

Look Based Media Player

Rachana Tripathi, Ruchita Thakur, Sadhana Inchanale, Prof. Nidhi Sanghavi

Rachana Tripathi, Universal College of engineering, Mumbai, India

Ruchita Thakur, Universal college of Engineering, Mumbai, India

Sadhana Inchanale, Universal college of Engineering, Mumbai, India

Prof. Nidhi Sanghavi, Information Technology, Universal college of Engineering, Mumbai, India

Abstract - In this project we are developing an advanced media player which plays and pauses the video by detecting the users face looking at screen or not. System monitors whether the user is looking at the screen or not using a web camera. If yes then doesn't interrupt the video and allows it to play. In case if the user is not looking at the or say the system couldn't detect the users face then it immediately stops the video. We are trying to add a feature of controlling other features of media player such as volume up and volume down, backward and forward video using hand gestures.

Keywords: Face, hand gestures, media player, look, face detection.

1. INTRODUCTION

Usually when you are watching a video and someone calls you, you have to look somewhere else or go away from pc for some time so you miss some part of the video. Later you need to drag back the video from where you saw it. Well here is a solution to this problem. A look based media player that pauses itself when user is not looking at it. The player starts running again as soon as the user looks at it again. This is done using the camera or web camera on top of the computer. As long as the camera detects the users face looking at it, the media is played. The player pauses as soon as users face is not completely seen. This system also provides the feature of controlling other functions of media players such as volume up, volume down, forward and backward using hand gestures.

2. AIMS AND GOALS OF PROJECT

The goal of our project is to create an advanced media player based on look and hand gestures.

We have set the following objectives for our media player to achieve the goal:

1. The user interface of media player should efficient and user friendly.
2. The media player should be accurate in terms of result.
3. The media player pause the video as soon as the user face is not detected.

4. The hand gestures should be captured accurately and actions associated to them should performed perfectly.
5. We are trying to make this project with an aim for 10.

3. LITERATURE SURVEY

S R N O	PAPER	AUTH OR	RESULT S	ADVANTA GES	DISADVANTAGES
1	Controlling Multimedia Applications Using Hand Gesture Recognition.	Neha Roka de, Harsha Jadhav Saliba Pathan Uma Anna malai.	Easy& simple to control Real time system such as multimedia apps.	1. Use of non-complex algorithms. 2. Interface between Human Machine Interaction [HMI].	Conversion of original image into so many forms such as HSV Scale image, Threshold image, Filtered image.
2	A Vision Based Hand Gesture Interface for Controlling VLC Media Player.	Sidharth Rautaray, Anupam Agrawal.	Can easily control VLC Media player using Hand gestures.	1. Use of Hand segments 2. It detects moving points of hand.	Use of complex algorithms such as k-nearest, neighborhood pyramid, lucas kanade optical flow

3	Emotion Detection Using Facial Expression.	Jyoti Rani, Kanwal Garg.	1. Automated Facial Expression Recognition System. 2. Face Detection. 3. Emotion Detection	1. Area of interest within various fields such as science, medicine, & psychology. 2. Various feature extraction techniques have been developed.	1. May occur delay while displaying results. 2. Invariant to different distraction like glasses, styles, facial hairs
4	Video-Based Face Recognition using Adaptive Hidden Markov Model.	Xiaoming Liu, Tsuhan Chen	1. Face recognition from video sequence. 2. Use of adaptive HMM for video based recognition	1. Better face modeling. 2. Enhanced performance of image based recognition.	Because of dynamic image detection result may be non-relevant
5	Hand Gesture Recognition System To Control Slide Show Navigation.	D. Jadhav, Prof. L.M.R. J Lobo.	1. Both static & dynamic gestures are used to control slide show navigation. 2. Usage of Hand gestures can be extended to control real time	1. Overcomes the problem of circular profiling. 2. Doesn't require training	1. Complexity level is high. 2. Time consuming.

6	Controlling Windows Media Player Using Hand Recognition System.	N. Krishna, Chaitanya, R. Janardan Rao.	apps. OF ACCURACY : Volume Up : 80% Volume Down : 80% Forward : 90% Backward : 90%	Use of hand gestures makes it easy to handle the media player.	Complex and Time consuming.
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4. CONCEPT AND EVALUATION

4.1 Existing System:

Mostly existing systems use eye recognition. Due to which results aren't accurate. Face recognition and hand gestures are not implemented properly together and not even individually.

