

SMART MEDIA PLAYER USING AI

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Abstract - There has been vast development in technology in recent times, and as a result, it has become possible to create applications that can understand user movements and perform tasks accordingly. The current project aims to develop an application that can recognize a user's face and hand movements and pause, play, increase-decrease volume and forward and reverse a video based on gesture movements. This application can be programmed using Artificial Intelligence techniques, which are widely adopted in the development of intelligent systems. Artificial Intelligence (AI) is a place of laptop technology that offers with the improvement of intelligent systems that can perform tasks that typically require human intelligence, such as perception, reasoning, and learning. AI algorithms can be used to recognize patterns in data, allowing the development of intelligent systems that can perform complex task using Haar Cascade Classifier.

Key Words: Gesture Recognition, Haar Cascade Classifier, Artificial intelligence, Media Player, Smart Media Player.

1. INTRODUCTION

Smart Media Player is a player designed as a time-saving multimedia player. This player plays a key role as it includes eye, face and hand gestures that allow the player to play, pause, fast forward, rewind and mute the video. Usually, when you are watching a video and someone calls you, you have to look away or leave the screen for a while to miss some part of the video. Then drag the video to where it left off. To alleviate this difficulty, we want to develop a multimedia player that pauses according to the user's current viewing habits. The player plays the video when the user looks at the screen again. In addition to the computer, we need a camera or webcam for this. The video is played until the camera detects the user's face, eyes or hand movements. The player stops as soon as the user's face, eyes or hand movements are not fully recognized.

2. SCOPE OF PROJECT.

- The project is aimed at providing a simple and easy to use player for playing and pausing videos.

- This player will be useful for people who can play, pause, increase, decrease the volume and forward and reverse the video by eyes, face and fingers.
- The pandemic forced everything from nurseries to big businesses to go online.
- This player will play a major roles, it will play, pause, forward, mute depending upon the user actions.

3. PROBLEM DEFINITION.

- Designing a system to control Media player through Gesture Recognition system
- Design the system in a user friendly model so that can be used by any of the age group
- Better Experience with help of media player
- To watch the whole video without missing any part of the video.

4.OBJECTIVE OF THE STUDY.

- The main objective of the system is to develop a Face and Hand Gesture Recognition System.
- To develop a successful system which follows the user Input and provide user the respective output.
- Save time by reducing the number of keystrokes and mouse clicks.
- In order to be a smart media player, it has to be convenient to use.

5. LITERATURE SURVEY.

5.1)MP-FEG: Media Player controlled by Facial Expressions and Gestures.

This paper has helped to understand that that communication with the computer can be done in a non tangible way. There were many methods were tangible communications are been taken place through keyboard

and mouse to operate or get a respond from system. In this paper it has proved that communication can be done in non tangible way by using hand and face gestures to communicate with the system. For facial expressions deformable model is been used. This model gives around 49 points on face region to analyse the gestures of face and hand.

5.2) Human face detection algorithm via Haar cascade classifier combined with three additional classifiers

From this paper we learned about the new face detection algorithm called Haar cascade classifier. First it is based on node based on human skin histogram matching detection. 2nd weak classifier is based on the eye detection and the third weak classifier is based on the mouth detection. This both have a high detection rates.

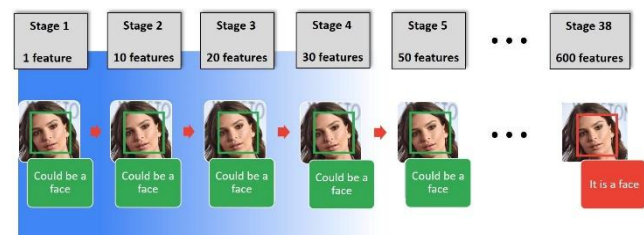
5.3) Human Computer Interface Using Hand Gesture Recognition Based on Neural Network

From this paper , we have learned about hand gesture which are used for controlling media player using neural network. This algorithm recognises features such as play, pause, reverse and forward. The algorithm works in 4 phases : Feature extraction, Image acquisition, Hand segmentation, and Classification. An image will be captured from the webcam and then with help of skin detection a new image of boundary will be created of hand detection's. The obtained desired output is almost 95 percent as per average.

6. METHODOLOGY

The use of Haar Cascade classifiers for object detection is efficient. Fast Item Detection using a Boosted Cascade of Basic Features is the paper that Paul Viola and Michael Jones wrote that first described this technique. The classifier is educated the use of a big quantity of each high-quality and bad photos withinside the Haar Cascade technique, that's primarily based totally on gadget learning. Positive images - These pic encompass the pic that we need our classifier with the intention to recognise. Negative images: These are pics of the entirety else that do not encompass the element we are looking to find. Face recognition is a method for locating or authenticating the face in digital photographs or video frames. A human can easily and rapidly recognise the faces. For us, it is a simple task, but for a computer, it is challenging. There are many difficulties, including low resolution, occlusion, different lighting conditions, etc. These elements have a significant impact on how accurately the computer can identify faces. The distinction between face detection and face recognition must first be understood. Face detection is typically understood to involve locating and maybe extracting the faces (in terms of size and location) from an image for use by the face detection algorithm.

