SIXTH SENSE TECHNOLOGY

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ABSTRACT

There are five basic senses – seeing, feeling, smelling, tasting and hearing. Now, we are moving into the era of Sixth Sense Technology. Basically it sounds supernatural, which is beyond science. Sixth Sense is a usable "gestural interface" device which refers to the connection with something greater than our physical senses can perceive. It's a developing technology and once fully developed it has the potential to give human being any source of information about the world around him. Sixth Sense combines data obtained from Radio Frequency Identification (RFID) based sensing with information from different sources such as calendar to automatically draw conclusions about the interaction among people, objects, and workspaces. The sixth sense technology concept is a move to connect the digital world in to the real world. Its basic use it to cause computers to adapt to human needs. The technology lets out information about an object while we're viewing it. The aim of Sixth Sense is to let the computer assist human in making correct decisions by molding information into various forms. We have been used to a clear gap between the virtual world and the real world but Sixth sense aims to fill the void. Sixth sense is like breathing a new life in the world of virtual reality. In this paper, we will be discussing technical aspects behind sixth sense, gesture recognition, and we will cover the analysis of the emergence and necessity of Sixth Sense Technology.

Keywords: RFID, Gesture Recognition, Augment Reality etc.

I INTRODUCTION

'Sixth Sense' is a wearable gesture baseddevice that connects our real world with digital information on the computer and lets us use natural hand gestures to interact with that information, thus making it an interface between our brain and computer. It was developed by Pranav Mistry a PHD student at the MIT lab.It associate technologies like hand gesture recognition, Image capturing, processing,manipulation etc. which makes it magnificent and present it in single portable and economical form. It has the potential to eradicate hardware usage, thus revolutionizing itself in a large way.

II EMERGENCE AND EVOLUTION

In the current scenario we our using devices such as cell phones; tablets etc which enable us to browse through the vast internet that helps us receive and manipulate information. The technology initially came into notice when Steve

Mann made a wearable device in 1990. His idea has been well executed by Pranav Mistry, an Indian researcher at MIT lab. Sixth Sense has come into notice because the information/ data that man has accumulated over the internet over time needed to be manipulated and used with ease. Maes' a group of MIT graduate students had been thinking how humans can access information about the world without taking out a gadget and browsing through the internet. Information over the World Wide Web needed to be more useful to people with minimal effort and pure ease. At first they initiated a wristband that could read a Radio Frequency Identification tag to know, for example, what item is being held by a user at a grocery store. This required a device where the information would be displayed. That's how the idea of accessing data from the internet and projecting it on a surface came into existence.

III TECHNOLOGIES RELATED TO SIXTH SENSE

3.1 Gesture Recognisation

It is a technology whose sole purpose is to recognize and interpret human gestures with the help of mathematical algorithms fed into the machine. It enables our brain to interact with the computer in a more direct way than using hardware devices. It focuses on human hand and face gestures.

3.2 Augmented Reality

The basic concept behind augmented reality is that images and sounds are superimposed over what the user experiences in the real world. The head mounted display used in augmented reality systems will enable the user to view superimposed graphics and text created by the system. Another component of augmented reality system is its tracking and orientation system. This system pinpoints the user's location in reference to his surroundings and additionally tracks the user's eye and head movements.

3.3 Computer Vision

It's the technology which attempts to give a comparable capability to a computer or other machine via the extraction, processing, and analysis of relevant information from an image, sequence of images, or multi-dimensional data. Itincludes certain aspect of artificial intelligence techniques like pattern recognition.

3.4 Radio Frequency Identification

This technology enables remote and automated gathering and sending of information between RFID tags ortransponders and readers using a wireless link.Other current uses of RFID include product tracking, hospital patient identification, asset tracking and security, animal identification, automotive security, car licenses, access systems, and public transport payment systems.

