A

Seminar - I Report

on

SIXTH SENSE TECHNOLOGY

Submitted in Partial Fulfillment of
the Requirements for the **Third Year**

of

Bachelor of Engineering

in

Computer Engineering

to

North Maharashtra University, Jalgaon

Submitted by

Mayuri D.Patil

Under the Guidance of

Mr. Jitendra R.Patil

DEPARTMENT OF COMPUTER ENGINEERING
SSBT's COLLEGE OF ENGINEERING AND TECHNOLOGY,
BAMBHORI, JALGAON - 425 001 (MS)
2015 - 2016

SSBT's COLLEGE OF ENGINEERING AND TECHNOLOGY, BAMBHORI, JALGAON - 425 001 (MS)
DEPARTMENT OF COMPUTER ENGINEERING

CERTIFICATE

This is to certify that the seminar - I entitled *SIXTH SENSE TECHNOLOGY*, submitted by

Mayuri D.Patil

in partial fulfillment of the degree of *Bachelor of Engineering* in *Computer Engineering* has been satisfactorily carried out under my guidance as per the requirement of North Maharashtra University, Jalgaon.

Date: February 18, 2017
Place: Jalgaon

<div align="right">

Mr. Jitendra R.Patil
Guide

</div>

Prof. Dr. Girish K. Patnaik   Prof. Dr. K. S. Wani
Head   **Principal**

Acknowledgements

I would like to express my deep gratitude and sincere thanks to all who helped me to complete this seminar report work successfully. Many thanks to almighty GOD who makes everything happen. My sincere thanks to principal Prof.Dr.K.S.Wani for having provided the facilities to complete this special study report. I would like to express my gratitude and appreciation to all those who gave me the possibility to complete this report. A special thanks to Prof.Dr.G.K.Patnaik,head of the department, whose help, stimulating suggestions and encouragement, helped me in writing this report. Last but not least, many thanks to the guide of the seminar, Mr. Jitendra R. Patil who has given her full effort in guiding me and achieving the goal as well as her encouragement to maintain the progress in track. I would also like to appreciate the guidance given by other supervisor that has improved my presentation skills by their comments and tips. Last but not the least, I extremely indebted my parents and friends without whose support this effort not reach its successful completion.

Mayuri D.Patil

Contents

List of Figures

Abstract

Sixth Sense Technology is a mini-projector coupled with a camera and a cell phone which acts as the computer and connected to the Cloud, all the information stored on the web.Sixth Sense can also obey hand gestures. The camera recognizes objects around a person instantly, with the micro-projector overlaying the information on any surface, including the object itself or hand. Also can access or manipulate the information using angers. Make a call by Extend hand on front of the projector and numbers will appear for to click. Know the time by Draw a circle on wrist and a watch will appear. take a photo by Just make a square with angers, highlighting what want to frame, and the system will make the photo which can later organize with the others using own hands over the air.The device has a huge number of applications , it is portable and easily to carry as can wear it in neck.

Chapter 1

Introduction

Sixth Sense Technology, it is the newest jargon that has proclaimed its presence in the technical arena. This technology has emerged, which has its relation to the power of these six senses. Our ordinary computers will soon be able to sense the direct feelings accumulated in the surroundings and it is all a gift of the Sixth Sense Technology newly introduced. Sixth Sense is a wearable gesture based device that augments the physical world with digital information and lets people use natural hand gestures to interact with that information. It was developed by Pranav Mistry, a PhD student in the Fluid Interfaces Group at the MIT Media Lab. A grad student with the Fluid Interfaces Group at MIT, he caused a storm with his creation of Sixth Sense. We have evolved over millions of years to sense the world around us. When we encounter something, someone or some place, we use our vet natural senses which includes eye, ear, nose, tongue mind and body to perceive information about it; that information helps us make decisions and chose the right actions to take. But arguably the most useful information that can help us make the right decision is not naturally perceivable with our vet senses, namely the data, information and knowledge that mankind has accumulated about everything and which is increasingly all available online. Although the miniaturization of computing devices allows us to carry computers in our pockets, keeping us continually connected to the digital world, there is no link between our digital devices and our interactions with the physical world. Information is conned traditionally on paper or digitally on a screen. Sixth Sense bridges this gap, bringing intangible, digital information out into the tangible world, and allowing us to interact with this information via natural hand gestures. Sixth Sense frees information from its cones by seamlessly integrating it with reality, and thus making the entire world your computer.

