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Look based Media Player

Deepika Nadar[1], Suma Acharya[2], Sarvesh Parab[3], Akhil karkera[4]
[1, 2, 3, 4]*Department of computer engineering, St. John College of Engineering & Management, Palghar, Mumbai, Maharashtra, India.*

Abstract- Advance technologies are the key factor of todays upcoming world, thus developing an advanced Media player which plays and pauses the video by detecting the users face. System tries to capture whether the user is looking at the screen or not with the help of web camera. Hand gestures plays a crucial role in increasing and reducing the volume. Look based media player can also work on dim light version. look based media player also works as the field of computer vision based on hand gesture interfaces for Human Computer Interaction (HCI).look based media player works on different features that are face detection ,hand gestures and voice modulation. currently we have proposed to built a prototype which gives a accurate results in terms of performance. This media player also helps the user to have better experience in daily life. It also helps with the user friendly performance.
Keywords- media player, face detection ,hand gestures ,voice modulation, camera, HAAR ,HMM .

I. INTRODUCTION

Usually while watching a video when someone interrupts you and you have to look somewhere else or go away from the system for some time so you miss some part of the video. Subsequently you need to drag back the video from where you left. Well we got a solution to this problem. A media player that gets paused when user is not looking at it. The media player resumes again as soon as the user looks at it again. A web camera is a part of this process. The media player will be played continuously as long as the camera detects the users face. This system also provides the feature of controlling other functions of media players such as play, pause, volume up, volume down, next using hand gestures and voice modulation helps to change to a new video. Direct use of hands as a input device is an attractive method for improving natural Human Computer Interaction which has evolved from text based interfaces from 2D graphical based interfaces , multimedia supported interfaces ,to fully fledged multi-participant Virtual Environment systems. This enhanced media player can help in minimizing human efforts. In future, this technique can Get better experience of using media player.by Not missing any part of video etc.

II. ALGORITHM

A. Haar Cascades

The working of face detection is done with the help of using Haar cascades invented by Viola,.P.Jones, M. The algorithm needs a lot of positive images (images of faces) and negative images (images without faces) to train the classifier. Then we need to extract features from it. Features are nothing but numerical information extracted from the images that can be used to distinguish one image from another; for example, a histogram (distribution of intensity values) is one of the features that can be used to define several characteristics of an image even without looking at the image, such as dark or bright image, the intensity range of the image, contrast, and so on. The core basis for Haar classifier object detection is the Haar-like features. These features, rather than using the intensity values of a pixel, use the change in contrast values between adjacent rectangular groups of pixels. The contrast variances between the pixel groups are used to determine relative light and dark areas. Two or three adjacent groups with a relative contrast variance form a Haar-like feature.

$$f_i = \text{Sum}(r_{i,\text{white}}) - \text{Sum}(r_{i,\text{black}})$$

h(x) = 1 if f_i > threshold.

= -1 if f_i <threshold.

Haar-like features, as shown in Figure A are used to detect an image . Haar features can easily be scaled by increasing or decreasing the size of the pixel group being examined. This allows features to be used to detect objects of various sizes. We will use Haar features to detect faces in an image. Here is a figure showing different Haar features:

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III. BLOCK DIAGRAM

The diagram mainly consist of,

A. Face recognition
B. Hand gesture recognition
C. Voice modulation

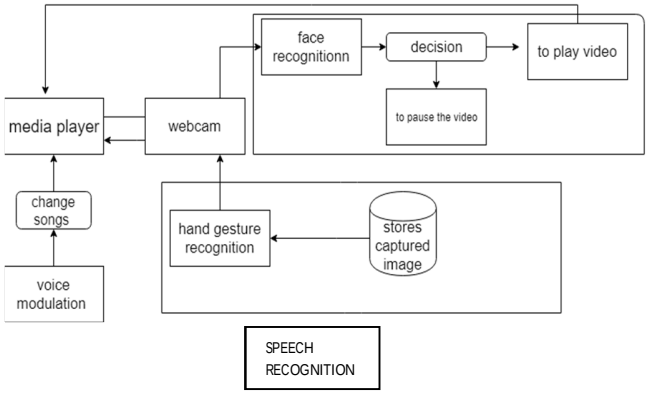

Fig 1: Block Diagram

A. Speech Recognition

We are also using Speech Recognition in our project. The media player will work on voice commands, For eg. If a voice command is given like play then the media player will play video, if it says pause then it will pause the video,and if it says play the previous one then it will play the desired clip and vice versa .Hidden markov algorithm is used where a raw speech is transmitted to it a text signals are generated.When Associate in Nursing HMM is applied to speech recognition, the states are interpreted as acoustic models, indicating what sounds are likely to be heard during their corresponding segments of speech;while the transitions offer temporal constraints, indicating how the states may follow each other in sequence. Viterbi algorithm, useful for continuous speech recognition.