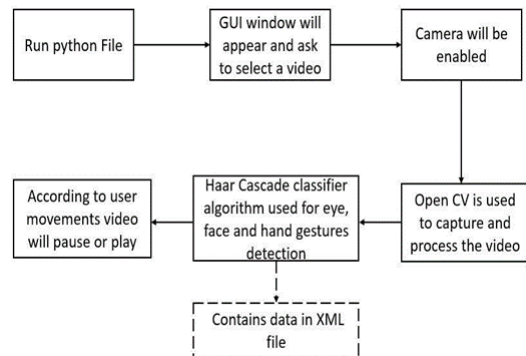
Fundamentals of the HAAR Cascade Algorithm: In the HAAR cascade, a cascade function is trained using a large number of both positive and negative pictures. Images with faces are considered positive, whereas those without faces are considered negative. Image characteristics are viewed in face detection as numerical data taken from the images that can differentiate one image from another. On every training image, we run every algorithm feature. At first, each image is given equal weight. It discovered the most accurate threshold for classifying faces as positive or negative. Errors and incorrect categorization could exist. We choose the features with the lowest error rate, i.e., the features that categorise faces the most accurately.



7..REQUIRMENTS

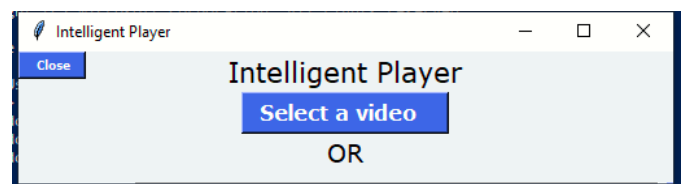
- 1) Intel Core i5 and above Speed - 2.5 GHz
- 2) RAM - 8 GB (min), Hard Disk - 50 GB,
- 3) Webcam, OS version 5.0 and above.,
- 4) Operating System Windows 10
- 5) Python 3.6 Compiler - Python Idle/VS Code

8.FLOW DIAGRAM.

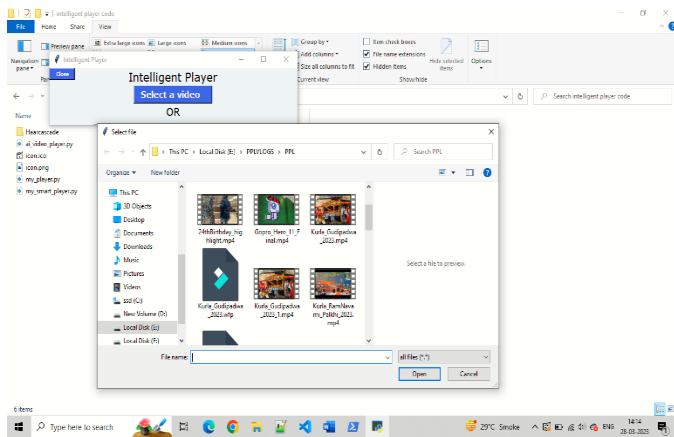


9.RESULT ANALYSIS.

1. Once the Python file has been executed a GUI will appear that will ask input from user to select the video which is to be played.



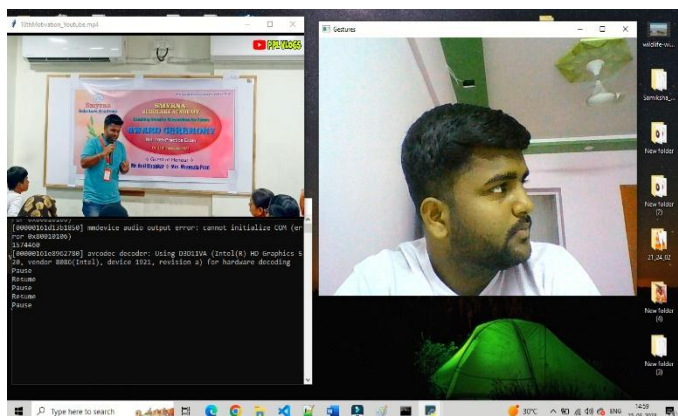
2. Once the GUI has appeared the user has to select the respective video which he/she has to watch.