3.5 Working of Sixth Sense

Sixth sense technology uses a mini -projector coupled with a camera along with a mirror and a cellphone. Camera and cellphone together act as a computer and connect us to the 'cloud'which is all the information stored on the web. The Camera recognizes objects around it instantly using computer vision based technique with the micro projector overlaying the information on any surface including the object itself for instance in your hand. Hand gestures and images captured by the camera are processed using software programs and it also tracks the locations of the colored markers also known as 'visual tracking fiducials' at the tips of the user's fingers. The motion and arrangements of these fiducials are interpreted into gestures that act as interaction instructions for the projected application interfaces. The mirror reflects the projection coming out from the projector and thus helps in projecting onto the desired locations on walls or surfaces. The user manually can change the tilt of the mirror to change the location of the projection. Mirror in Sixth Sense helps in overcoming the limitation of the limited projection space of the projector. The microphone is an optional component of the Sixth Sense. It is required when using a paper as a computing interface. When the user wants to use a sheet of paper as an interactive surface, he or she clips the microphone to the paper. The microphone attached this way captures the sound signals of user's touching the paper. This data is passed to computing device for processing. Later, combined with the tracking information about user's finger, the system is able to identify precise touch events on the paper.

3.6 Applications of Sixth Sense Technology

There's no link between our digital devices and our interactions with the physical world. But sixth sense aims to fill this void. 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 hang gestures.

Phone calls become easier using this technology. Simply touch the digital keys on your palm projected by projector.

- For time checking, the user needs to simply carryout a circle gesture on his/her wrist. The Sixth Sense technology is smart enough to recognize it. Quickly, it will display time.
- Sixth sense technology can be used for scanning a book. It can tell u the ratings and reviews of the book before reading or buying it.
- Sixth Sense Technology can be used for gaming purpose and also writing accounts. With some basic hand gestures, a game can be played. Different sound effects can also be produced through motion sensor concept.
- Newspaper can show live video news or dynamic information can be provided on a regular piece of paper.
- Sixth sense system implants a gestural camera that takes photos of the scene the user is looking at by detecting the 'framing gesture'.The user can stop by any surface or wall and flick through the photos he has taken.
- The drawing application lets the users draw anything on any surface by tracking the fingertip movements of

the user's index finger.

3.7 Proa And Cons

As One Of The Newest And The Most Refined Technologies Of The Modern Era, Sixth Sense Has Its Own Advantages And Disadvantages. With This Concept It's Expected To Change How Man Thinks. By The Progression Of This Technology It Will Be A Brave Step To Another Era In The Modern Science And Technology.

S. No.	Advantages	Disadvantages
1.	No computer skills or pre	It will undoubtedly lead to a technology
	knowledge is required to browse	addiction. Excessive use of technology had
	data. It will be easier for us to	already been affecting social lives. With
	be technologically awake all the	this, there is going to be a reduction in the
	time and to connect to the world	social nature of the world and the
	via this newest invention.	humanness is bound to diminish.
2.	No need to carry devices like	Technologies like computer vision and
	laptops, tablets as one can easily	RFID are used in sixth sense which leads
	browse or store data at any time	to projection of rays on surface. The most
	using sixth sense.	feasible surfaces to be used are human
		body parts for instance arms hands; which
		may lead to some health problems due to
		exposure to rays for such long duration of
		time .

IV FUTURE SCOPE

Gadgets using sixth sense technology will help the blind. Devices using sixth sense have already hit the market that help to discern Braille, send text messages on mobile phones, and even ride a car. The device called See Assistive Technology and consists of wrist bracelet and wireless earphones. The bracelet is used for scanning products' bar codes and earphones tell this information to a person. Bio sonic Vision Australia has announced the creation of an artificial digital eye of a new generation, and the government has allowed its testing on people. Special chip is implanted into an eye socket and is connected to a nervous system with the help of a network of electrodes. The device also includes a camera implemented into special glasses. This camera translates images. The implant receives these data and transfers them to a brain. In future mind control technology will take the place of the voice control technology that is popular nowadays. The sensors that will detect the changes in brain activity will be placed on a head and computer will decode the data collected by these sensors and transmit them to a device.

V CONCLUSION

From the discussions so far it's not hard to insinuate the remarkable scope of Sixth Sense technology. It has the potential to completely change man's perspective about real objects and there will be a thin and narrow line between

our real world and the virtual world. It will make our world easily accessible by introducing the digital world into it.

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