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Computer Operations Using Hand Gestures (COUHG)

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Abstract: **- Over a period of time various developments have been made in the computer world for making user interaction simpler. From the original punch cards to mouse and keyboards, all the way to track pads, interfaces have evolved rapidly during the last few decades. The use of hand gestures provides an attractive alternative to cumbersome interface devices for human-computer interaction (HCI). In particular, visual interpretation of hand gestures can help in achieving the ease and naturalness desired for HCI. This has motivated a very active research area concerned with computer vision-based analysis and interpretation of hand gestures. Every interaction with the physical world involves some form of physical manipulation, which may be considered as a gesture. The system will capture these gestures to form a touch-free computer interface using techniques from computer vision.**

Keywords: **- Human-computer interaction (HCI), Computer vision.**

I. INTRODUCTION

Computer Operation Using Hand Gestures is a concept by which the aim is to control various computer operations and applications via hand gestures. The user performs a gesture in front of a camera, which is linked to the computer. The picture of the gesture is then processed to identify the gesture, indicated by the user. Once the gesture is identified corresponding control action assigned to the gesture is actuated. In this, various gestures such as thumbs up, a clenched fist, a victory symbol, etc. will be assigned specific tasks. The project aims to present an application which is designed for human computer interaction which uses different computer vision techniques for recognizing hand gestures for controlling various computer operations. The aim and objectives of this system is to use a natural device free interface, which recognizes the hand gestures as commands. The system will use a webcam which is used for image acquisition. To control the computer operations using defined gesture, the system will focus on some functions which are used more frequently. Thus the Human Computer Interaction (HCI) will be more intuitive, easy and convenient. Human hand gestures are a means of non-verbal interaction among people. They range from simple actions of using our hand to point at and move objects around to the more complex ones that express our feelings and allow us to communicate with others. To exploit the use of gestures in HCI it is necessary to provide the means by which they can be interpreted by computers. The HCI interpretation of gestures requires that dynamic and/or static configurations of the human hand, arm, and even other parts of the human body, be measurable by the machine.

II. OBJECTIVE

- The main objective of this project is to to present an application where different computer vision techniques for recognizing hand gestures will be applied to perform computer operations.
- This system aims to provide
- A natural device free interface.
- Intuitive.
- Easy.
- Convenient.

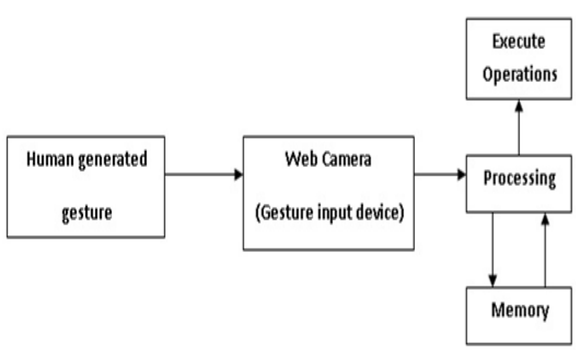
III. LITRATURE SURVEY

In [1] it is mean a paper was published in International Journal of Computer Applications named “A Vision based Hand Gesture Interface for Controlling VLC Media Player”. This paper was implemented with computer vision and gesture recognition techniques and develops a vision based low cost input device for controlling the VLC player through gestures. VLC application consists of a central computational module which uses the Principal Component Analysis for gesture images and finds the feature vectors of the gesture and save it into a XML file. The recognition of the gesture is done by K Nearest Neighbor algorithm. In [2] it is mean Hillcrest Labs invented Freespace motion-control technology and the first motion-controlled remote for television. Freespace allows users to control images on a screen by using natural motions, allowing for a new way of interacting with television content. It is currently used in several products, such as the Magic Motion motion-sensing remote controls that come with some of LG Electronics' televisions. Other licensees of Freespace include Logitech, Sony's videogame division, Roku, Universal Electronicsand Zillion TV Hillcrest also invented the first graphical zoomable interface for television and Kylo, the first Web browser optimized for television. In [3] it is mean 'SixthSense' project was developed by Pranav Mistry in which wearable gestural interfaces that augments the physical world around us with digital information and lets us use natural hand gestures to interact with that information. By using a camera and a tiny projector mounted in a pendant like wearable device, 'SixthSense' sees what you see and visually augments any surfaces or objects we are interacting with. It projects information onto surfaces, walls, and physical objects around us, and lets us interact with the projected information through natural hand gestures, arm movements, or our interaction with the object itself.

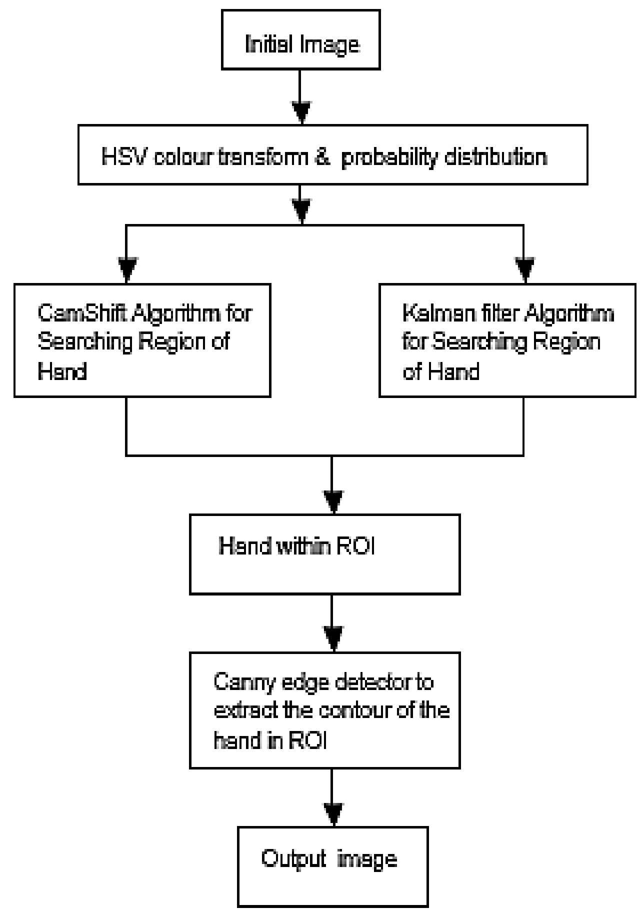
IV. PROPOSED SYSTEM

The system should provide the following functionalities:It should take in real-time video input from any camera connected to the system. It should efficiently detect the hand of the user and recognize the gesture performed by the user. After detecting the gesture, it should perform the desired operation. The system should run in the background and should not cause any interruption in the working of other processes.
The system should use minimum primary memory and processing power. The system should work in adequate lighting conditions and should detect gestures from a considerable distance from the user.

V. VISUAL ABSTRACT



VI. FLOW CHART



VII. CONCLUSION

Thus we have collected all the information about the COUHG (computer operation using hand gesture)we have reffered all the paper,books,reports on the related topic which are listed bellow.The main advantage of this system is to make device free interface,fast and efficient.The major disadvantage of this system is that it works only with gloves.We are also working on skin detection technology through which we can overcome the disadvantage.

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