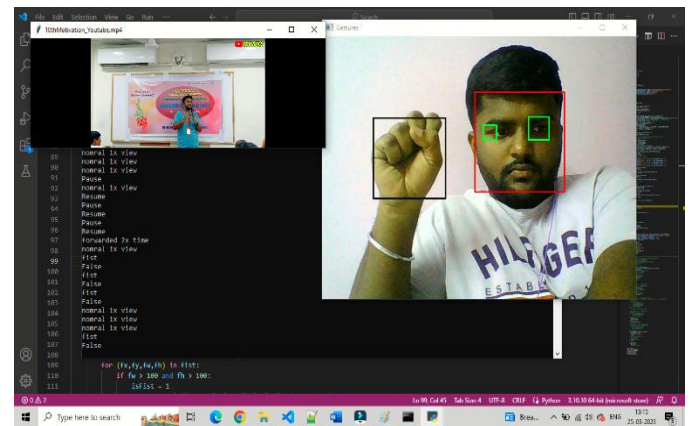
3. After selecting the video, the camera will be enabled and when face is detected the media player will start automatically playing the video.



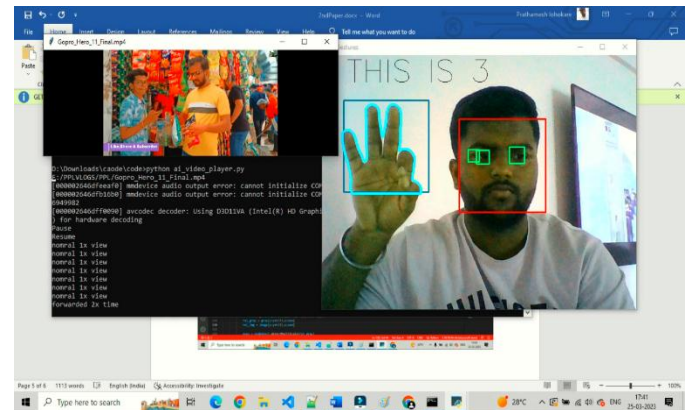
4. Here in 2nd scenario where the face is not detected it will pause the video player



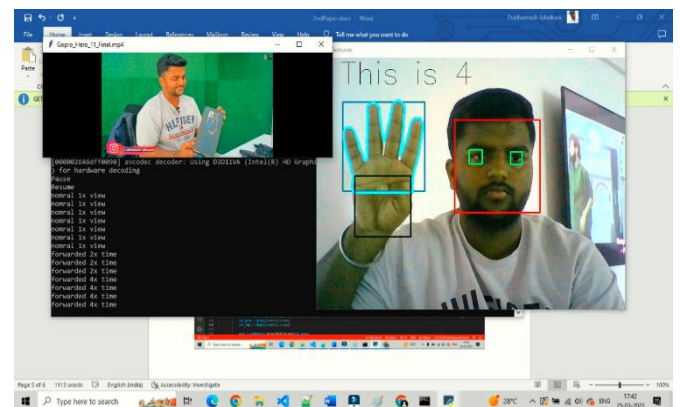
5. When Fist is been detected, the media player decreases its sound.



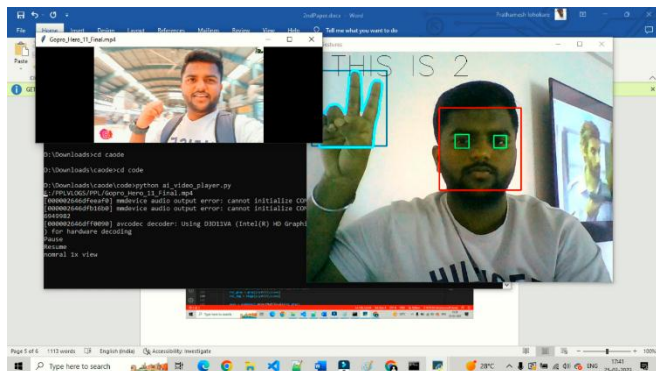
6. When 3 Fingers are shown, it will forward the video 2x Times



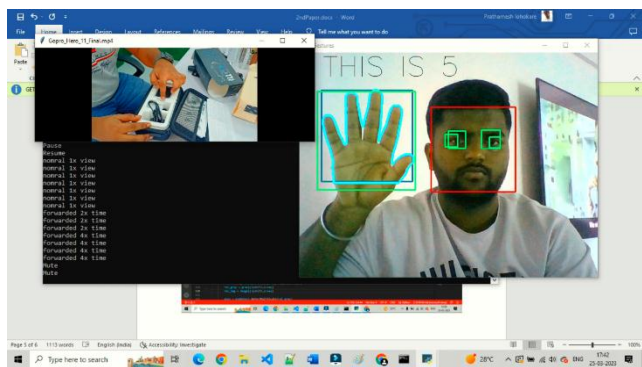
7. When 4 fingers are been showed, the media player will forward the video 4x Times



8. After when video is been fast forwarded, to bring video to the normal view 2 finger's are used.



9. When 5 finger's are shown the media player will get mute.



CONCLUSION

In this project, we aim to help the user get a better experience of using intelligent media players. We are doing this by using hand gestures and face detection for controlling features of the media player such as playing, pausing, forward, mute when proper hand gestures are being given as input. The main purpose of this research was to explore System that allows for detection of the face and hand gestures. The system has to be user-friendly his device will be very useful for people who are paralyzed or handicapped as it would allow them to control their computer without using their hands

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