1.1   Summary

In the above chapter,In section 1.1 an introduction of Sixth Sense Technology.In the next chapter description about literature survey of Sixth Sense Technology in section 2.1.In

section 2.2, discussed related technology such as gesture recolonization,augmented reality.Some technology sixth sense technology use as platform such as Radio Frequency Identification,Washing Machine of Sixth sense technology in section 2.3.

Chapter 2

Literature survey

In this chapter,In section 2.1 a Literature survey of Sixth Sense Technology and history of Sixth Sense Technology.In section 2.2, discussed related technology such as gesture recolonization,augmented reality.Some technology sixth sense technology use as platform such as Radio Frequency Identification,Washing Machine of Sixth sense technology in section 2.3.

Some technology sixth sense technology use as platform such as Radio Frequency Identification,Washing Machine of Sixth sense technology. While in last chapter we covered an introduction and history of Sixth Sense Technology.Manab Kumar Saha, Sirshendu Hore said that, This paper is a brief survey in the held of Sixth Sense Technology. Sixth Sense is an interface of wearable motions which redesign the physical world around us with advanced data and give us a chance to utilize the common signals to communicate with that data. The advent of technology over the last decade has established a new dimension in the

eld of Human computer Interaction (HCI). The aim of this paper is to review various gestures, components used, methodology adopted in sixth sense technology and its application.

2.1   History

Sixth Sense originated as a variety of wearable technologies including headworn, neckworn, wristworn,etc., including the neckworn projector+camera system developed by Media Lab student Steve Mann. Mann originally referred to these wearable technologies as "Synthetic Synesthesia of the Sixth Sense". In the 1990s and early 2000s, Mann used this project as a teaching example, and taught several hundred students how to build the neckworn SixthSense system, as part of the undergraduate teaching curriculum at University of Toronto. In the 1990s the early are mac did vector graphics rather than raster graphics, but a raster graphics version based on a miniature wearable micromirror projector was developed in 2001, which could project onto the wearer's hands, other objects, or the or or ground in front of the wearer, so that it could work with hand gestures or foot gestures. 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

rst prototype of the 6th 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" (Arjun K. R, 2011). Therefore, Mistry came up with a dierent and more convenient device which is a neck worn portable camera that allows users more space for their daily actions.

2.2   Related technology

Sixth Sense technology takes a different approach to computing and tries to make the digital aspect of our lives more intuitive, interactive and, above all, more natural. We shouldn't have to think about it separately. Its a lot of complex technology squeezed into a simple portable device. When we bring in connectivity, we can get instant, relevant visual information projected on any object we pick up or interact with The technology is mainly based on hand augmented reality, gesture recognition, computer vision based algorithm etc. Augmented reality Augmented reality (AR) is a term for a live direct or indirect view of a physical real world environment whose elements are augmented by virtual computer-generated imagery. It is related to a more general concept called mediated reality in which a view of reality is modified (possibly even diminished rather than augmented) by a computer. The augmentation is conventionally in real-time and in semantic context with environmental elements. Sixth sense technology which uses Augmented Reality concept to super imposes digital information on the physical world. With the help of advanced AR technology (e.g. adding computer vision and object recognition) the information about the surrounding real world of the user becomes interactive and digitally usable. Artificial information about the environment and the objects in it can be stored and retrieved as an information layer on top of the real world view. The main hardware components for augmented reality are: display, tracking, input de-vices, and computer. Combination of powerful CPU, camera, accelerators, GPS and solid state compass are often present in modern Smartphone, which make them prospective platforms.Head Mounted Displays A Head Mounted Display (HMD) places images of both the physical world and registered virtual graphical objects over the user's view of the world. The HMD's are either optical seethrough or video see-through in nature.Handheld Displays Handheld Augment Reality employs a small computing device with a display that Its in a user's hand. All handheld AR solutions to date have employed video see-through techniques to overlay the graphical information to the physical world. Initially

