures. It sends data to smart phone for further processing. Basically it acts as a digital eye which connects to the world of digital information.

- **Mobile Component -** Consist of a web enabled smart phone which process the data send by the camera.

- **Mirror Component:** The uses of the mirror is significant as the projector, dangles pointing down wards from the neck.

- **Projector -** The projector is the key output device of the sixth sense system the projector visually augments surfaces walls and physical object the user is interacting with by projecting digital information and graphical user interface the projector itself contains a battery inside with three hours of battery life. Suggested product of projectors are LED or LASER.

- **Colored Marker -** Color marker are used to marking the user's finger with color red, green, yellow and blue . Its placed at the tip of user's fingers here web cam to recognize the hand gestures.

III WORKING PRINCIPLE OF SIXTH SENSE TECHNOLOGY

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 prepared. The sixth sense prototype is made using very common and easily available equipments like pocket projector, a mirror, mobile components, color markers and a camera. The working principle of sixth sense technology is shown in figure 2.
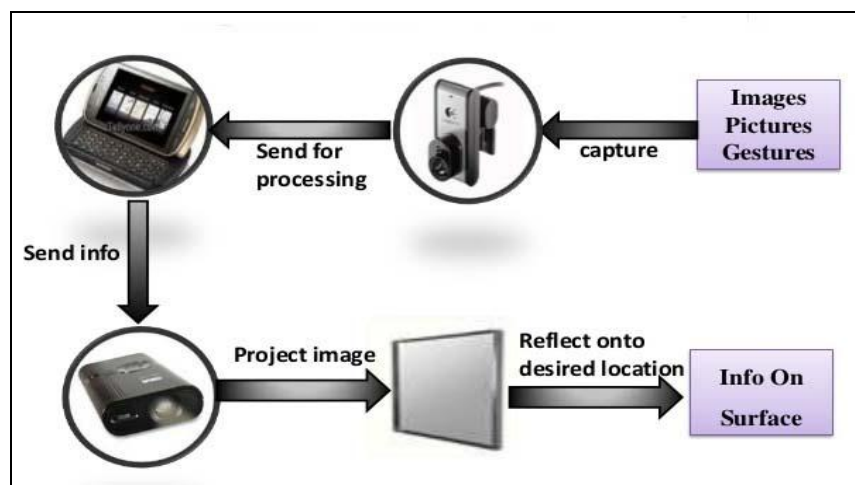

Figure 2 Working principle of Sixth Sense Technology

1. 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.

2. 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.

3. Recognition is made using computer vision technique. These markers act as visual tracking fiducials.

4. 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.

5. These gestures can act as input to application which is projected by the projector.

6. 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.

7. The entire hardware is fabricated in the form of a pendent.

8. It works very similar like a touch screen phone with entire world as the screen.

a)APPLICATIONS

The greatest benefit of the device is the availability of wide variety of application in it they are

1. Make a call

2. Call up a map

3. Check the time

4. Create multimedia reading experience

5. Drawing application

6. Zooming features

7. Get product information

8. Get book information

9. Get flight updates

10. Feed information people

11. Take pictures

12. Check the email.

b) ADVANTAGE

1. Sixth sense technology is a user friendly device and an open source.

2. It is so light, easy to use and easy to implement

3. It is not heavy to carry around

4. It is not that expensive (cost about $350 or 17000 /-)

5. Sixth sense technology is a gadget that could be work as jewelry and can do various things like take pictures, given direction (like GPS) Browse the web etc.

6. This technology connects human being to the entire world without being connected to Internet.

7. Sixth sense technology does not change to human habits but ,computer and other machine need to adapt to human needs.

c) LIMITATION

1. There is no easy way to fix if sixth sense device is break.

2. Sixth sense device cannot be used for long period of time

3. Privacy is a major issue; if we open up the gadget on a busy street then everyone would be able to see what we are doing

4. This device will not be used to project on a hard surface.

5. This technology is not attach to all the time with human body parts, because high waves radiation emitted may cause some disease

6. Projection is better in the night time and dark areas rather than mornings and bright areas.

7. Software does support the ability to use real time video streams in order to produce augmented reality.

IV CONCLUSION

Sixth sense is the science of tomorrow with the aim of connecting the digital world with physical world. It is essentially a wearable computer that can create multimedia reading, make phone calls and even connect to other computing devices. It is more manageable and more interactive than any electronic communication devices available today. However it too has some limitations which have to be triumph over due to its advantages. It allows for the user to easily record and take pictures of anything without being observed and it can also permit the user to read the Internet about anything just by a momentary look at it and performing an online search. This technology will certainly bring up many social, legal, ethical and security concerns which are astonishing in its future.

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