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Smart City using Sixth Sense Technology

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Abstract: ***Villages are considered to be the heart of our nation India and the economic development of villages along with cities is also important to us. Therefore, in order to bring development to the grass-root level, the focus should be on the progress of the village. 'Sixth Sense' is a gesture interface that enhances the physical world around us with digital information and allows us to use natural hand gestures to interact with that information. Sixth Sense technology helps to bridge this gap between the tangible and intangible world. But the most important piece of information in this new age of technology that helps a person make the right decision is something that cannot be seen and analyzed by our natural senses. Sixth Sense Technology Concept is an attempt to connect this data to the real world in the digital world. Using this sixth sense technology we can easily transform or develop developing countries/cities into smart cities / developed countries.***
Keywords: Sixth Sense Technology, digital world, natural hand gestures, IOT

I. INTRODUCTION

Pranav Mistry and Patti Messe developed Sixth Sense Technology augmented reality. 'Sixth Sense' is a gesture interface that enhances the physical world around us with digital information and allows us to use natural hand gestures to interact with the information attached to a pendant like a mobile wearable device. Mistry has come up with a separate and more convenient device which is a portable camera worn around the neck which gives the users more space for their daily activities. Sixth Sense technology can transform the whole world into a computer at the touch of a hand, and it is the science of tomorrow that seeks to integrate the digital world with the physical world, eliminating hardware devices. It is essentially a wearable computer that can surf the web, make phone calls and even connect to other computing devices. This is considered to be more portable and more interactive than any smartphone, laptop or tablet available today. The movements and adjustments of these fiducials are interpreted in gestures that act as interaction instructions for the approximate application interface. The maximum number of tracked fingers is limited only by the number of unique fiducials, thus Sixth Sense also supports multi-touch and multi-user interactions.

II. EXISTING SYSTEM

Sixth Sense is a mini-projector connected to a camera and cell phone that acts as a computer and our connection to the cloud, all the information stored on the web. Hardware components are attached to a pendant like a mobile wearable device. Both the projector and the camera are attached to the mobile computing device in the use pocket.

1) *Software:* The software program processes the video stream data captured by the camera, Sixth Sense software will be open source. As long as there seems to be a small set of these things, there will be no user interface or more advanced programs for users. There will be more rigid and secure coding inside the device to ensure the security of the software. It will be interesting to know the new language for coding for the Sixth Sense device.
2) *Hardware:* To control the sixth sense, it needs some advanced hardware as it appears. In some public presentations, the presenter wears some controlled devices, including color markers, cameras and projectors. They should be compact and easy to handle. However, the hardware integration of Sixth Sense technology is quite innovative as they have succeeded in developing everyday objects like cameras and pens.
3) *Projector:* It projects visual information enabling us to use the surfaces, walls and physical objects around us as an interface.
4) *Camera:* The camera identifies and tracks the user's hand gestures and physical objects using computer vision based techniques.
5) *Colored Markers:* Colored markers are placed on the tips of users' fingers using simple computer vision techniques. It helps the webcam track the movement of the fingers. The movements and adjustments of these fiducials are interpreted in gestures that act as interaction instructions for the approximate application interface.
6) *Mobile Device:* Mobile device can be laptop, PDA, smart phone etc. It connects to other hardware devices and sends information to the projector for projection. The important thing is that the device is a mobile device. That is, it is so light that we can take it with us wherever we want. It is as small as a cell phone and very easy to use.

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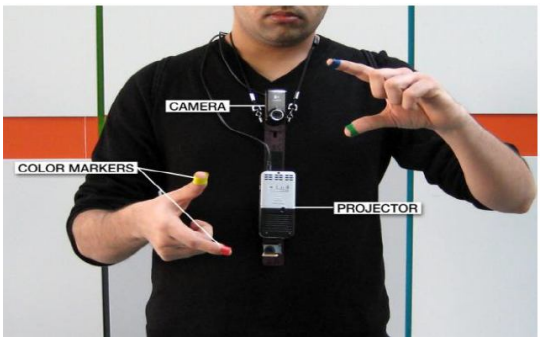


Fig. 1 Existing system of sixth sense technology

III. WORKING

The sixth sense device analyzes what the user sees and visually enhances the user's interactions with surfaces and physical objects. Researchers have combined a number of standard gadgets, including webcams, projectors and mobile phones, to create a brand new interaction experience. The key here is that the sixth sense recognizes the things around us, displays information automatically and allows it to be accessed as easily as we want it to be. The technology itself is nothing more than a combination of some amazing technologies but the idea of combining those technologies is really great. The technology is mainly based on hand gesture recognition, image capturing, processing and manipulation etc.