handheld AR employed sensors such as digital compasses and GPS units for its six degree of freedom tracking sensors.Spatial Displays Instead of the user wearing or carrying the display such as with head mounted displays or handheld devices; Spatial Augmented Reality (SAR) makes use of digital projectors to display graphical information onto physical objects. For users with disabilities of varying kinds, AR has real potential to help people with a variety of disabilities. Only some of the current and future AR applications make use of a Smartphone as a mobile.

2.3   Gesture Recognition

Gesture recognition is a topic in computer science and language technology with the goal of interpreting human gestures via mathematical algorithms. Gestures can originate from any bodily motion or state but commonly originate from the face or hand. Current focuses in the field include emotion recognition from the face and hand gesture recognition. Many approaches have been made using cameras and computer vision algorithms to interpret sign language. Gestures can exist in isolation or involve external objects. Free of any object, we wave, beckon, fend, and to a greater or lesser degree (depending on training) make use of more formal sign languages. With respect to objects, we have a broad range of gestures that are almost universal, including pointing at objects, touching or moving objects, changing object shape, activating objects such as controls, or handing objects to others.

These can further be categorized according to their functionality.Symbolic gestures:- These are gestures that, within each culture, have come to a single meaning. An Emblem such as the OK gesture is one such example, however American Sign Language gestures also fall into this category.Deictic gestures:- These are the types of gestures most generally seen in HCI and are the gestures of pointing, or otherwise directing the listeners attention to specific event or objects in the environment.Iconic gestures As the name suggests, these gestures are used to convey information about the size, shape or orientation of the object of discourse. They are the gestures made when someone says The plane like this, while moving their hand through the air like the right path of the aircraft.

2.4   Technologies that uses Sixth Sense as Platform

Sixth Sense technology takes a different approach to computing and tries to make the digital aspect of our lives more intuitive, interactive and, above all, more natural. When you bring in connectivity, you can get instant, relevant visual information projected on any object you pick up or interact with. So, pick up a box of cereal and your device will project whether it suits your preferences.Some of the technologies that uses this are Radio Frequency Identification,

gesture gaming, washing machine.

1. Radio Frequency Identification: Sixth Sense is a platform for Radio Frequency Identification based enterprise intelligence that combines Radio Frequency Identification events with information from other enterprise systems and sensors to automatically make inferences about people, objects, workspaces,and their interactions. Radio Frequency Identification is basically an electronic tagging technology that allows the detection and tracking of tags and consequently the objects that they are axed to.This ability to do remote detection and tracking coupled with the low cost of passive tags has led to the widespread adoption of RFID in supply chains worldwide. Pranav Mistry, a researcher at the media lab of the Massachusetts Institute Technology, has developed a 'sixth sense' device a gadget worn on the wrist that can function as a 'touch screen' device for many modern applications. The gadget is capable of selecting a product either by image recognition or radio frequency identification (RFID) tags and project information, like an Amazon rating.

2. Sixth Sense Washing Machine: Whirlpool AWOE 8758 White Washing Machine is a remarkable front loader that incorporates the unparalleled Sixth Sense technology. Whirlpools 2009 range of washing machines comes integrated with enhanced 6th sense technology that gives more optimisation of resources and also increased saving in terms of energy, water and time. Ideal washing machine for thorough washing that requires sixth sense to detect stubborn stains and adjust wash impact. It is a feature packed washing ally with Sixth Sense Technology and several customized programs to enhance the washing performance and dexterously assist you in heavy washing loads. The New Generation 6th Sense appliances from Whirlpool are helping to protect the environment and to reduce your energy bills. Whirlpool 6th Sense appliances are designed to Division Of Computer Science Engineering ,SOE ,CUSAT Page 18 be intelligent and energy scient appliances that adapt their performance to better suit your needs. All Whirlpool appliances with intelligent 6th Sense technology work on three key principles; Sense, Adaption and Control, to ensure that they achieve optimal performance each and every time that they are used. Whirlpool 6th Sense washing machines can save you up to 50time during the cycle. These intelligent machines sense the size of the load and adjust and control the cycle dependent on the load inside in order to optimise the use of water, energy and time. Some models also contain a detergent overdosing monitor to make sure that you do not use too much washing detergent. Tumble dryers use 6th Sense technology to minimise energy and time wastage by monitoring the humidity inside your laundry and adjusting the drying time accordingly.

