RESEARCH COMMUNICATION

Basic Principles of Sixth Sense Technology

[1]Monika Arora*

ABSTRACT

This paper gives you just introduction about sixth sense. This paper makes you familiar with sixth sense technology which provides freedom of interacting with the digital world using hand gestures. The sixth sense prototype is comprised of pocket projector, a mirror, mobile components, color markers and a camera. The sixth sense technology is all about interacting to the digital world in most efficient and direct way. Sixth Sense devices are very much different from the Computers; this will be a new topic for the hackers and the other people also. Everyone can get general idea of sixth sense technology by look at this paper.

Keywords : Sixth Sense Technology, Digital World, Gestures, Projector.

1. INTRODUCTION

'Sixth Sense' is a wearable gestural interface that augments the physical world around us with digital information and lets us use natural hand gestures to interact with that information. Sixth Sense in scientific (or non-scientific) terms is defined as Extra Sensory Perception or in short ESP. Sixth Sense technology is the science of tomorrow with the aim of connecting the digital world with the physical world seamlessly, eliminating hardware devices. 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. Both the projector and the camera are connected to the mobile computing device in the user's pocket. Many products based on this technology are available in the market. The sixth sense technology is the next big thing which will create next sensation.
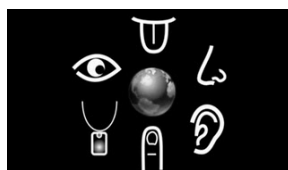

Fig. 1.1: Six Senses

[1]Lecturer, Department of Computer Science & Engineering, NWIET, Moga, Punjab, INDIA.
*Correspondence : mnk_arora35@yahoo.com

2. HISTORY

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 + camera system. He was a media lab student at that time. There after it was used and implemented by an Indian who is the man has become very famous in the recent Pranav Mistry. There will be a long future rather than the short period of history for the Sixth Sense technology.

3. EVOLUTION OF SIXTH SENSE TECHNOLOGY

Steve Mann implemented the Sixth Sense technology as the neck worn projector with a camera system. His work was carried forward by Pranav Mistry, an Indian research assistant in MIT Media Lab. He came up with exciting new applications from this technology. Sixth sense technology was developed at media labs in MIT and coined as Wear Ur World (WUW).

4. WHY CHOOSE SIXTH SENSE TECHNOLOGY?

This sixth sense technology provides us with the freedom of interacting with the 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. This technology enables people to interact in the digital world as if they are interacting in the real world. The Sixth Sense prototype implements several applications that demonstrate the usefulness, viability and flexibility of the system.

5. HOW DOES SIXTH SENSE WORKS?

The sixth sense prototype is comprised of 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 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 tracking fiducially. 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. 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.
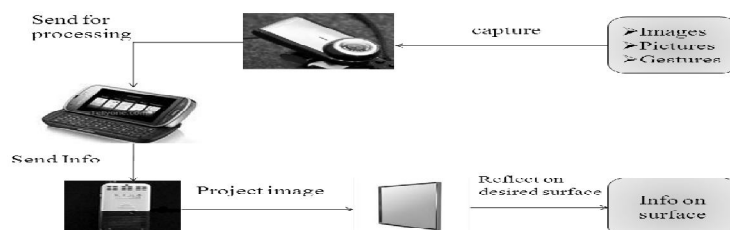

Fig. 5.1: Working

- The hardware that makes Sixth Sense work is a pendant like mobile wearable interface
- It has a camera, a mirror and a projector and is connected wirelessly to a Bluetooth or 3G or WIFI smart phone that can slip comfortably into one's pocket
- The camera recognizes individuals, images, pictures, gestures one makes with their hands.
- Information is sent to the Smartphone for processing
- The downward-facing projector projects the output image on to the mirror
- Mirror reflects image on to the desired surface
- Thus, digital information is freed from its confines and placed in the physical world.

6. TECHNOLOGIES THAT ARE RELATED TO SIXTH SENSE DEVICES

6.1. Augmented Reality

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

It is a technology which is aimed at interpreting human gestures with the help of mathematical algorithms. Gesture recognition technique basically special type of hand gloves which provide information about hand position orientation and flux of the fingers.

6.3. Computer Vision

Computer Vision is the technology in which machines are able to interpret necessary information from an image. This technology includes various fields like image processing, image analysis and machine vision. It includes certain aspect of artificial intelligence techniques like pattern recognition.

6.4. Radio Frequency Identification

Radio Frequency Identification systems transmit the identity of an object wirelessly, using radio magnetic waves. The main purpose of this technology is to enable the transfer of a data via a portable device. This technology is widely used in the fields like asset tracking, supply chain management, manufacturing, payment system etc.

7. APPLICATIONS

7.1. Motion Capture

Fig. 7.1: Motion Capture

The photos can be taken to any interface for editing, managing the galleries and sharing. There is an inbuilt storage device where the data can be stored. The capturing device like 4 rubber rings can be used to capture the photos of any location.

7.2. 3D Drawing

Fig. 7.2: 3D Drawing

A pencil that enables users to draw in 3D is good innovation. It will be a good tool for the beginners to the 3D modeling world.

7.3. Fingers as Brush

Fig. 7.3 : Figures as Brush

The user can draw anything on paint with the help of his fingers. This drawing can be 3D also. Hence, no need to use mouse.

7.4. Capture Photos With Fingers

Fig. 7.4: Capture Photos with Fingers

The using 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.

7.5. Palm is the New Dialer

Fig. 7.5: 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.

7.6. Read Books Easily

Fig . 7.6 : 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.

7.7. Video Newspapers

Fig . 7.7 : Video Newspapers

This technology identifies the news headline and then projects the relevant video like the video newspapers of Harry Potter.

7.8. See Map

Fig. 7.8 : See Map

The map will be projected with projector on any surface.

7.9. Clock

Fig. 7.9 : Clock

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

7.10.   Access Anywhere Internet

Fig. 7.10 : Access to Internet

The users can browse internet on any surface even on their palm.

8.   CONCLUSION AND FUTURE SCOPE

8.1 CONCLUSION

This technology 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.

8.2 FUTURE SCOPE

As this technology will emerge may be new devices and hence forth new markets will evolve. Mystery made his own tablet computer much before they hit the market, using just a piece of paper, a microphone and a camera. This technology enables one to account, compute and browse data on any piece of paper we can find around. Sixth Sense devices are very much different from the computers; this will be a new topic for the hackers and the other people also. First thing is to provide the security for the Sixth Sense applications and devices. Lot of good technologies came and died due to the security threats. There are some weaknesses that can reduce the accuracy of the data. Some of them were the on palm phone keypad. It allows the user to dial a number of the phone using the keypad available on the palm. There will be a significant market competitor to the Sixth Sense technology since it still required some hardware involvement with the user.

9.   REFRENCES

[1] http://www.pranavmistry.com/projects/sixthsense/

[2] notesofenius.com/multimedia/-applications-sixthsense-technology/

[3] www.youthkiawaaz.com/2010/06/Pranav-mistry---innovator-of-sixth-sense-technology---technology that makes sense

[4] http:/www.ted.com/talkspranav_mistry_the_thrilling_potential_of_sixthsense_technology.html

[5] http://code.google.com/sixthsense/

[6] Intelligent Image Processing,John Wiley and Sons,pp.384,02001NOV02,ISBN 0-471-40637-6 sixthsense. Pranav Mistry.

[7] http://theviewspaper.net/sixth-sense-technology-will-revolutionize-the-world/

[8] http://lucasrichter.wordpress.com/2009/03/13/pattie-maes-sixth-sensetechnology-whats-stopping-this/

❏❏