

*A PAPER PRESENTATION
ON
SIXTH SENSE*

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ABSTRACT:

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. It is a sense that would give seamless and easy access to meta information or the information that may exist somewhere. The sixth sense prototype is comprised of a pocket projector, a mirror, and a camera. The hardware components are coupled in a pendant-like mobile wearable device. Both the projector and the camera are connected to the mobile computing device in the user's pocket. The projector projects the visual information enabling surfaces, walls, and physical objects around us to be used as interfaces. Sixth sense frees information from its confines by seamlessly integrating it

with reality ,and thus making the entire world your computer.Integrating information to our everyday objects will not only help us to get rid of the gap between physical world and digital world. But it will also help us in some way to stay human, to be more connected to our physical world. The goal is to bring a part of the physical world to digital world to make computing devices more intuitive. The reverse process is also made possible. In this paper, we explained the sixth sense device, its working and the various applications that demonstrate the usefulness, viability and flexibility of the system also providing information about its availability and adoptability.

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 to perceive information about it; that information helps us make decisions and choose 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. Most of the people have some portable technology like

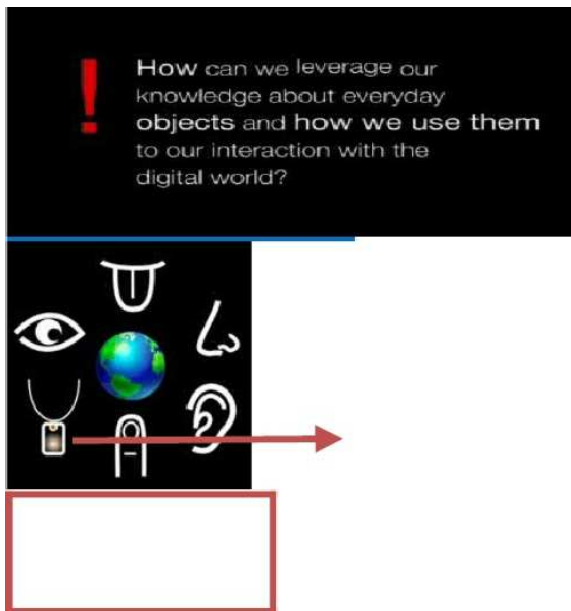
smart phones, laptops, e-book and iPods. But you need to carry all the stuff with

you. We grew up interacting with the physical objects around us. And there are enormous numbers of them that we use every day. Unlike our most computing devices these objects are much more fun to

use. When you talk about objects one another thing that automatically comes to

that thing is gestures how we manipulate the objects. We use gestures not only to interact with each other but also to interact with each other.

WHY THE NAME ‘SIXTH SENSE’: From thousands of years mankind used the five senses to gain information. But now From thousands of years mankind used the five senses to gain information. But now as this device is completely portable and it can provide information about anything, it is named as ‘SIXTH SENSE DEVICE’



Initially the device started with a helmet consisting of camera, projector and color markers. Later it was converted into a form so that it is easy to use it by wearing around the neck. Sixth Sense bridges this bringing intangible, digital information out into the

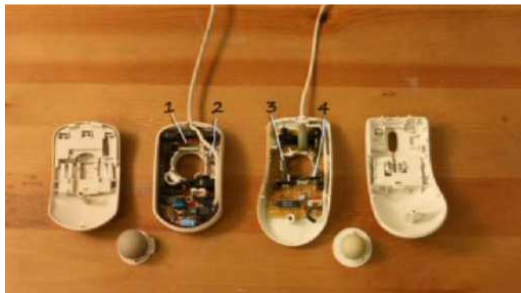


the gap,

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.

HISTORY:

The exploration of this sixth sense technology started with a question why can't we use a computer to interact with physical world. This literally started with a mouse that comes with a ball in it and TWO ROLLERS that actually guides the movement. So taking out rollers from another mouse totally we have four rollers. Using these a system interface device was formed. With this whatever you do in physical world will be reflected in the digital world.



With this initially a pen to draw 3- dimensions in digital world was made that can help designers and architects not only Think but they can actually draw so that it is more intuitive to use that way. The goal is to bring part of physical world to digital world to make computing devices more intuitive. Not only this, the reverse process is made possible.