2.5 Summary

In the above chapter,In section 2.1 a Literature survey of Sixth Sense Technology and history of Sixth Sense Technology.In section 2.2, discussed related technology such as gesture recolonization,augmented reality.Some technology sixth sense technology use as platform such as Radio Frequency Identification,Washing Machine of Sixth sense technology in section 2.3.The next section contains the methodology of the system.

Chapter 3

Methodology

In this chapter, It consist of Components of Sixth Sense Technology and Workings of Sixth Sense Technology. In section 3.1 the Components of Sixth Sense Technology are discussed.The working of Sixth Sense Technology discussed in section 3.2.

3.1 Component

The hardware components are coupled in a pendant like mobile wearable device.

1. Camera

2. Projector

3. Mirror

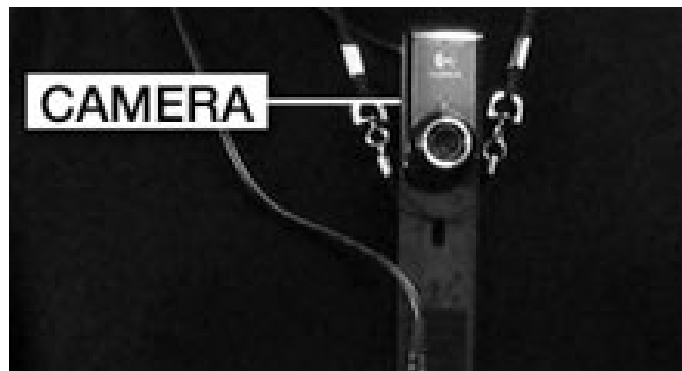4. Mobile Component

5. Color Markers

3.1.1 Camera

Figure 3.1: Camera

A web cam captures and recognises an object in view and tracks the users hand gestures using computer-vision based techniques. It sends the data to the smart phone. The camera, in a sense, acts as a digital eye, seeing what the user sees. It also tracks the movements of the thumbs and index fingers of both of the user's hands. The camera recognizes objects around you instantly, with the microprojector overlaying the information on any surface, including the object itself or your hand.
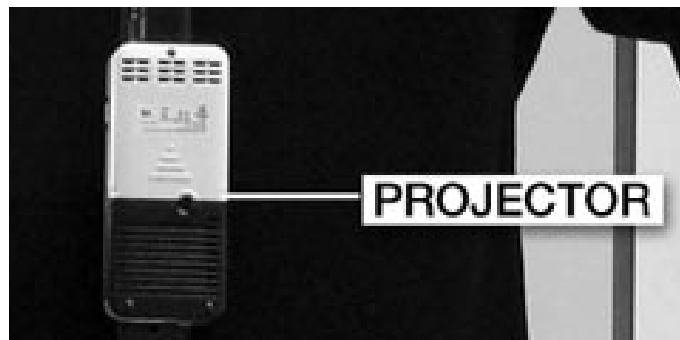
3.1.2 Projector

Figure 3.2: Projector

Also, a projector opens up interaction and sharing. The project itself contains a battery inside, with 3 hours of battery life. The projector projects visual information enabling surfaces, walls and physical objects around us to be used as interfaces. We want this thing to merge with the physical world in a real physical sense. You are touching that object and projecting info onto that object. The information will look like it is part of the object. A tiny LED projector displays data sent from the smart phone on any surface in view object, wall, or person.
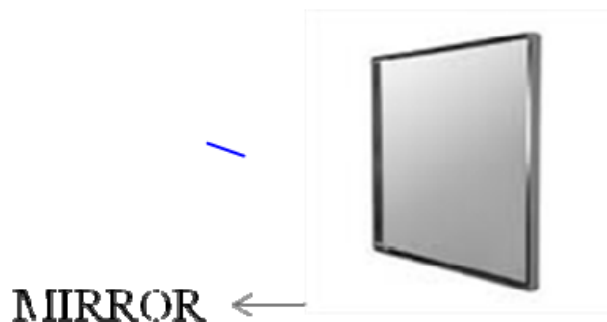
3.1.3 Mirror