B. Hand Gesture Recognition

Originally for the task of face tracking and detection, Viola and Jones proposed a statistical approach to handle the large variety of human faces. In theiralgorithm, the construct of “integral image” is employed to reason an expensive set of Haar-like options. There is a data base in which various hand gestures are stored. When a user shows a particular hand gesture to the application, the application searches the particular hand gesture in the database and then provides the output. The ge sture will be mapped according to the gray level values. every gesture has different task to be performed .Gesture could be a image of physical behavior or emotional expression.It includes body gesture and hand gesture.It falls into 2 categories: static gesture and dynamic gesture.

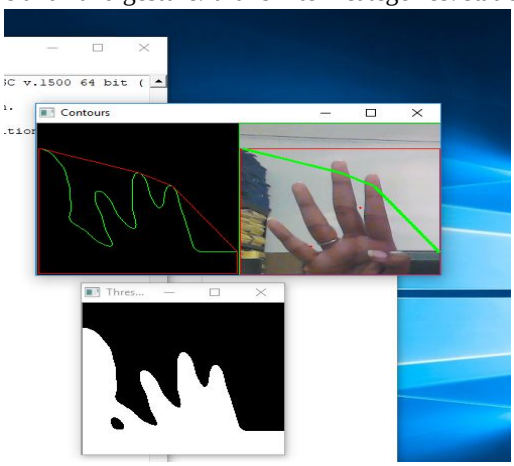

Fig 2: Hand Gesture

Compared with different approaches, that should care for multiple image scales, the integral image can do true scale invariableness by eliminating the requirement to work out a multi scale image pyramid and significantly reduces the image processing time. The Viola and Jones rule is around fifteen times quicker than any previous approaches whereas achieving accuracy that's cherish the simplest printed results. The simple Haar-like features are used in the Viola and Jones algorithm. The "integral image" at the situation of pixel(x, y) contains the total of the constituent values higher than and left of this constituent, that is comprehensive.

$$f(x) = \sum_{\text{black}} (\text{pixel value}) - \sum_{\text{white}} (\text{pixel value}).$$

The "integral image" at the location of pixel(*x, y*) containsthe sum of the pixel values above and left of this pixel, which is inclusive.

$$P(x, y) = \sum_{x' \le x,\, y' \le y} p(x', y').$$

C. Face Detection

In face detection all the possible sizes and locations of each kernel is used to calculate plenty of features.For each feature calculation, we need to find sum of pixels under white and black rectangles. To solve this, they introduced the integral images.It simplifies calculation of add of pixels, however giant is also the quantity of pixels, to an operation involving just four pixels.Nice, isn't it? It makes things super-fast.

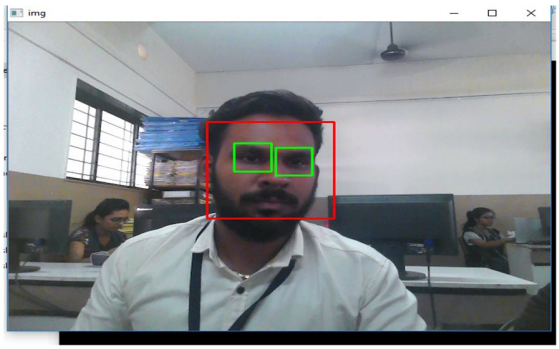

Fig 3: Face Detection

But among of these options we have a tendency to calculated, most of them are irrelevant. For example, consider the image below.The first feature designated looks to target the property that the region of the eyes is usually darker than the region of the nose and cheeks.The second feature designated depends on the property that the eyes ar darker than the bridge of the nose.But constant windows applying on cheeks or the other place is moot. It is achieved by Adaboost.

