„GESTURE RECOGNITION BASED VIRTUAL MOUSE AND KEYBORD"

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ABSTRACT

will understand the gesture shown by the user and act accordingly. Now a days computer vision has reached its pinnacle, where a computer can identify its owner using a simple program of image processing. In this stage of development, people are using this vision in many aspects of day to day life, like Face Recognition, Colour detection, Automatic car, etc. In this project, computer vision is used in creating an Optical mouse and keyboard using hand gestures. The camera of the computer will read the image of different gestures performed by a person's hand and according to the movement of the gestures the Mouse or the cursor of the computer will move, even perform right and left clicks using different gestures. Similarly, the keyboard functions may be used with some different gestures, like using one finger gesture for alphabet select and four-figure gesture to swipe left and right. It will act as a virtual mouse and keyboard with no wire or external devices. The only hardware aspect of the project is a web-cam and the coding is done on python using Anaconda platform. Here the Convex hull defects are first generated and then using the defect calculations an algorithm is generated and mapping the mouse and keyboard functions with the defects. Mapping a couple of them with the mouse and keyboard, the computer

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INTRODUCTION

The Computer webcam is capturing the video of the person sitting in front of the computer, there will be a small green box which will be generated in the middle of the screen. In that green box, the objects shown will be processed by the code and matched with it if it matches then a red colored border will be generated, which means the computer has identified the object and then by moving the object the mouse cursor can be moved. This will not only help in the security of the computer but also help in generating a virtual computational experience. Here in the place of different objects, using hand gestures one gesture will be moving the cursor, the different gesture will be used for right click and different for left click, similarly with a simple gesture can do the keyboard functions virtually that may have been done on some keyboard as a physical aspect. It the gesture does not match the box will show an only green box when the known gesture is observed a red border will occur.

A mouse, in computing terms is a pointing device that detects two-dimensional movements relative to a surface. This movement is converted into the movement of a pointer on a display that allows to control the Graphical User Interface (GUI) on a computer platform. There are a lot of different types of mouse that have already existed in the modern days technology, there's the mechanical mouse that determines the movements by a hard rubber ball that rolls around as the mouse is moved. Years later, the optical mouse was introduced that replace the hard rubber ball to a LED sensor to detects table top movement and then sends off the information to the computer for processing. On the year 2004, the laser mouse was then introduced to improve the accuracy movement with the slightest hand movement, it overcome the limitations of the optical mouse which is the

difficulties to track high-gloss surfaces. However, no matter how accurate can it be, there are still limitations exist within the mouse itself in both physical and technical terms. For example, a computer mouse is a consumable hardware device as it requires replacement in the long run, either the mouse buttons were degraded that causes inappropriate clicks, or the whole mouse was no longer detected by the computer itself.

LITERATURE SURVEY

Research on the Hand Gesture Recognition Based on Deep Learning with the rapid development of computer vision, the demand for interaction between human and machine is becoming more and more extensive. Since hand gestures are able to express enriched information, the hand gesture recognition is widely used in robot control, intelligent furniture and other aspects. The paper realizes the segmentation of hand gestures by establishing the skin color model and AdaBoost classifier based on haar according to the particularity of skin color for hand gestures, as well as the denaturation of hand gestures with one frame of video being cut for analysis. In this regard, the human hand is segmented from the complicated background, the realtime hand gesture tracking is also realized by Cam Shift algorithm.

