Real Time Face Detection For Mouse Movement

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Abstract: We are studying a system that track a human face. The main purpose of this project is to help handicap people who has hand disability or the people who can't use their hands for using a mouse. This System can make interaction with computer system for handicap people. This system uses a face tracking algorithm to scan the face and to perform the action. This project aims to help people to overcome their disabilities of hands. Using facial expressions we can move cursor and can perform the action of the mouse The eyes can be used as a right click and left click while movement of face can be used to move the cursor. This System should be able to start and initialize itself with minimum knowledge about the environment, this system should be perform in different environments .The face is scanned by SSR filter, in which two segment are used to detect eyes and one segment is used to detect the nose and other segment are used to detect other facial Expressions.

Keywords: Six Segmented Rectangular(SSR)

I.   INTRODUCTION

Technology of Computer System have highly progressed in recent years and also becomeless expensive due to availability of high speed processor and web cameras because ofthis. people have become interested in real time applications that involves image processing with the use of artificial Intelligence in Human computer Interface which is design in sucha way that it uses human gestures in order to interact with the computer system. The sensor captures the desired facial features with the web cameras and monitor its action in order to communicate with the computer. This project is specially made for disable people who hashand disabilities and therefore unable to use the mouse. In this project the application is made in a such a way that the sensor scans the face and uses the facial gestures to communicatewith the computer system. Which will help the disable people to use the computer In this app facial things like nose eyes face etc. is scanned and recorded in the memory.Once the scanning is complete the working of the application starts The nose is being scanned first because as we know the nose is situated in the middle of the face it becomes easy for the webcam to scan the face and easily helps to note down the coordinates of the face. The application helps the person to move the mouse cursor with the help of their facial expressions Like moving face towards right to move the cursor in the right direction. Also the eyes Gestures can be used as a right click of the mouse. With the help of eyes a person can Right click on files using eyes gesture like blinking of an eye can perform such action. we can use the right eye to right click of the mouse and the left eye will refer to the left click of the mouse. This project is to help people who has a hand disabilities.

II. LITERATURE REVIEW

Today with increasing number of researches are mostly concentrating on the topics of computer visions. computer vision is considered today as a field with an increasing no of commercial applications in area such as medicine manufacturing and even toys. Research on the latest domains that of face detection , facial feature extraction /tracking and eye blink detection a brief survey follows.

Face detection

The approach of face detection is distinguished in two main categories feature based and image based . the former techniques are based on the common properties of human faces, such as geometry or skin colour, the latter techniques instead consider face recognition as a more general pattern recognition problem.

Feature –based approach

These are based on the motion that the colour of human skin is always between a certain range , regardless of the ethnic origin of a person .

The image is searched for contiguous pixels with a particular class of colour and, after having determined the boundary of a face, it is extracted from the image.

Image-based approach

With the image based approach, the human face is considered as a pattern that can be learned from studying examples. Therefore, precise knowledge of facial characteristics is not required. This eliminates errors caused by the use of an inaccurate or incomplete face model.

