ISSN No:-2456-2165

Real Time Feature Based Face Detection and Tracking Cursor

[1.] Ruchika Bankar, Computer Dept., G.H. Raisoni Institute of engineering & Technology, Pune
[2.] Rutuja Gaikwad , Computer Dept., G.H. Raisoni Institute of engineering & Technology, Pune
[3.] Prajakta Bhapkar, Computer Dept, G.H. Raisoni Institute of engineering & Technology, Pune
[4.] Kanchan Barule, Computer Dept, G.H. Raisoni Institute of engineering & Technology, Pune

Abstract- Human vision is, without a doubt, the most crucial sense. As a result, visual information is frequently used to guide our behaviour and thinking. When attempting to conduct complex information, particularly in scenarios involving humans, it is quite helpful if some information can be gleaned from photos. Computer vision has now advanced to the point where a computer can recognise its owner using a simple image processing method Image processing and computer vision are two fields related to one other. This project makes use of the OpenCV library. It's also compatible with the Python programming language. The library contains both simple and complicated image processing techniques. Face detection is one of them, and it can be done in Python using the OpenCV library. In this case, computer vision is used. Hand gestures will be used to generate an optical mouse and keyboard. The camera on the computer will scan the area. The mouse or pointer will move in reaction to the various movements made by a person's hand. Many people are becoming incapacitated as a result of hand and other infirmities, making it impossible for them to use a keyboard or mouse. So, for impaired people, we considered vision, which may be used to manage a computer using a mouse and keyboard.

Keywords- *Eyes Gesture Control System ; Mouse Cursor; Eye Tracking Systems; Webcam; Eye Mouse; Webcam; Eye Movement, Harr-Cascade Algorithm.*

I. INTRODUCTION

The eye gesture control system interacts directly with human eyesight before controlling the machine. Eye gesture is a real-time gesture assurance programme that uses the user's eye gestures to operate a computer mouse cursor. Individuals with at least one eye with adequate vision and the ability to manipulate the computer are the only requirements for using the mouse system. Adults and children with cerebral paralysis, spinal rope wounds, mental wounds, ALS, multiple sclerosis, brainstem strokes, and other conditions can use it. Homes, companies, schools, health centres, and long-haul mind offices can all benefit from an eye gesture control system. A user can run computer software, operate a computer mouse, and access the internet and email by looking at the control of a system that is displayed on a screen. Provide a low-cost eye-tracking technology for controlling a computer's cursor with your eyes. Allow persons who are physically impaired to utilise computers. To communicate with other systems and control a computer. To create a technology that allows users to manipulate their eyes in real time. To provide a mouse control system that does not require the use of one's hands. To create a fully functional eye-gesture mouse control system. To provide a complete mouse control system without the usage of wires. Mouse cursor movement is simple to control.

II. LITERATURE SURVEY

[1] Same hardware requirements are used. But, it uses a simple local logarithm for face detection that results in low performance and limiting its functionalities and they suggest the growth in the field of Human Computer Interaction (HCI) that focuses on providing an interface between human and computer which plays a vital role in development of technology. It says there is a need to come up with a alternate approach to make communication between computer for people with physical impairment, taking the cost and convenience into consideration we have used the laptop camera itself for capturing images and using as a Haar cascade classifier algorithm which is quite accurate and advanced algorithm to find the facial vectors. This was proposed by Sivasangari, A., D. Deepa, T. Anandhi, Anitha Ponraj, and M. S. Roobini. "Eyeball based Cursor Movement Control."(2020)

[2] According to Khare, Vandana, S. Gopala Krishna, and Sai Kalyan Sanisetty. "Cursor Control Using EyeBall Movement. (2019) personal computers have become an inevitable part of our day to day life and the freedom to use computer by anyone is restricted by their physical abilities in order to overcome such differences they used a raspberry pi and OpenCV and a external camera to obtain images and used it to detect facial features which is a quite straightforward method to graph eyeball movement to cursor movement and also quite expensive due to the additional hardware.

[3] S. Mathew et al. suggest a concept for controlling household appliances for impaired individuals in their proposed publication. Individual eye movement is tracked using an eye tracking technology, which is then followed by a simple circuitry. In this system, HOG is used to determine the image's Histogram, and SVM is used to detect the face. The iris portion of the image is cropped, and then some points in the eye are targeted, and the movements of those points map the cursor movements. It's a training-based method that relies on image processing for all of its operations.