Figure 3.3: Mirror

The usage of the mirror is signi

cant as the projector dangles pointing downwards from the neck.

3.1.4 Mobile Component

Figure 3.4: Mobile Component

The mobile devices like Smartphone in our pockets transmit and receive voice and data anywhere and to anyone via the mobile internet. An accompanying Smartphone runs the Sixth Sense software, and handles the connection to the internet. A Web-enabled smart phone in the users pocket processes the video data. Other software searches the Web and interprets the hand gestures.
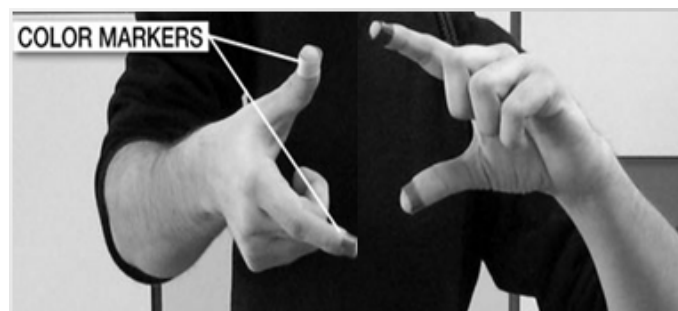
3.1.5 Color Markers

Figure 3.5: Color Markers

It is at the tip of the users fingers. Marking the users fingers with red, yellow, green, and blue tape helps the webcam recognize gestures. The movements and arrangements of these makers are interpreted into gestures that act as interaction instructions for the projected application interfaces.
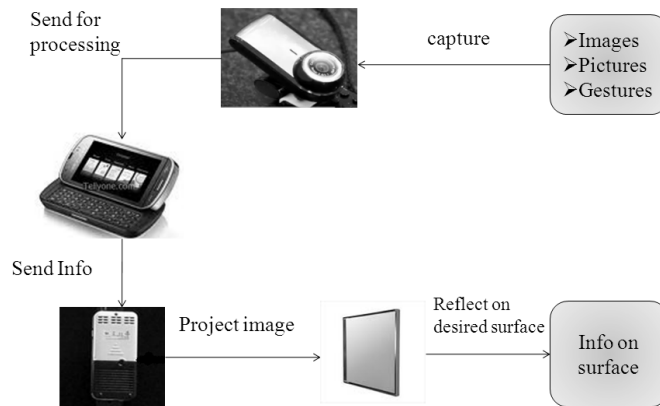
3.2 Working

Figure 3.6: Working

The hardware that makes Sixth Sense work is a pendant like mobile wearaable interface.

1. It has a camera, a mirror and a projector and is connected wirelessly to a Blue- tooth or 3G or wi

   smart phone that can slip comfortably into ones pocket

2. The camera recognizes individuals, images, pictures, gestures one makes with their hands.

3. Information is sent to the Smartphone for processing

4. The downward-facing projector projects the output image on to the mirror

5. Mirror reects image on to the desired surface.

Thus, digital information is freed from its cones and placed in the physical world.The entire hardware apparatus is encompassed in a pendant-shaped mobile wearable device. Basically the camera recognises individuals, images, pictures, gestures one makes with their hands and the projector assists in projecting any information on whatever type of surface is present in front of the person. The usage of the mirror is significant as the projector dangles pointing downwards from the neck. To bring out variations on a much higher plane, in the demo video which was broadcasted to showcase the prototype to the world, Mistry uses coloured caps on his fingers so that it becomes simpler for the software to differentiate between the fingers, demanding various applications. The software program analyses the video data caught by the camera and also tracks down the locations of the coloured markers by utilising single computer vision techniques. One can have any number of hand gestures

