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RETINA BASED MOUSE CONTROL

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ABSTRACT

This system identifies the focus of an individual's gaze within his/her field of vision. Eye tracking system have been primarily used in research systems to investigate the visual behaviour of individuals performing a variety of tasks. Knowing the user's point of gaze has significant potential to enhance current human-computer interfaces, given that eye movements can be used as an indicator of the vigilance state of a user. Users can explicitly control the interface though the use of eye movements. For example, eye gaze tracking can be used to for controlling the GUI for a disabled person.

I. INTRODUCTION

Recently there has been a growing interest in developing natural interaction between human and computer. Several studies for human-computer interaction in universal computing are introduced. The GUI technique in matlab software extracts motion information without any high cost equipments from an input video image. Thus, GUI approach is taken into account an effective technique to develop human computer interface systems.The software should do and accurate detection and tracking with minimum running time. We are using simple webcam .Eye detection and is divided into three major steps. Face zone detection and tracking,eye area detection and third is finding the retina in the eye area.

II. HEADING

1.1 Software Platform:

MATLAB

(GUI Designing.)

1.2 Proposed System Description:

The proposed system consists of following blocks:

1.2.1:Image Acquisition: A video camera is mounted in front of the user and on the top of the display device to continuously capture the video of the driver.

1.2.2:Face Detection: Firstly, the System has to detect the face of the user which is basically in RGB format.

1.2.3:Eyes Detection: The GUI framework is used for eye localization.

1.2.4:Eye Template Creation: Binary Template of cropped eye image is created for further processing.

1.2.5:Retina Position Estimation: The position and movements of the extracted pupils are obtained frame by frame.

1.2.6:Controlling the Cursor: Depending on the Direction of the pupil the corresponding action in the computer is taken.

1.3: Procedure

A complete procedure is presented that moves the mouse from one place to another on desktop through user's eyes movement. Before the processing for the movement of mouse begins, detailed processing is presented below:

1. Camera receives the input from the eye.
2. After receiving these streaming videos from the cameras, it will break into frames.
3. After receiving frames, it will check for lighting conditions because cameras require sufficient lights from external sources otherwise error message will display on the screen.
4. The captured frames that are already in RGB mode are converted into Black 'n' White.
5. Images (frames) from the input source focusing the eye are analyzed for Iris detection (centre of eye).
6. After this, a mid point is calculated by taking the mean of left and right eye centre point.
7. Finally the mouse will move from one position to another on the screen and user will perform clicking by blinking their eyes for 5 seconds.

We have allocate four points for cursor movement that is Image A for right side movement of cursor ,B for left side, C for up side and D for down side. After recognizing this eye movement by the software it gets tilt and then we can say that cursor movement is done.

1.4: FLOWCHART

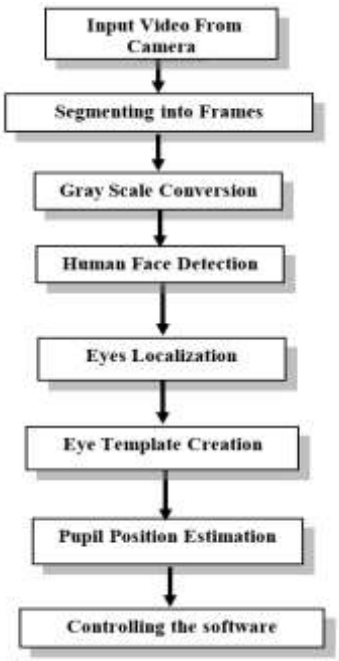

Fig.1.4.1

III.FIGURES

1. Detection of face from the video input which is capturing through webcam.

Fig.a

2. Detection of eye zone from the Face.

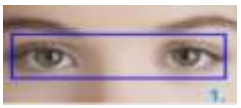

Fig.b

3. Conversion of that captured eye zone which is in RGB image format into blach and white image.

Fig.c

4. .Detection of Retina and its movement.

Fig.d

5.GUI allocation points for cursor movement.

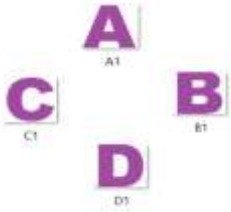

Fig.e

After click on above points , the specific letter will get tilt. This is shown in fig.f

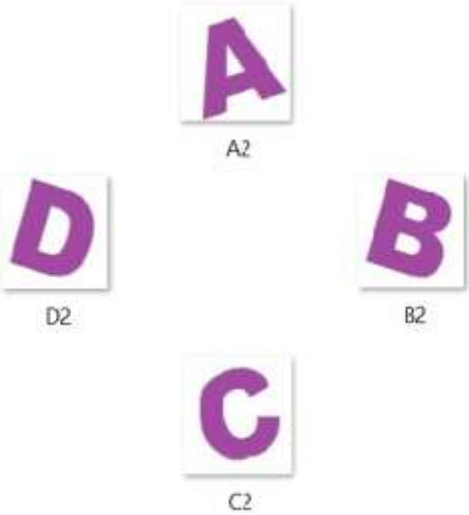

Fig.e

6. Binary images of eye

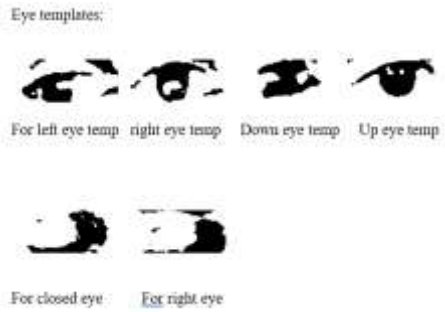

Fig.f

IV. CONCLUSION

The paper focuses on the hand free interaction with computer system. To do this the proposed system is implemented successfully and movement of mouse is implemented by eye. The movements of mouse cursor were implemented using GUI technique in Matlab software. Therefore proposed system is successfully implemented.

V. ACKNOWLEDGEMENTS

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