ISSN No:-2456-2165

[4] Article of Bukhalov, Aleksei, and Viktoriia Chafonova. "An eye tracking algorithm based on hough transform." (2018) uses an infrared camera and a pc to capture the images of the user and uses the feature-based and model-based approach algorithm to detect the pupil radius. In their proposed system they used the circular hough transform to detect the pupil and they have used the keyword technology.

[5] A virtual mouse with fingertip identification and hand motion tracking based on image in a live video is one of the research projects in human-computer interaction. This study proposes using fingertip identification and hand motion recognition to control a virtual mouse. In this experiment, two methods for tracking the fingers are used. The employment of coloured caps is one approach, while hand motions are another. The three main stages are finger detection via colour identification, hand gesture tracking, and implementation on the on-screen cursor.

III. PROPOSED SYSTEM

The suggested system's goal is to identify emotion using face cues. However, cropping the eye is all that is required during the preprocessing stage. region and seize the distinctive value, resulting in emotion recognition outcomes were found to be lower. To his method must be improved in order to improve accuracy transformed. Mouth is used to increase precision. Haar Cascades are used to add features. The Haar is a small town in the Netherlands. The cascades approach is used to determine whether a face is real or not exists in the photographs, and if the face does not appear in the images, then go back to the beginning and enter the image frames. In the event that face is there, but the eyes and mouth must be found, as well as the eye. It's necessary to crop the mouth and nose regions.

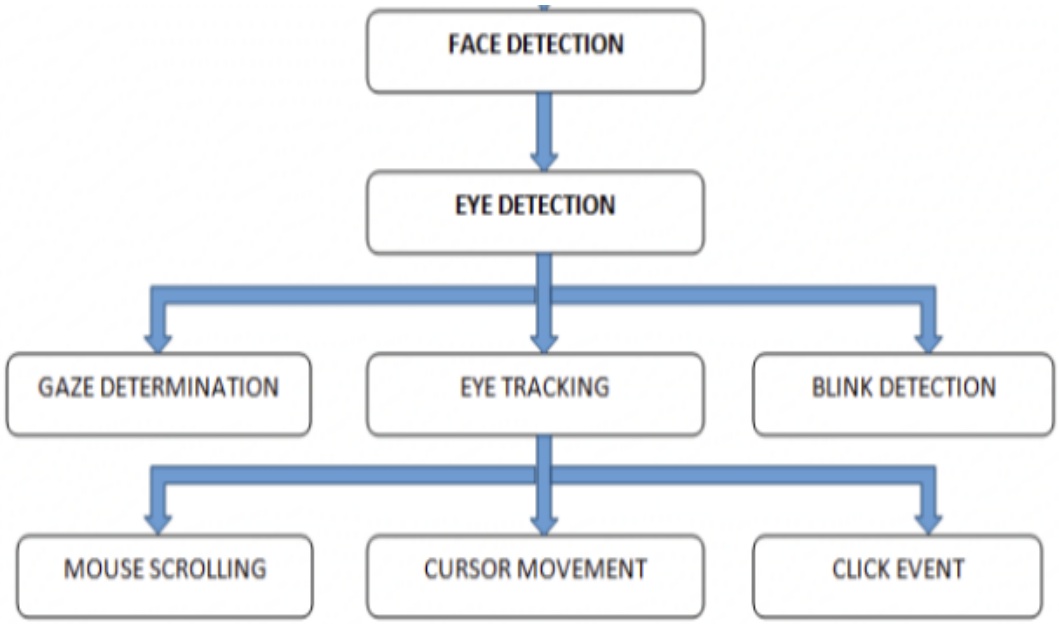

Fig 1:- System Overview

1. Work On System: In this approach, a python-based system called imouse is created. It will first activate the camera and begin recording video; video is made up of frames; it will then select a frame and convert it to a grayscale image; as images are converted to binary form, it gets easier to discern items from that image. It will then use Haar-cascade to detect the face. Haar cascade is a cascade function that detects objects from other photos after being trained on a large number of positive and negative images. It will detect the face in the provided picture, crop that frame, and send it on to be processed further. It will then use the obtained frame to detect eyes.
2. System Analysis and Evaluation: We begin by presenting the working group's findings. Haar cascade functions are used in this contour detection approach.
3. HaarCascade Algorithm: In this algorithm, the system p erforms two functions: it detects the person's face and ey es, and it shows the face cascade function. Facecascade i s used to detect the user's face from an image. It crops th e image and draws a box around the face for further processing. It recognises the user's eyes f rom the image after we extract the face from it.

