Sixth Sense Technology

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Abstract: *In the present wherever nearly everything is digitized, completely different suggests that of interacting with the digital devices are gaining vast quality and importance. This is due to the advancements of technologies that modified the concept that interacting with the technology is restricted to dial pads, keyboards, mouse and touch screens. This project is intended to perform various tasks on computer such as capture an image, play audio, open MS PowerPoint and work with it etc. with the assistance of gesture recognition and image process principles solely with the assistance of colored sensors(caps/LEDs) worn on the fingers of the user. It is a gestural interface that augments the physical world around us with digital information and lets us use our natural hand gestures with colored sensors to interact with that information. This technology paves a path for enormous applications. This technique allows human interaction with computers in an exceedingly a lot of direct method while not victimization any external interfacing devices. It can provide a much better alternative to a text user interface and graphical user interface to interact with the computer*
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I. Introduction

Every one of us is aware of the five basic senses – seeing, feeling, smelling, tasting and hearing. These senses have evolved through millions of years. Whenever we encounter a new object/experience our natural senses try to analyze that experience and the information that is obtained is used to modify our interaction with the environment.

But in this age of technologies, the most important information that helps one to make the right decision is something that cannot be perceived and analyzed by our natural senses. That information is the data in the digital form, and it is available to everyone through sources like the internet. Our effort is to connect this data in the digital world into the real world. Although miniaturized versions of computers help us to connect to the digital world but there isn't any device as of now which gives a direct link between the digital world and our physical interaction with the important world. This technology helps to bridge the gap between tangible and intangible world.

This project is focused to implement a gestural interface that augments the physical world around us with digital information and enabling us to use our natural hand gestures to interact with that information. This enables to perform various tasks on computer such as capture an image, play an audio, open MS PowerPoint and work with it etc. with the help of gesture recognition and image processing principles with the help of coloured sensors(caps/LEDs) worn on the fingers of the user. We have a camera which is used as a sensor.The camera recognizes and tracks user's hand gestures using computer-vision based techniques. The package program processes the data captured by the camera and tracks the locations of the coloured caps (visual following fiducials) on the user's fingers.The movements and arrangements of these fiducials are taken into gestures that act as interaction directions for the projected application interface. This can be used to implement several applications.

II. Literature Review

The first one to create a tool with intuition was Steve Mann. By developing the thought and creating the wearable pc in 90's once he was Media research lab student, Steve Mann became the daddy of intuition Technology. He implemented the concept as the neck worn projector with the camera system.

After Mann, the thought was developed additional by Pranav Mistry, the Head of Think Tank Team and Director of Research of Samsung Research America, when he was a Research Assistant and Ph.D. candidate at the MIT (Massachusetts Institute of Technology) Media research lab.

After a lot of research and work has been done and everyone added their own ideas.

Gaurav Subhash Nikam, describes the sixth sense as a wearable gestural interface that integrates the physical world around us with the digital world. They take into account intuition technology as a "Wearable computer" that consists of assorted hardware elements.

Shany Jophin, proposed the concept how to remove the traditional hardware components like mouse by using sixth sense technology. By victimisation color markers and therefore the motion sensors, they're ready to operate the operating procedure of the mouse. They use the camera for detective work the RGB color markers to implement the hand pursuit in real time.

III. Requirement Specifications

A. Hardware Requirements:
1. GSM Module
2. USB to TTL
3. USB wired Camera
4. Laptop with internal Camera

B. Software Requirements:
1. Operating system: Windows 7/8.
2. Coding Language: Matlab
3. Software's used: Matlab version18

IV. Implementation

● In this project we have proposed the sixth sense technology using image processing.
● Two bright color tape will be fixed on two fingers. Two camera will be used on for image capture and one for image processing. Background of the image has to be black so as to avoid color noise. GSM module is used for calling and to send SMS.
● Initially two fingers with two different color are used which are place under the camera. Camera will capture the image of the fingers after that it will detect the RGB values in the image and depending on the RGB values an minimum and maximum threshold for the color is set.
● After setting the threshold user will again place his finger under the camera and click on the color present on the finger to find the centroid of that finger.
● When centroid are found then they can be used to perform the following operations.
● For calling and sms, in MATLAB functions of calling and sms is programmed. If user moves/swipe his finger vertical upwards then through GSM module call will be sent and if user moves his finger downwards then SMS will be sent to predefined number through GSM module.
● Two fingers with two different colors will be programmed to capture the image through camera. If both the fingers touch each other then the internal camera of laptop will turn on and it will capture the image.
● To control the PPT initially we will open a PPT and then through MATLAB commands mouse operation will be blocked. Their will be a threshold value set for finger movement, if finger is moved right from the threshold value then next slide of PPT will open and if finger is moved left from the threshold value them previous slide of PPT will open.
● To control music player four direction will be set and one center threshold is defined in MATLAB programming. If finger move left to the threshold value then volume will decrease, if finger moves right to the threshold then volume will decrease. If finger moved closer to the camera then music will pause and if finger moved away from the camera then music will resume where it paused.

V. Conclusion

1. This project was intended to perform various tasks on computer and we successfully performed tasks such as capturing an image, playing an audio, opening MS PowerPoint and working with it etc. with the assistance of gesture recognition and image process principles.
2. This is done only with the help of coloured sensors (caps/LEDs) that are worn on the fingers of the user.
3. This project is a gestural interface that augments the physical world around us with digital information and lets us use our natural hand gesture with coloured sensors to interact with that information.
4. This project enables humans to interact with computers in a more direct way without using any external interfacing devices.
5. This project provides a much better alternative compared to the text user interfaces and graphical user interface which are usually used to interact with the computer.

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