IV. CONCLUSION

The main concern of this project is to help the user get best experience of using a media player. We have tried to achieve this goal by automating the media player in a wide extent. We are doing this by using face recognition and hand gestures for controlling varied features of the media player such as pausing and playing the video again when the user isn't looking at the screen(for which face recognition is used),changing video(for which voice recognition is used) and controlling functions as forwarding , back warding, volume up and volume down(for which hand gestures are used).

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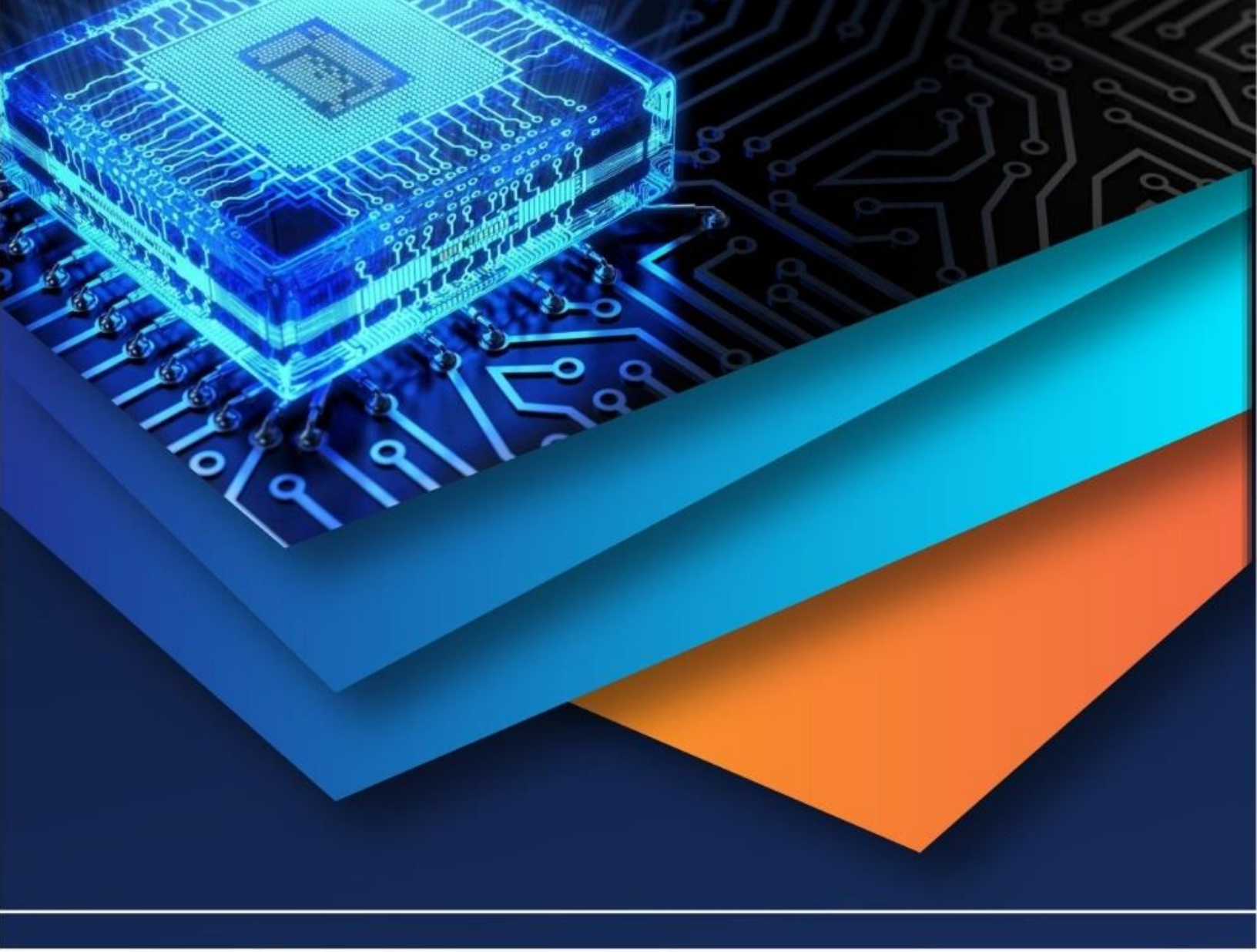

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