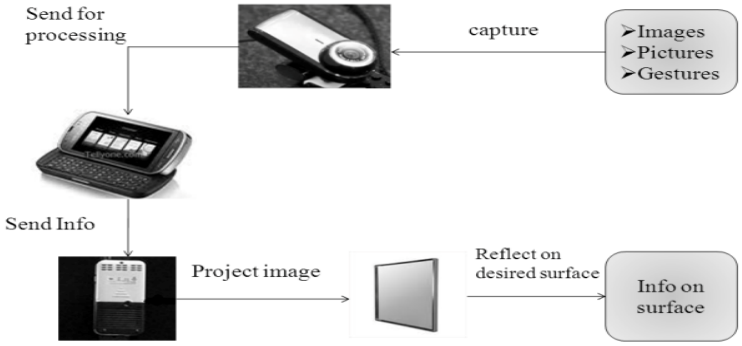


Fig. 2 Working of sixth sense technology

The Sixth Sense Prototype includes a camera built into a wearable device like a pocket projector, a mirror and a pendant. Both the projector and the camera are attached to the mobile computing device in the user's pocket. The projector projects visual information that enables us to use the surfaces, walls, and physical objects around us as interfaces, while the camera recognizes and tracks the user's hand gestures and physical objects using computer-vision based techniques. Cameras are used to identify and track user hand gestures and physical objects using computer vision based techniques, while projectors are used to project visual information on walls or any physical object around us. Other hardware includes mirrors and colored caps for use on the fingers. The technology's software uses video streams, which are captured by the camera and also track the location of finger tips to identify gestures. This process is performed using some of the techniques of Computer Vision 4. It is basically a device which is a mini projector and which can be projected on any surface, it carries the information stored in it and also collects information from the web. He is the one who follows our hand gestures and gives us what we want to see and know. It is the combined technology of computer with cell phone. It works when someone hangs it around his neck and starts projecting through a micro projector attached to it. Our fingers work like a mouse, like a keyboard.

IV. PROPOSED SYSTEM

Sixth Sense seeks its approach in many ways. Information and communication technology (ICT) is a key enabler for cities to address these challenges in a 'smart' way. A smart city is a city with at least one initiative addressing one or more of the following six characteristics: smart governance, smart people, smart living, smart mobility, smart economy and smart environment. The Smart City initiative spans all six characteristics, but mostly focuses on the smart environment and smart mobility. The success of a smart city depends on the depth and effectiveness of targeted improvements within each area or initiative and the relevance or balance of the portfolio of initiatives across the city.

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V. IMPLEMENTATION AND RESULT ANALYSIS

A. Hardware

1) Any Windows computer / laptop
2) Camera
3) Projector
4) Color markers

B. Software

1) DirectX
2) Visual Studio
3) Adobe Flash Player
4) MS Outlook
5) Internet connection is also required

VI. RELATION BETWEEN SMART CITY AND SIXTH SENSE

Although the general and specific objectives are very similar throughout the project, the technical solutions used are very different. Some companies (such as Google) are working on technologies to try and integrate Sixth Sense (parts). Digital India is an initiative of the Government of India to unite government departments and the people of India. Its purpose is to ensure that government services are made available to citizens electronically by reducing paperwork. It also plans to connect rural areas to high-speed internet networks. There are three main components to Digital India. These include: Creating Digital Infrastructure,
Delivering Services, Digitally Digital Literacy
Digital India is also related to Sixth Sense Technology. Digital technologies, including cloud computing and mobile applications, have emerged as catalysts for rapid economic growth and civic empowerment around the world. We are increasingly using digital technology in our daily lives, from retail stores to government offices. They help us connect with each other and also share information on the problems and concerns we face. In some cases they even enable them to solve those problems in near real time

VII. FUTURE WORK DEVELOPMENT

Traffic management Smart City projects focus on Smart Mobility and Smart Environment. They are ICT-enabled systems, typically based on road sensors or active GPS. The objective is to monitor real-time traffic information in order to manage city traffic in the most efficient and environmentally friendly way possible. This objective is to be achieved by speeding up the resolution of road network issues, reducing congestion and improving traffic flow. Although the general and specific objectives are very similar across projects, the technological solutions employed are very different.

VIII. APPLICATIONS

Applications Sixth Sense Prototype applies many applications that demonstrate the usefulness, viability, and flexibility of the system. The user can pick up the product from the supermarket (e.g. a package of paper towels), and display system related information (e.g. amount of bleach used) on the product itself.

1) The system can identify any book taken by the user and display Amazon rating on the cover of the book.
2) As the user opens the book, the system may display additional information such as reader comments.
3) The system is able to recognize newspaper articles and project the most recent video on a news event on a newspaper blank.
4) The system enables people to identify by their appearance and project a word cloud on the body of the person retrieving relevant information from the Internet.
5) Motion capture
6) To capture photos using fingers
7) Reviewing flight conditions
8) Time without clock
9) 3D drawing
10) Call using a palm as a dialer
11) Video newspaper

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Fig. 3 Application of six sense technology

IX. ADVANTAGES

A. Open source software: The software used to interpret and analyse the data collected by the device will be made open source as stated by its inventor. This will enable other developers to contribute to the development of the system.

B. Effective cost: The cost of building a Sixth Sense prototype is very low. It was made from parts that were assembled together from ordinary devices. Sixth Sense devices were not built on a large scale for commercial purposes. Once that is done it is almost certain that the cost of the device will be much lower than the current price.

