FINGER GESTURE RECOGNITION USING LINEAR CAMERA

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Abstract - *Finger gesture recognition system is used for interfacing between computer and human using finger gesture. We wish to make a PC-based application for live motion gesture recognition using linear camera input . This project is combination of finger detection and gesture identification. This application uses the linear camera to detect gesture and perform basic operations accordingly. The user has to perform a particular finger gesture. The linear camera captures this and identifies the gesture, recognizes it and performs the action according to it. This application can be made to run in the background while the user runs other and applications. This is very useful for a hands-free approach as daily life. While it may not be of great use for browsing the web and writing a text document, it is useful in media player and while reading documents . An simple gestures could pause or play the movie or increase the volume even while sitting front of the computer screen. One could easily scroll through an presentation even while having lunch.*

Key Words: **Linear Camera, Gesture Recognition, Finger Tracking , Image Processing.**

1.INTRODUCTION

The finger gesture, during daily life, is a natural communication method mostly used only among people who have some difficulty in speaking or hearing. However, a human computer interaction system based on gestures has various application scenarios. For example, play games who intend to provide mouse- and keyboard-free experience; control robots in some environment, e.g. the environment underwater, where it is inconvenient to use speech or typical input devices; or simply provide translation for people who use different gesture languages.

Mouse operations using finger tracking is an image processing application that recognized the user's finger movements and maps them to cursor movement. All functionalities provided by a physical mouse can be implemented using this application.

Finger gestures provide a naturally immersive and user friendly way of interaction with the system. and gesture of the users are matched to mouse events in the system. This

enables the user to operate the system from a distance. It also eliminates the need for a physical connection to perform the same functionalities like that of a mouse. Thus problems such as unavailability of mouse, physical damage to touch-pads in laptops, weak connection of mouse to system, etc. can be eliminated.

1.1 Objective

➢ Objective of this project is to make an application that controls some specific functionalities of computer using finger gesturesvia integrated linear camera.

➢ The user can access his own condition at any time.

➢ This system is to be available at reasonable prices.

➢ finger Gesture recognition enables humans to communicate with the machine and interact naturally without any mechanical devices.

➢ Using the concept of gesture recognition, it is possible to point a finger at the computer screen so that the cursor will move accordingly.

1.2 Motivation

We had chosen this project with an interest of learning the direct interaction of humans with the consumer electronic devices . This takes the user experience to a whole new level. The gesture control technology would reduce our dependence on the age old peripheral devices hence it would reduce the overall complexity of the system.

2. Problem Statement

There are generally two approaches for finger gesture recognition, which are hardware based, where the user must wear a device, and the other is vision based which uses image processing techniques with inputs from a linear camera. The proposed system is vision based,

which uses image processing techniques and inputs from a linear camera. Vision based gesture recognition tracking and gesture recognition. The input frame would be captured from the linear camera and systems are generally broken down into four stages, skin detection, finger contour extraction, finger the skin region would be detected using skin detection. The finger contour would then be found and used for finger tracking and gesture recognition. finger tracking would be used to navigate the computer cursor and finger gestures would be used to perform mouse functions such as right click, left click, scroll up and scroll down. The scope of the project would therefore be to design a vision based system, which can perform the mouse function.

2.1 Existing System

In recent decades, due to computer software and hardware technologies of continuous innovation and breakthrough, the social life and information technology have a very close relationship in the twenty-first century. In the future, especially the interfaces of consumer electronics products (e.g. smart phones, games and infota1inment systems) will have more and more functions and be complex. How to develop a convenient human-machine Interface (Human Machine Interaction/Interface, HMI) for each consumer electronics product has become an important issue. The traditional electronic input devices, such as mouse, keyboard, and joystick are still the most common interaction way. However, it does not mean that these devices are the most convenient and natural input devices for most users. Since ancient times, gestures are a major way for communication and interaction between people. People can easily express the idea by gestures before the invention of language. Nowadays, gestures still are naturally used by many people and especially are the most major and nature interaction way for deaf people . In recent years, the gesture control technique has become a new developmental trend for many human based electronics products, such as computers, televisions, and games. This technique let people can control these products more naturally, intuitively and In case of existing system . The objective of this paper is to develop a real time finger gesture recognition system based on adaptive color HSV model and motion history image (MHI). By adaptive skin color model, the effects from lighting, environment, and camera can be greatly reduced, and the robustness of finger gesture recognition could be greatly improved.

2.2 Proposed System

The proposed system is a real time video processing that is based on a real time application system. This can replace one of the traditionally used input device i.e. mouse so that simply by using the finger gestures the user will be able to interact naturally with their computer.Thebasic block diagram of the overall proposed system is as shown below in the figure.
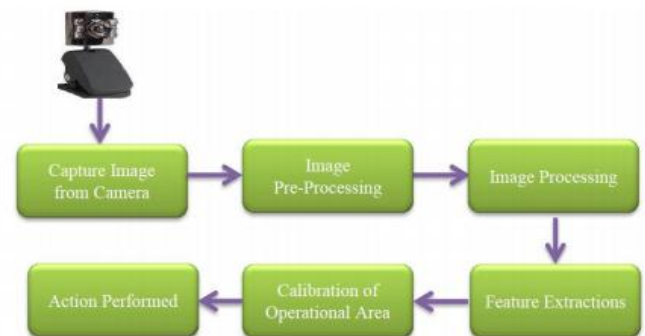

Fig -1: Basic Block Diagram

3. CONCLUSIONS

In This Paper, system for finger gesture recognition is developed the main objective of this to developed system that can recognize human generator gesture and make use of this data for controlling PC based application. This system is aimed to make access system environment simper so that person who are unaware about system can handed with few simple gesture command.

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