

# “SixthSense: A Wearable, Gestural Interface to Augment Our World”

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## ABSTRACT

**Sixth Sense technology crosses over any barrier between the physical world and the advanced world, bringing impalpable, digital information out into the substantial world, and allowing us to relate with this information via natural hand gestures. In Sixth Sense technology system could be prepare to recognize and percept real world objects and respond as desired. The gesture recognition, augmented reality and computer vision is use is to implemented Sixth Sense technology in 'Sixth Sense/WUW (wear your world). It's a wearable interface that augments the physical world around us with the digital information. It's just born concept which allows user to connect with the internet seamlessly. Without use of keyboard, mouse we can see videos access, change, move data simply. We have recommended that Sixth Sense innovation could be incorporated with voice acknowledgment. Likewise camera, sensor and projectors could be utilized.**

**Keywords: Projector, Gesture Recognition, Six Sense, Camera**

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## I. INTRODUCTION

We have advanced more than a great many years to sense the world around us. There are 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 valuable data that can help us settle on the correct choice is not actually recognizable with our five detects, to be specific the information, data and learning that humanity has collected about everything and which is progressively all accessible on the web. Although the miniaturization of processing gadgets permits us to convey PCs in our pockets, keeping us consistently associated with the advanced world, there is no connection between our computerized gadgets and our collaborations with the physical world. The traditionally information is confined on paper or digitally on a screen. Sixth Sense bridges this gap, bringing imperceptible, digital information out into the real world, and allowing us to interact with this data via natural hand gestures. Sixth Sense frees information from its limits by flawlessly integrating it with reality, and in this manner making the whole world your computer. SixthSense is a wearable “gesture based” device that increases the physical world with computerized data and gives individuals a chance to utilize 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 SixthSense. He says that the movies “Robocop” and “Minority Report” gave him the inspiration to create his view of a world not dominated by computers, digital information and human robots, but one where computers and other digital devices enhance people’s enjoyment of the physical world. This technology is a revolutionary way to interface the physical world with digital information. Modern technologies include the touch screen techniques which is used widely and it makes ease of operation and saves utilization time. 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. We have work on a new type of technology which is going to be soon launched in the market .Its name is the sixth sense technology. It’s a wearable interface that augments the physical world around us with the digital information. It’s just born concept which allows user to connect with the internet seamlessly. Without use of keyboard, mouse we can see videos access, change, move data simply.

**About Sixth Sense**

In scientific (or non-scientific) terms as Extra Sensory Perception or in short ESP is defined sixth sense. The sixth sense gives reception of information which is not gained through any of the five senses. Nor is it taken from any experiences from the past or known. Sixth Sense objectives to Additional seamlessly integrate online information and tech into daily life. By making available data required for basic leadership past what we have entry to with our five senses, it efficiently gives users a sixth sense. It's a wearable interface that augments the physical world around us with the digital information. It's just born concept which allows user to connect with the internet seamlessly. Without use of keyboard, mouse we can see videos access, change, move data simply. Sixth Sense technology is the science of tomorrow with the aim of connecting the digital world with the physical world seamlessly, eliminating hardware devices



Fig1: The Five Senses



Fig2: Six Sense

However, the container necks of this technique, for example, position of camera, for capturing gestures translates the precision in the anticipated output, lead to use of commands rather than of hand gestures. In image capturing and projected output efficiency and accuracy position of camera is a major constraint. Therefore the activities which we regularly perform in our daily life are converted to commands and are trained to a speech IC. They are put away as a database in the incorporated circuit and comparing activities are performed when the speech is recognized from the user.

**II. SYSTEM OVERVIEW**

Figure shows the block diagram of the system. It consists of camera, laptop and projector. Detailed functioning of each block is given below.

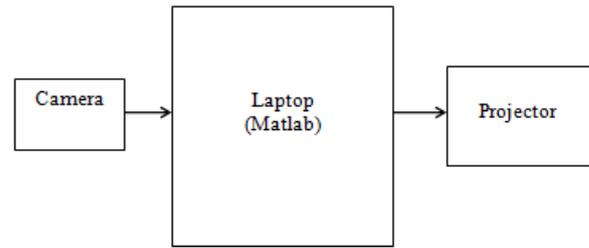


Fig3: System Block Diagram

Fig3: System Block Diagram

**A. CAMERA**

The camera is use to capture the image of the object in view and tracks the users hand gesture. This device recognizes individuals, images, pictures, gestures that user makes with his hand. The camera then sends this information to a portable. Work station for handling. The digital eye which connects to the world of digital information is basically form by the camera.

**B. LAPTOP**

On laptop there is MATLAB software. In this software, gesture recognition, colour marker detection and product detection is done.

