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Development of System using Six Sense Technology for Gesture Detection and Computer Applications

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Abstract:
Sixth Sense Technology is a gestural interface device that uses to provide direct communication between physical world around and digital word. It consists of two main devices like camera and laptop .Basically it is working on the image processing. As this project is act as link between human sense and physical world around its name as sixth sense technology. This technique here is used in computation and day to day work. Automation. Images capture by camera are used to gather digital information used to communicate with physical world

Keywords: Sixth Sense Technology**,** Gesture Detection, Color Detection, Six sense technology, interact with things, human robot

I. INTRODUCTION

Technology is continuedly evolving to which innovations are introduce very frequently in todays world. One of these innovation six sense technology. This technology was developed by Pranav Mistry, a PhD student in the Fluid Interfaces Group at the MIT Media Lab. 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 Information on anything we want from anywhere within a few moments! We will not only be interact with things but people also. This is a wearable "gesture based" device that augments the physical world with digital information. One can use natural hand gesture to interreact with digital world. Now our devices are so small like camera and Projectors which can be used to capture and process the images. The pointing position of camera is a major constraint in the image capturing and projected output efficiency and accuracy. Therefore the actions which we regularly perform in our daily life, are converted to commands and are trained to a speech IC .They are stored as a database in the integrated circuit and corresponding actions are performed when the speech is recognized from the user.

II. METHODOLOGY

2.1 SYSTEM OVERVIEW

Sixth Sense in scientific (or non-scientific) terms is defined as Extra Sensory Perception. Sixth Sense aims to more seamlessly collect extra digital information and used it in to daily day to day life. For decision making information from natural five sense is useful. This collected digital information is more use full It's a device seamlessly integrate Analog information with our everyday physical world. Basically six sense technology uses hand gesture to interact with digital world. The finger tip will have color markers and hence gesture perform will be captured by camera given to computer or mobile device. Conclusion or understanding from the images are used by computer for next process to perform

2.1.1BUILDING BLOCKS :

2.1.1.1CAMERA

It captures the image of the object in view and tracks the users hand gesture. The camera recognizes individuals, images, pictures, gestures that user makes with his hand. The camera then sends this data to a laptop for processing. Basically the camera forms a digital eye which connects to the world of digital information.

2.1.1.2LAPTOP

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

2.2 IMAGE PROCESSING

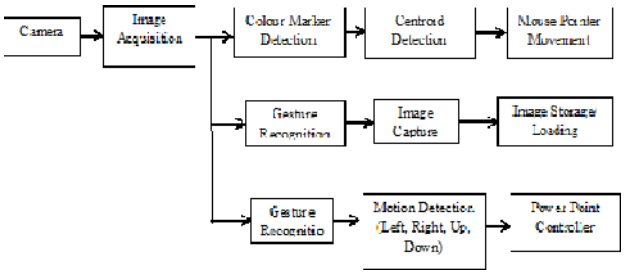

Figure.1. Image processing

Image processing Part
Above figure shows the image processing done in MATLAB. Following steps are done in MATLAB.

2.2.1 IMAGE ACQUISITION

Image obtaining is the activity of recovering pictures from source, normally an equipment based source, for example, camera.

Image Preprocessing:
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. After acquisition of image some preprocessing is done on acquired image.

3.2.2 Colour Marker detection

There are color markers placed at the tip of users fingers. Marking the user's fingers with red, yellow, green and blue colored tape helps the webcam to recognize the hand gestures. The movements and arrangement of these markers are interpreted into gestures that act as an interaction instruction for the projected application interfaces.

III. IMPLEMENTATION

3.1 Hardware Used

3.1.1Camera

Image is acquired by high-resolution web camera.
Following are the specifications of camera used.
I-Ball Robo K20 features
High Quality CMOS sensors.
8 M pixels still image resolution, 4 M pixels video resolution.
High quality 5G wide-angle lens.
USB 2.0 Interface.
4x Digital zoom
Video Format: RGB 24 bit
Video Resolution: 640x480, 1600x760, 1280x960, 1280x1024, 1600x1200, 2304x1728.
Frame Rate: 30 Frames per second.

3.2 SYSTEM SOFTWARE

MATLAB‟s Graphical User Interface Development Environment (GUIDE) provides a rich set of tools for incorporating graphical user interfaces (GUIs) in M-functions. Using GUIDE, the processes of laying out a GUI (i.e., its buttons, pop-up menus, etc.)and programming the operation of the GUI are divided conveniently into two easily managed and relatively independent tasks. Matlab Platform: The MATLAB allows to include thinkgear.dll. This environment has broad support in toolbox, which makes it ideal for a scientific research. This paper presents how recording and processing the raw EEG signal in MATLAB environment using Mind Wave sensor. The Communication Protocol, shows a system of digital rules for message exchange between MATLAB environment and Mind Wave device

IV. RESULT

4.1 To human needs and not the other way round. Hand gestures are used to communicate with digital.

4.2 Information, multi-touch and multi-user interaction are also supported. Data from machine is directly accessed into real time

4.3 It is open source and it is cost effective and map idea can be minded anywhere. Our relevant information is provided by the gesture controlled. 4.4 Wearable computing device that manipulates any surface into a display. It is portable.

V. CONCLUSION

This project discussed gesture detection can be used for computation application. Six sense technologies provides the smoot access of digital information in to the physical world. The ultimate power of Sixth Sense lies within the potential it holds to connect Internet with the real world.

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