4.2 Proposed System:

In this project we are using face recognition and hand gestures for controlling media player. Face recognition is used for pausing and playing. Various hand gestures are used for controlling other functions of media player.

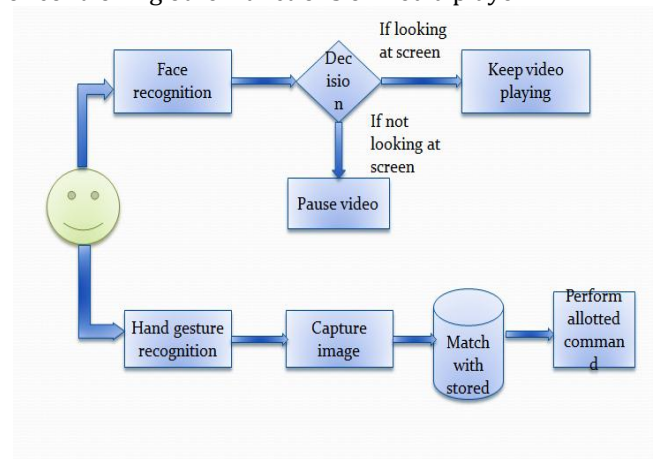


Fig -1: Basic Block diagram of system.

5. IMPLEMENTATION METHOD

HAAR CASCADE CLASSIFIERS:

In the Viola–Jones object detection framework, the Haar-like features are therefore organized in something called a classifier cascade to form a strong learner or classifier. The key advantage of a Haar-like feature over most other features is its calculation speed. Haar-like features are digital image features used in object recognition. They owe their name to their intuitive similarity with Haar wavelets and were used in first real-time face detector.

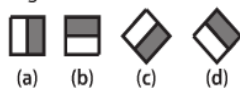
In the detection phase of the Viola–Jones object detection framework, a window of the target size is moved over the input image, and for each subsection of the image the Haar-like feature is calculated. This difference is then compared to a learned threshold that separates non-objects from objects. Because such a Haar-like feature is only a weak learner or classifier (its detection quality is slightly better than random guessing) a large number of Haar-like features are necessary to describe an object with sufficient accuracy. In the Viola–Jones object detection framework, the Haar-like features are therefore organized in something called a classifier cascade to form a strong learner or classifier.

The key advantage of a Haar-like feature over most other features is its calculation speed. Due to the use of integral images, a Haar-like feature of any size can be calculated in constant time (approximately 60 microprocessor instructions for a 2-rectangle feature).

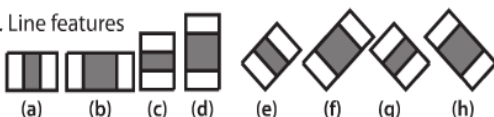
Open CV's algorithm is currently using the following Haar-like features which are the input to the basic classifiers:

- Feature = $w_1 \times \text{RecSum}(r_1) + w_2 \times \text{RecSum}(r_2)$
- Weights can be positive or negative.
- Weights are directly proportional to the area.
- Calculated at every point and scale.

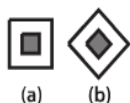
1. Edge features



2. Line features



3. Center-surround features



6. ADVANTAGES

Look based media player following advantages:

- Users cannot miss any part of the video.
- The video stops as user changes their view from the video thereby no need of users to keep on dragging back to the point from where they missed.
- You can also forward and backward the video if required.
- It saves time and electricity.
- It gives accurate result

7. CONCLUSIONS

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 starting the video again when the user isn't looking at the screen(for which face recognition is used), and controlling functions as forwarding , back-warding, volume up and volume down(for which hand gestures are used).

8. ACKNOWLEDGEMENT

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Ms. Rachana Tripathi
B.E. Information Technology
Universal College Of Engineering,
Vasai.



Ms. Ruchita Thakur
B.E. Information Technology
Universal College Of Engineering,
Vasai.



Ms. Sadhana Inchanale
B.E. Information Technology
Universal College Of Engineering,
Vasai.



Prof. Nidhi Sanghavi
Department Of Information Tech.
Universal College Of Engineering,
Vasai.