ISSN No:-2456-2165

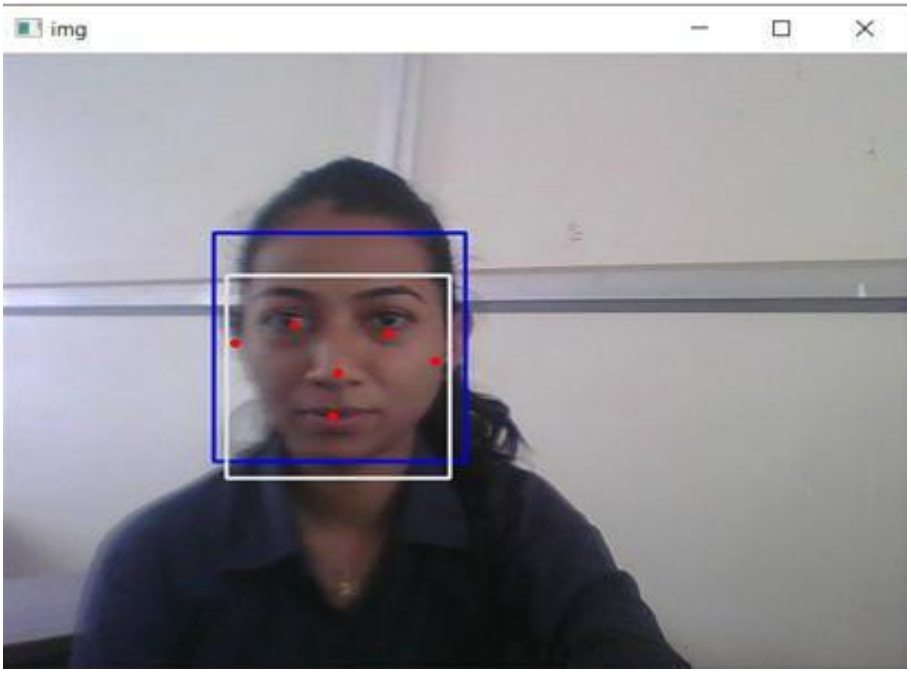

Fig 2:- Eye Detection

IV. 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 couldn't fully be implemented due to lack of human computer interaction. system that recognises hand gestures and eliminates the need for a mouse and keyboard. This includes mouse cursor movement, drag and click, and keyboard features such as printing alphabets and other keyboard tasks.

V. FUTURE SCOPE

The development of hands-free computing is centred on controlling computer systems with eye movements. The implementation of various movement-based human-computer interface strategies. The mouse cursor is controlled by eye movement, and the Viola Jones method is utilised to handle mouse pointer movement and click actions. Because human-computer interaction-based software can be very valuable in the sphere of modern technology, the work provided above has a very broad future potential. This project's various scopes could include driving cars using eye motions and operating other digital appliances with body movements.

REFERENCES

[1]. A. Sivasangari., D. Deepa., T. Anandhi., A. Ponraj and M. S. Roobini., "Eyeball based Cursor Movement Control," 2020 International Conference on Communication and Signal Processing (ICCSP), 2020, pp. 1116-1119, doi: 10.1109/ICCSP48568.2020.9182296.

[2]. V. Khare, S. G. Krishna and S. K. Sanisetty, "Cursor Control Using Eye Ball Movement," 2019 Fifth International Conference on Science Technology Engineering and Mathematics (ICONSTEM), 2019, pp. 232-235, doi: 10.1109/ICONSTEM.2019.8918780.

[3]. S. Mathew, A. Sreeshma, T. A. Jaison, V. Pradeep and S. S. Jabarani, "Eye Movement Based Cursor Control and Home Automation for Disabled People," 2019 International Conference on Communication and Electronics Systems (ICCES), Coimbatore, India, 2019, pp. 1422-1426,2019

[4]. A. Bukhalov and V. Chafonova, "An eye tracking algorithm based on hough transform," 2018 International Symposium on Consumer Technologies (ISCT), 2018, pp. 49-50, doi: 10.1109/ISCE.2018.8408915.

[5]. Imperial Journal of Interdisciplinary Research (IJIR) Vol-3, Issue-4, 2017.