and movements as long as they are all reasonably identified and differentiated for the system to interpret it, preferably through unique and varied denials. This is possible only because the Sixth Sense device supports multi-touch and multi-user interaction.The idea is that Sixth Sense tries to determine not only what someone is interacting with, but also how he or she is interacting with it. The software searches the internet for information that is potentially relevant to that situation, and then the projector takes over. Capsule Endoscopy lets the doctor to examine the lining of the All the work is in the software," says Dr Maes. "The system is constantly trying to ureterointestinal tract, which includes the three portion of the small out what's around you, and what you're trying to do. It has to recognize the images you see,intestine(duodenum,jejunum, and ileum). A pill sized video camera is given to track your gestures, and then relate it all to relevant information at the same time. The entire hardware apparatus is encompassed in a pendant-shaped mobile wearable device. Basically the camera recognises individuals, images, pictures, gestures one makes with their hands and the projector assists in projecting any information on whatever type of surface is present in front of the person. The usage of the mirror is significant as the projector dangles pointing downwards from the neck. To bring out variations on a much higher plane,in the demo video which was broadcasted to showcase the prototype to the world, Mistry uses coloured caps on his fingers so that it becomes simpler for the software to differentiate between the fingers, demanding various applications.The software program analyses the video data caught by the camera and also tracks down the locations of the coloured markers by utilising single computer vision techniques. One can have any number of hand gestures and movements as long as they are all reasonably identified and differentiated for the system to interpret it, preferably through unique and varied denials. This is possible only because the Sixth Sense device supports multi-touch and multi-user interaction.MIT basically plans to augment reality with a pendant picoprojector: hold up an object at the store and the device blasts relevant information onto it (like environmental stats, for instance), which can be browsed and manipulated with hand gestures. The "sixth sense" in question is the internet, which naturally supplies the data, and that can be just about anything MIT has shown o the device projecting information about a person you meet at a party on that actual person (pictured), projecting flight status on a boarding pass, along with an entire Doctor will be able to view these pictures at a later time. The software recognizes 3 kinds of gestures: (a) Multitouch gestures, like the ones you see in Microsoft Surface or the iPhone where you touch the screen and make the map move by pinching and dragging. (b) Freehand gestures, like when you take a picture [as in the photo above]. Or, you might have noticed in the demo, because of my culture, I do a namaste gesture to start the projection on the wall. (c) Iconic gestures, drawing an icon in the air. Like, whenever I draw a star, show me the weather. When I

draw a magnifying glass, show me the map. You might want to use other gestures that you use in everyday life. The technology is mainly based on hand gesture recognition, image capturing, processing, and manipulation, etc. The map application lets the user navigate a map displayed on a nearby surface using hand gestures, similar to gestures supported by multi- touch based systems, letting the user zoom in, zoom out or pan using intuitive hand movements. The drawing application lets the user draw on any surface by tracking the fingertip movements of the users index finger.

3.3   Summury

In above chapter, see the component's and working of Sixth Sense Technology. see the overall working and the hardware components combine together .The next chapter, discuss about Advantages,Disadvantages,Applications.

Chapter 4

Discussion

In this chapter, in section 4.1 the Application of the Sixth Sense Technology are discussed. The advantages of the Sixth Sense Technology are discussed in section 4.2. In section 4.3 the disadvantages Sixth Sense Technology.

4.1   Application

In the next chapter we disscussed Applicaton's and Future Scope of Sixth Sense Technology.The Sixth Sense prototype implements several applications that demonstrate the usefulness, viability and exibility of the system. The SixthSense device has a huge number of applications. The following are few of the applications of Sixth Sense Technology.