WORKING PRINCIPLE:

The Sixth Sense prototype is comprised of a pocket projector, a mirror and a camera. The hardware components are coupled in a pendant like mobile wearable device. Both the projector and the camera are connected to the mobile computing device in the user's pocket. The projector

projects visual information enabling surfaces, walls and physical objects around us to be used as interfaces; while the camera recognizes and tracks user's hand gestures and physical objects using computer-vision

based techniques. The software program processes the video stream data captured by the camera and tracks the locations of the colored markers (visual tracking fiducially) at the tip of the user's fingers

using simple computer-vision techniques. The movements and arrangements of these fiducially are interpreted into gestures that act as interaction instructions for the projected application interfaces. The maximum number of tracked fingers is only constrained by the number of unique fiducially, thus Sixth Sense also supports multi-touch and multi-user interaction. CPU & MEMORY WITH 3G PROJECTOR CAMERA .



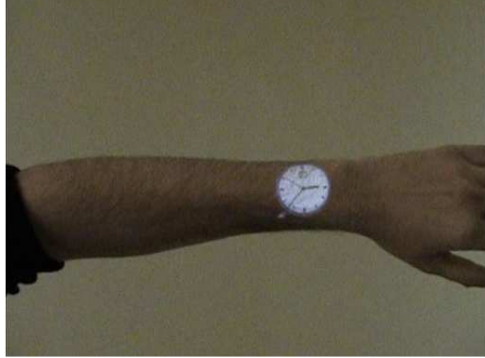
APPLICATIONS:

The sixth sense prototype implements several applications that demonstrate the usefulness, viability and flexibility of the system .sixth sense technology has got a wide range of applications in different fields.

The following can explain the areas in which this amazing technology can be applied.

->U CAN KNOW THE TIME:

For example, Mistry traces a small circle on his wrist using his index finger, SixthSense will project a watch onto his wrist:



->WATCH VIDEOS ON A NEWSPAPER:

While you're reading a newspaper, depending on the news and related photos you can immediately watch the related videos on the news papers itself and make it useful and interesting rather than going for other sources.



->GPS:Using the global positioning system, you can project maps anywhere which provide information on your position depending on your moves and find a way by using zoom out and zoom in options. When this topic is explained to our former president DR.A.P.J .ABDUL KALAM ,he

suggested a new use saying that a person who is dumb can use speaker system to express his thoughts using this technology.many other processes are going on to make this technology reach masses.



->PLAYING GAMES, BROWSING WEB ON PAPER:

Attach the microphone available with the webcam to a paper. Now the sound of touch is exactly getting a where a person is touching the paper.



->MAKE A CALL:

If you want to make a call to anyone and you find yourself with no such calling device, it is possible to make a call with sixth sense technology. It's enough to stretch your palm and then a virtual dialing pad will be projected. In this way you can call with no external device.



->**TAKE A SNAPSHOT:** If you find beautiful scenery and want to capture it, you hold your fingers out at arm's length forming square. The system snaps a photo of what's enclosed by your fingers. Later, you can sort, resize and fiddle with these photos by projecting them onto any wall and dragging their images with your fingertips, à la Microsoft Surface. That's it you captured it and you

can project it on any surface say a wall, and you can even edit it and mail to a friend.



->**GET INFORMATION ABOUT ANY THING INSTANTLY:**

software that analyzes the gestures and the objects captured by the camera so that it can respond and provide the appropriate information.



SOCIETAL ISSUES: This technology in essence seems fantastic; however, there are a number of societal issues that come with it. The two major ones are: the accuracy of the

information and the privacy of individuals. The first major issue which this new technology arises is how accurate the information displayed is. For example, if you wish to see the environmental statistics of certain product, what guarantees that the information displayed will be, at least, relatively accurate? If the company which produces the product were to make sure to not let certain information be displayed the product might seem harmless to the environment when it really isn't The second major issue that arises from "Sixth Sense" is the issue of personal privacy. The project is being promised to be able to get relevant information of people you meet. For example, if you meet someone at a party you would get some relevant facts about that person. The problem here is how much "relevant facts" there are. Even if only the name and the birthday of the person is displayed, this would facilitate identity theft immensely not only because the information is readily available but also because it would be much harder to track the culprit since this technology would be used by a number of people. The possible solutions to this, however, are unfortunately not much different from the solutions to internet privacy that is to not provide any personally identifiable information. Of course, not even this guarantees personal privacy since other people can upload information about yourself without your knowledge.

CONCLUSION:

Imagination is the only limit for technologies like this one. It augments the physical world around us with digital information and lets us use natural hand gestures to interact with that information. It is a sense that would give seamless and easy access to Meta information or information. So, with this technology we can have our digital world with us wherever we go. And we can start using any surface around us as an interface. It will change the way we interact with people not only with physical world. Actually the hardware is not that hard to manufacture. The open source software is going to be made available .It costs around \$350.So the technology can reach masses than staying to

laboratories or environments.

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