**C. PROJECTOR**

The physical objects and visual information enabling surfaces is to be used as interfaces in projector. The device itself consists of batteries having 3 hours of battery life. A Tiny LED projector displays the data sent from the smartphone on any surface in view-object, wall or person. The image is display on mirror using downward facing projector.

**IMAGE PROCESSING PART**

All the process is done in the MATLAB using programing and the image Acquisition process. In image acquisition perform various task like Image pre-processing is required to remove unwanted distortions and enhance the image features. There are numerous image representations and filtering techniques that can reduce the impact of lighting conditions and improve image quality.

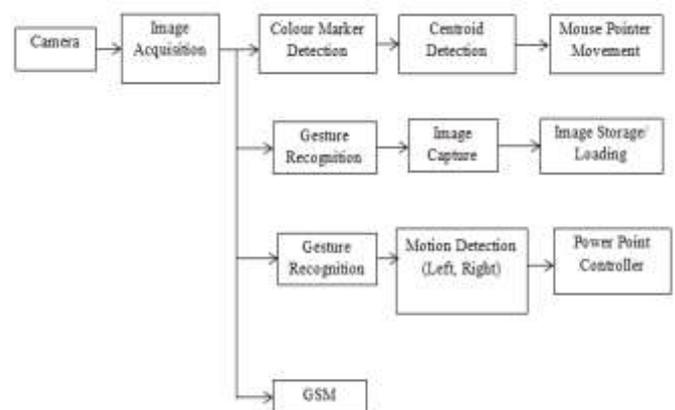


Fig4: Image Processing Part

The software program examinations the video information got by the camera and furthermore finds the areas of the coloured markers by using single computer vision methods. 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 fiducially. This multi-touch and multi-user interaction is supported by 'Sixth Sense' device. It tracks the users hand gestures and captures the image of the object in view. The tip of users fingers are used to placed colour markers to recognize the hand gestures through webcam with the help of fingers with red, yellow, green and blue colored tape. The movements and arrangement of these markers are interpreted into gestures that act as a collaboration guideline for the anticipated application interfaces.

### III. ALGORITHM

Start

Image acquire from camera

Mouse pointer Movement

Color Marker Detection

Centroid Detection

By using gesture recognition image is capture and store and load that image.

Power point controlling is done using gesture recognition through motion detection (Left, Right)

Using gsm we send message to mobile for this activity use hand gesture.

Stop

### IV. RESULT

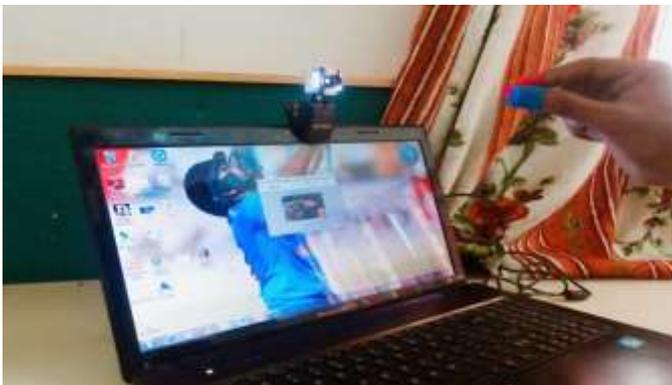


Fig5: Image capturing



Fig6: PPT Slide Change

In Fig 5. use colour band to detect the mouse pointer and the colour markers placed at the tip of users fingers. Marking the user's fingers with red and blue coloured tape helps the webcam to recognize the hand gestures. The movements and arrangement of these marker are interpreted into gestures that act as an interaction instruction for the projected application interfaces. Camera detect the red colour then move the mouse pointer when red colour markers placed at the tip of users fingers. Marking the user's fingers with red and the red color is used to detect the mouse pointer and also blue is detected. Using the colour band capture the image by using hand just be clicked action by index finger and thumb and these image can be stored in the laptop and using projector project the information to the other. In fig 6 PPT slide changes or move the pages by using hand gesture, slide changes or move the pages as forward and reverse direction by using hand gesture, move the hand near to webcam or particular distance as set in the program. All the process is done in the MATLAB using programing and the image Acquisition process. In image acquisition perform various task like Image pre-processing is required to remove unwanted distortions and enhance the image features. There are numerous image representations and filtering techniques that can reduce the impact of lighting conditions and improve image quality.

### V. CONCLUSION

The sixth sense technology using gesture movement and speech integrated circuits are emerging innovative ideas. We have a seamless access to data or information that may exist to help us make decisions. This provides access to relevant information about the things in the environment and enables the new interactions between the real world and the world of data.

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