C. Direct data access from machines in real time: With the help of Sixth Sense device, user can easily access data from any machine in real time speed. No machine-human interface is required for the user to access data. Data access by hand gesture recognition is much easier and user-friendly compared to a text user interface or a graphical user interface that requires a keyboard or mouse.

D. Portable: One of the main advantages of the Sixth Sense device is its small size and portability. It can be easily carried without any difficulty. The prototype of Sixth Sense is designed in such a way that it gives more importance to the portability factor. All devices are lightweight and can easily fit in a smartphone user's pocket.

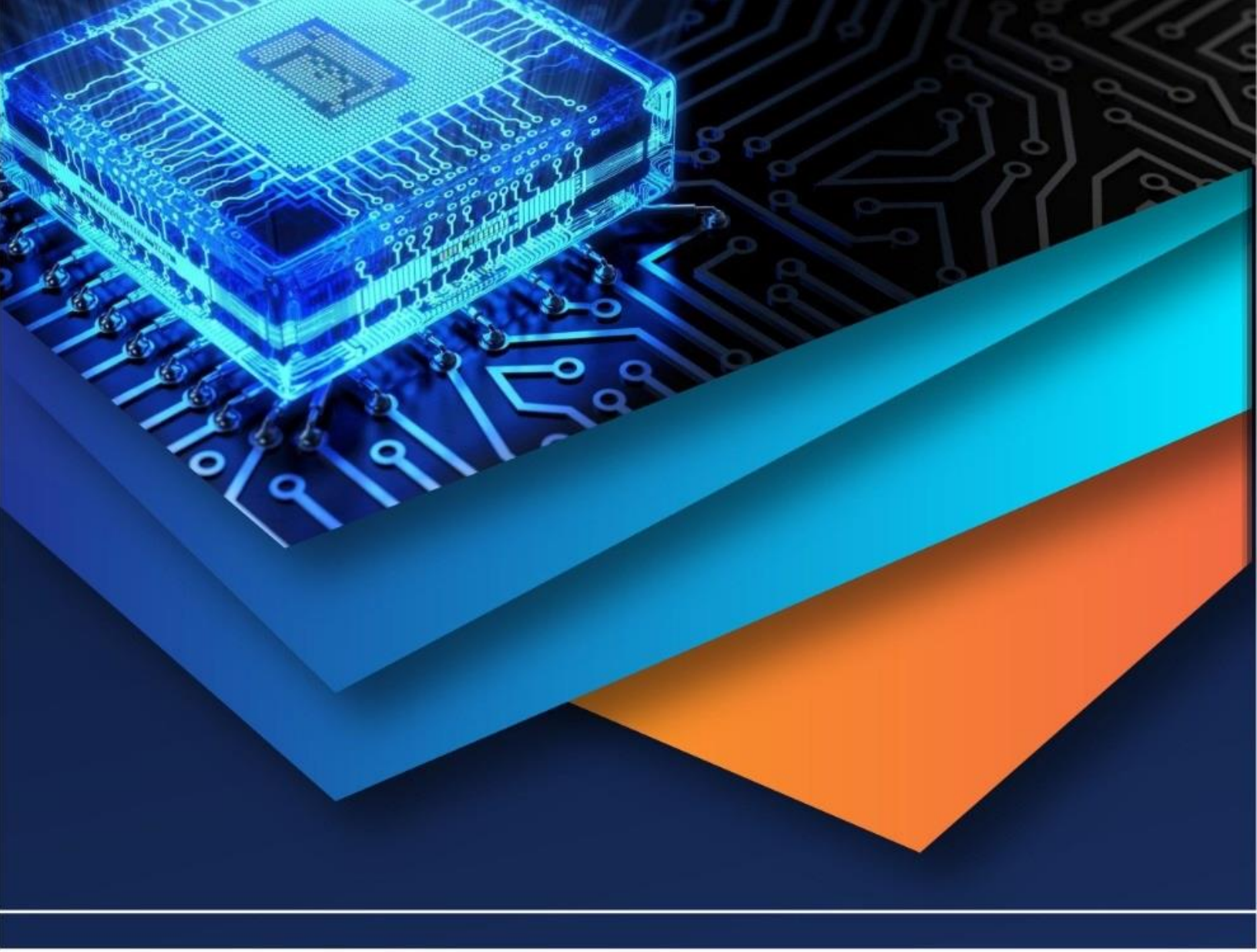
E. Support multi-touch and multi-user interaction: Multi-touch and multi-user interaction is another added feature of Sixth Sense devices. The multi-sensing technique allows the user to interact with the system with more than one finger at a time. Sixth Sense device also has in-corporate multi-user functionality. This is usually useful for large interaction scenarios such as interactive table tops and walls.

X. CONCLUSION

Sixth Sense Technology is wreaking havoc in the IT and electronics industry. In fact, mobile computing only goes beyond the next level. It's a wonderful discovery that is showing new dimensions. Although the general and specific objectives are very similar throughout the project, the technical solutions used are very different. We believe that many of the methods we will develop will be based on how groups compete and collaborate, and we believe that the infrastructure, skills and data that will characterize a smart city will enable equities to be easily established and such cities. The implementation of this technology will create a revolution. It will not only make it easier but also digitize our country.

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