PROPOSED SYSTEM

Activity Diagram
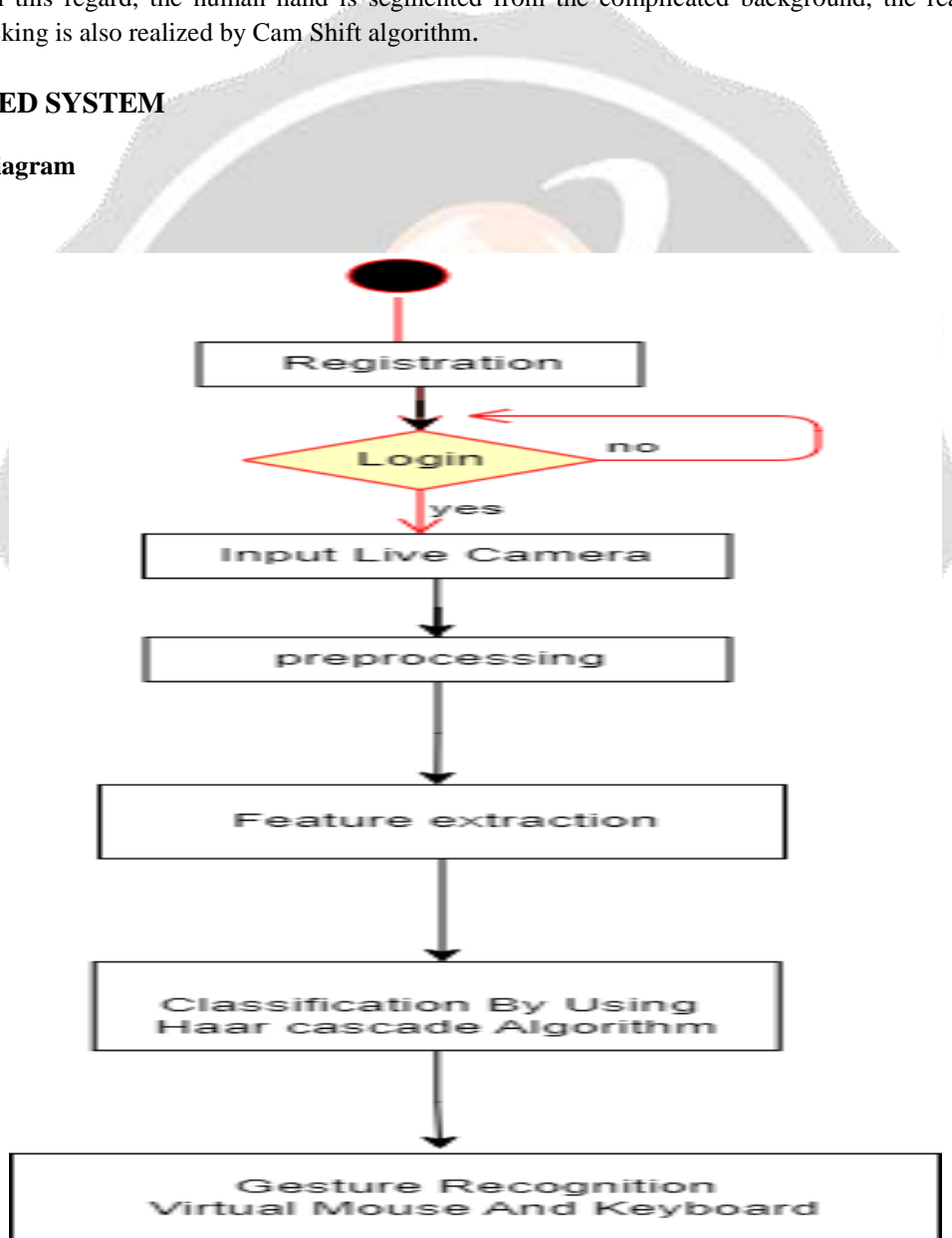
In the Unified Modeling Language, activity diagrams are intended to model both computational and organizational processes (i.e workflows), as well as the data flows intersecting with the related activities.

Although activity diagrams primarily show the overall flow of control they can also include elements showing the flow of data between activities through one or more data stores.

METHODOLOGY

The single problem can be solved by different solutions. This considers the performance parameters for each approach. Thus considers the efficiency issues. The overview of the hand gesture recognition system (as shown in Fig. 1) consists of the following stages. The first stage is the hand gesture image capture stage where the images are taken using digital camera under different conditions such as scaling, translation and rotation. The second stage is a pre-processor stage in which edge detection, smoothing, and other filtering processes occur. In the next stage, the features of the images of hand gesture are extracted using two methods, namely, hand contour and complex moments. The last stage is the classification using Haar Cascade Algorithm.

FUTURE SCOPE

To this project will Design and create a system which can identify Specific human gestures and use them to control.To in gesture recognition technology a camera reads the movements of the human body and communicates the data to a computer that uses the gestures as input to control devices of application

CONCLUSION

This project is proposing a system to recognize the hand gesture and replace the mouse and keyboard function. That includes the movement of the mouse cursor, the drag and click with the keyboard features like printing alphabets and other keyboard functions. The process of skin segmentation is utilized to separate the colour/image of hand with its background. Remove arm method, which effectively solves the situation of taking into the whole body into the camera. In general, the proposed algorithm can detect and recognize hand gesture so that it can operate mouse and keyboard features and also create a real world user interface. 3d printing, Architectural drawings and even doing medical operations from anywhere to everywhere. This project can be easily applied and its application can be very vast in medical science where computation is required but could not fully be implemented due to lack of human computer interaction..

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