

# SIX SENSE TECHNOLOGY

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*Abstract— ‘Sixth Sense’ is a wearable gesture interface that augments the physical world around us with digital information and lets us use natural hand gestures to interact with that information. This technology will definitely give the user a new way of seeing the world with information at their fingertips it has been classified under the category ‘wearable computing’. The true power of Sixth Sense lies on its potential to connect the real world with the Internet, and overlaying the information on the world itself. 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.*

## I. INTRODUCTION

We’ve evolved over millions of years to sense the world around us. When we encounter something, someone or some place, we use our five natural senses which include 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 five 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 confined 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 confines by seamlessly integrating it with reality, and thus making the entire world your computer.

All of us are aware of the five basic senses – seeing, feeling, smelling, tasting and hearing. But there is also another sense called the sixth sense. It is basically a connection to something greater than what their physical senses are able to perceive. To a layman, it would be something supernatural. Some might just consider it to be a superstition or something psychological. But the invention of sixth sense technology has completely shocked the world. Although it is not widely known as of now but the time is not far when this technology will change our perception of the world.

## II. KEYWORD

Sixth Sense, Augmented Reality, Gesture Recognition, Computer Vision.

## III. HISTORY AND EVOLUTION OF SIXTH SENSE TECHNOLOGY

Steve Mnn 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.

## IV. 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 aid in synthesis of bots that will be able to interact with humans.

## HOW DOES SIXTH SENSE WORKS?

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 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 tracking 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. Sixth Sense supports multi-touch and multi-user interaction.

**TECHNOLOGIES THAT ARE RELATED TO SIXTH SENSE DEVICES**

1. Augmented Reality.
2. Gesture Recognition.
3. Computer Vision.
4. Radio Frequency Identification.

**DEFINITIONS:**

## 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, haptic feedback and smell to the natural world as it exists.

## 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.

## 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.

## 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.

**APPLICATIONS:**

The Sixth Sense device has a huge number of applications. The following are few of the applications of Sixth Sense Technology.

## 1. Viewing Map:

With the help of a map application the user can call upon any map of his/her choice and navigate through them by projecting the map on to any surface. By using the thumb and index fingers movements the user can zoom in, zoom out or pan the selected map.

## 2. Taking Pictures:

Another application of Sixth Sense devices is the implementation of a gestural camera. This camera takes the photo of the location user is looking at by detecting the framing gesture. After taking the desired number of photos we can project them onto any surfaces and then use gestures to sort through those photos and organize and resize them.

## 3. Making Calls:

We can make calls with the help of Sixth Sense device. The Sixth Sense device is used to protect the keyboard into your palm and using that virtual keypad we can make calls to anyone.

## 4. Interacting with Physical Objects:

The Sixth Sense system also helps to interact with physical objects we use in a better way. It augments physical objects by projecting more information about these objects projected on them. For example, a gesture of drawing a circle on the user's wrist projects a watch on the user's hand. Similarly a newspaper can show live video news or dynamic information can be provided on a regular piece of paper.

## 5. Other Applications:

Sixth Sense also lets the user draw icons or symbols in the air using the movement of the index finger and recognizes those symbols as interaction instructions. For example, drawing a magnifying glass symbol takes the user to the map application or drawing a @ symbol lets the user check his mail.

**KEY FEATURES OF SIXTH SENSE**

1. Sixth Sense is a user friendly interface which integrates digital information into the physical world and its objects, making the entire world your computer.
2. Sixth Sense does not change human habits but causes computer and other machines to adapt to human needs.
3. It uses hand gestures to interact with digital information, supports multi-touch and multi-user interaction.
4. Data access directly from machine in real time. It is an open source and cost effective and we can mind map the idea anywhere.
5. It is gesture-controlled wearable computing device that feeds our relevant information and turns any surface into an interactive display.
6. It is portable and easy to carry as we can wear it in our neck.
7. 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.
8. If we are going for a holiday, then from now on wards it will be easy to capture photos by using mere fingers.

**V. CONCLUSION**

As this technology will emerge may be new devices and hence forth new markets will evolve. 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.

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