1. Make a call

2. Call up a map

3. Check the time

4. Create multimedia reading experience application

5. Zooming features

6. Get product information

7. Get book information

8. Get flight updates

9. Feed information on people

10. Take pictures

11. Check the email

4.1.1 Make a Call

Figure 4.1: Make a Call

You can use the Sixth Sense to project a keypad onto your hand, then use that virtual keypad to make a call. Calling a number also will not be a great task with the introduction of Sixth Sense Technology. No mobile device will be required, just type in the number with your palm acting as the virtual keypad. The keys will come up on the fingers. The fingers of the other hand will then be used to key in the number and call.

4.1.2 Call up Map

Figure 4.2: Call up Map

The sixth sense also implements map which lets the user display the map on any physical surface and

nd his destination and he can use his thumbs and index fingers to navigate the map, for example, to zoom in and out and do other controls.
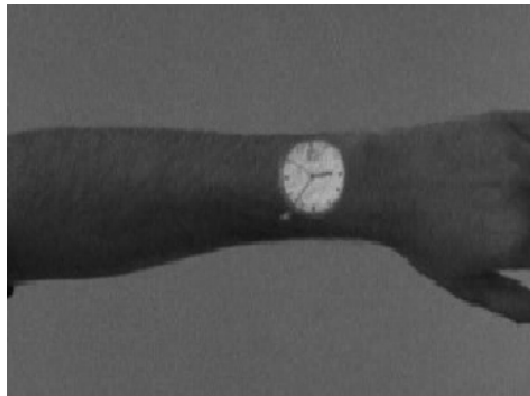
4.1.3 Check the time

Figure 4.3: Wirst Watch

Sixth Sense all we have to do is draw a circle on our wrist with our index finger to get a virtual watch that gives us the correct time. The computer tracks the red marker cap or piece of tape, recognizes the gesture, and instructs the projector to ash the image of a watch onto his wrist.
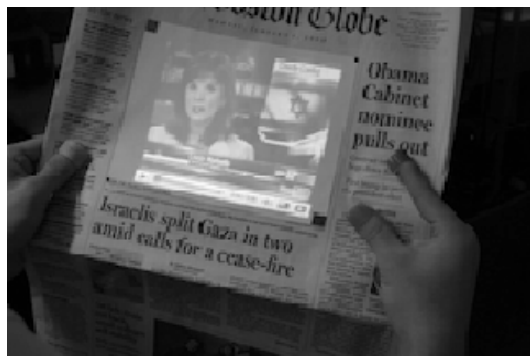
4.1.4 Video in Newspaper

Figure 4.4: Video in Newspaper

The Sixth Sense system also augments physical objects the user is interacting with by projecting more information about these objects projected on them. For example, a newspaper can show live video news or dynamic information can be provided on a regular piece of paper. Thus a piece of paper turns into a video display.

4.1.5 Drawing

Figure 4.5: Drawing

The drawing application lets the user draw on any surface by tracking the n- gertip movements of the users index finger.

4.1.6 Zooming Features

Figure 4.6: zoom in or zoom out

The user can zoom in or zoom out using intuitive hand movements.
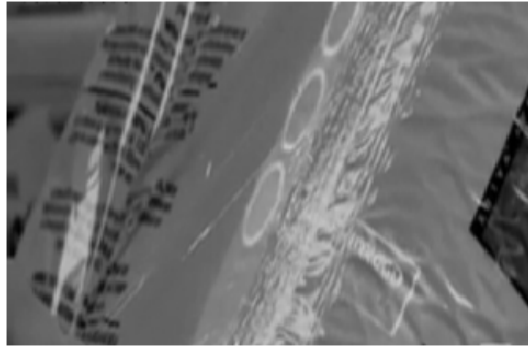
4.1.7 Get product information

Figure 4.7: product information

Maes says Sixth Sense uses image recognition or marker technology to recognize products you pick up, then feeds you information on those products. For example, if you're trying to shop "green" and are looking for paper towels with the least amount of bleach in them, the system will scan the product you pick up the shelf and give you guidance on whether this product is a good choice for you.

4.1.8 Get Book information

Figure 4.8: Book information

Maes says Sixth Sense uses image recognition or marker technology to recognize products you pick up, then feeds you information on books. The system can project Amazon ratings on that book, as well as reviews and other relevant information.