III . BLOCK DIAGRAM
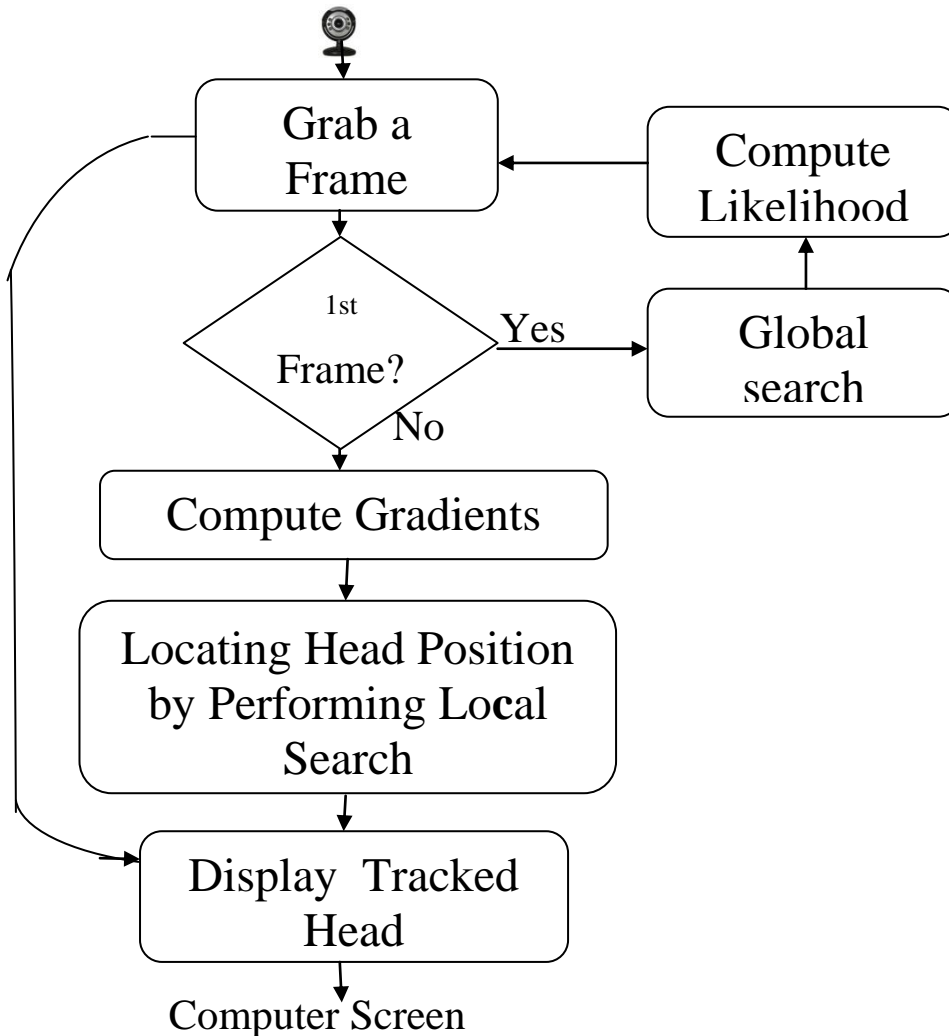
IV . WORKING EXPLANATIONS

TRACKING LAYER

The Tracking Layer is responsible for encapsulating All the algorithm functions regarding tracking in a single library, it hides all the complexity from the other layer exposing only the high level functions.Its purpose is to provide a face tracker robust enough to be usable in basically noisy environments and without perfect lighting conditions. The tracking mechanism must be able to deal efficiently with the natural behaviour of a computer user in every environment

FACE DETECTION

The systems need the ability to understand when it requires initialization i.e. whenever a user appears in front of the camera. The frames provided real time by the camera are continuously scanned in order to identify the number of faces in visual spectrum, each time a single face is detected its location is calculated and passed to the feature identification algorithm.The approach used is a image based face recognition technique based on a neural network of Haar faces. The network is trained using a set of frontal faces.

Feature Identification:

The technique created is based on four steps

- Retrieve face location
- Identify eyes

- Remove unwanted areas of face
- Identify good feature for tracking

Movement Tracking:
The real-time video clip provided by camera is analyze frame by frame in order to detect the movement of each single feature.

Eye Blink Detection:
The technique used to detect the eye blinks is entirely base on the movements ofeyelids which can be detected using a camera.

Client Layer:
The main aim of this layer is to make available the GUI so that the user can manage options and all the functions of the operating system.

(a) Gazing at Right Lowermost Position of Monitor

(b) Gazing at Center Position of Monitor
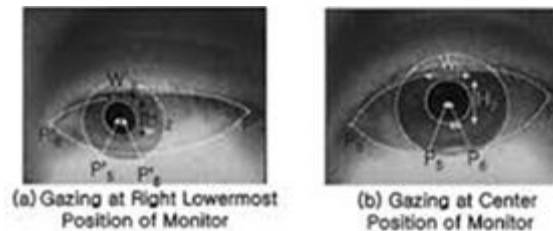
CONCLUSION

The camera mouse with ability to replace all mouse and keyboard functions has been studied. By using timer and blinking a user can successfully do left right click events, drag and drop event. Combination between timer and blinking as left and right click events can reduce fatigue because timer can be used more than blinking, so timer is suitable for replace left click and right click events. So after implementing this system, handicapped person can also use computer completely.

ACKNOWLEDGEMENT

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