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Gesture Recognition Based Virtual keyboard and Mouse

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Abstract: *People are use the vision in many aspects of day to day life, like Face Recognition, Color detection, automatic car etc. To eliminate the need of physical keyboard while interact with computer system use Webcam to detect the gesture with minimize interference of the keyboard for that image processing technique is used. In image processing technique image as an input. Linear regression algorithm is an ML algorithm used for supervised learning. Paper presents results of Linear regression algorithm is an ML algorithm used for supervised learning Results show the motion of hand will be captured with the recognized keyboard and then it will be typed onscreen keyboard*

Key Word : *Gesture Detection, Machine Learning.*

I.INTRODUCTION

A keyboards and mouse have been the main input devices for computers. However, with the rising popularity of ubiquitous and ambient devices, (i.e. PlayStations), and equipment which allows users to grasp virtual objects, hand or body gesture are becoming essential: gesture controls have become central to the human computer interaction system[1].Gesture Recognition is a technology that usessensors to read and interpret hand movements as commands. Gesture control technology is based on gesture recognition.Gesture recognition can be seen as a way for computers to begin to understand human body language[2]. Compared to the primitive user interfaces, such as keyboard and mouse, it builds a richer bridge between the computers and humans. Gesture control devices recognize and interpret human body movements, allowing the user to interact with a computer Gestures[3].

Some hardware, such as the mouse, the dongle to connect to the PC, and a battery to power the mouse to function, are utilised when using a wireless or Bluetooth mouse, but in this article, the user uses his or her built in camera or webcam and uses hand gestures to control the computer mouse operations[4]. The web camera in the suggested system records and analyses the acquired frames, detects the various hand motions and hand tip gestures, and then performs the specific mouse operation. This system has the implicit to replace the typical mouse and also the remote regulator of machines[5][6].

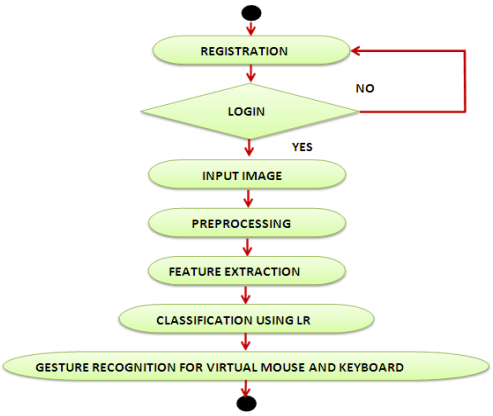
In particular, people with severe movement disabilities may have physical impairments which significantly limit their capability to control the fine motor. thus, they may not besuitable to class and communicate with a normal keyboard and mouse[7]. Hand gesture recognition is of great importance for human computer interaction (HCI) because of its extensive applications in virtual reality and sign language recognition etc.Human hand is very smaller with very complex articulations comparing with the entire human body and therefore errors can be easily affected. Gesture are easier representation, makes the presentation attractive, Quick expressing of message, etc.[9].Gestures are non-verbal communications. It can make the information to be presented easily via audio, visual, or even through silent. It is usually a substitute of verbal based Communication[8].

II.LITERATURE REVIEW

To Increase the typo rate due to a lack of tactile feedback and degrade the usability of mobile devices due to their large portion on screens uses deep neural decoder (DND).[1] These individuals need augmentative and alternative communication tools, since they may have only the eye movements as a form of communication and interaction with the outside world[2].The demands for 3D models have been increased due to high involvement in animated characters, virtual reality and augmented reality[4] The demands for 3D models have been increased due to high involvement in animated characters, virtual reality and augmented reality[5][3] Arule classifier is applied to predict the labels of hand gestures. The experiments on the data set of 1300 images show that our method performs well and is highly efficient[6]

In this paper, color is used as a robust feature to first define a Region of Interest (ROI). Then within this ROI, hand postures are detected by using Haar-like features and AdaBoost learning algorithm[7]. . They work oncolor identification, gesture identification and virtual mouse Without any use of sensor or gloves they can achieve the results by using of Open cv operations[9][8]

III. METHODOLOGY



If you are the new user then you have to register yourself by filling your details. If you are an existing user then you have to login. After that the application will take three images as an input to perform the operations i.e Face capture, Eye capture, Hand capture. The next step is Preprocessing the steps to be taken are Read image, Resize image, Remove noise, Segmentation, Morphology.

The technique of extracting the features is useful when you have a large data set and need to reduce the number of resources without losing any important or relevant information. The last step is the keyboard letters are displayed according the user's hand gesture.

Linear Regression Algorithm: Linear Regression is a machine learning algorithm based on supervised learning. It performs a regression task. Regression models a target prediction value based on independent variables. It is mostly used for finding out the relationship between variables and regression models differ based on – the kind of relationship between dependent and independent variables they are considering, and the number of independent variables getting used.

IV. RESULT

Fig (a)

Fig (b)

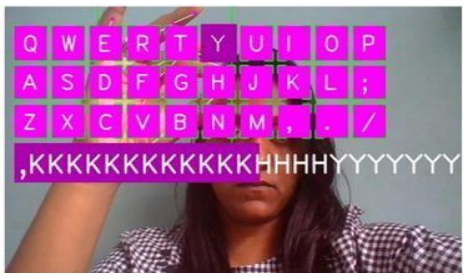


Fig (c)

Fig (d)

In the fig shows the main page if user is already registered thenonly login otherwise it will be registered first. Then choose option for recognizing the keyboard. Virtualkeyboard is on your screen give the correct gesture to type.
And lastly you can exit.

V.CONCLUSION

This research paper is proposing a system to recognize thehand gesture and eyes motion replace the keyboard and mousefunction. Right now our two objectives image processing andgesture recognition based virtual keyboard have been satisfied In future work we have completed remaining objectives. Theproposed algorithm can detect and recognize hand gesture sothat it can operate mouse and keyboard features and also createa real world user interface.

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