4.1.9 Take Pictures

Figure 4.9: Take Pictures

If we fashion our index fingers and thumbs into a square (the typical "framing" gesture), the system will snap a photo. After taking the desired number of photos, we can project them onto a surface, and use gestures to sort through the photos, and organize and resize them.
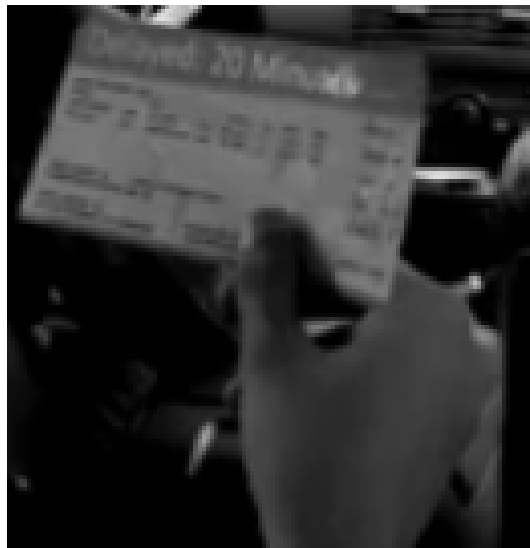
4.1.10 Flight Update

Figure 4.10: Flight Update

If we fashion our index fingers and thumbs into a square (the typical "framing" gesture), the system will snap a photo. After taking the desired number of photos, we can project them onto a surface, and use gestures to sort through the photos, and organize and resize them.

4.1.11 Information on People

Figure 4.11: Information on People

Sixth Sense also is capable of "a more controversial use. When you go out and meet someone, projecting relevant information such as what they do, where they work, and also m it could display tags about the person boating on their shirt. It could be handy if it displayed their facebook relationship status so that you knew not to waste your time.

4.2 Advantages

- 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.

- It uses hand gestures to interact with digital information.

- Supports multi-touch and multi-user interaction

- Data access directly from machine in real time

- It is an open source and cost eective 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

  ngers.

4.3 Disadvantages

- There are no legal obligations as of now, because there are some modi cations still being made on the product itself.

- Some of the health issues are regarding SixthSenses projection technology.

- Concerns about the pricing of this device are also rising among the people.

4.4 Summary

In this chapter we discussed the applications,advantages and disadvantages of Sixth Sense Technology . In the next chapter conclusion is discussed.

Conclusion

The key here is that Sixth Sense recognizes the objects around you, displaying information automatically and letting you access it in any way you want, in the simplest way possible. Clearly, this has the potential of becoming the ultimate "transparent" user interface for accessing information about everything around us. If they can get rid of the colored finger caps and it ever goes beyond the initial development phase, that is. But as it is now, it may change the way we interact with the real world and truly give everyone complete awareness of the environment around us.

Bibliography

[1] Sneha Allu,N.,www.blendernation.com,sixth-sense-technology,2009.BioCAS 2009.IEEE

[2] Pallavi Sonone,http://boingboing.net,2006 3rd International IEEE Conference on capsule endoscopy.

[3] Lenin Ravindranath,http://gizmodo.com,sixth-sense-technology-may-change-how-we-lookat-the-world-forever, and T.Kalker Medical Imaging,IEEE Transactions on Dec. 2008

[4] Venkata.Padmanabhan,Reena,"4.http://theviewspaper.net/sixth-sense-technology-will-revolutionize-the-world/".BMJ March 4 2006.

[5] Piyush Agrawal,"http://lucasrichter.wordpress.com/2009/03/13/pattie-maes-sixth-sensetechnology-".updated on oct 11th 2009.

[6] Ahmed Skaik,"http://www.pranavmistry.com/projects/sixthsense",in SANS Institute, 2001.

[7] Mahmoud Alhelou,"https://github.com/sixthsense/sixthsense".updated on June 2008.

[8] Sidhu RR,McAlindon MEME,Sanders DSDS,mage-http://vision.mas.ecp.fr/Personnel/teboul/visi Current Opinion in Pediatrics.2007.