IJARST

International Journal of Advanced Research in Science and Technology

journal homepage: www.ijarst.com

ISSN 2319 – 1783 (Print)
ISSN 2320 – 1126 (Online)

HAND GESTURE RECOGNITION SYSTEM FOR CONTROLLING MEDIA PLAYER

[1]Tabeen Fatima, [2]Mahindrakar Sourabh, [3]Mohan Savvana, [4]Yash Raj Varma

[1,2,3,4]CMR Technical Campus, Kandlakoya, Medchal, Hyderabad, India

197r1a0558@gmail.com

ARTICLEINFO

Article history:

Received	21 Mar 2023
Accepted	27 Mar 2023
Available online	01 Apr 2023

Keywords:

Hand Gesture Recognition,
Media Player Control,
Finger Detection.

ABSTRACT

Gesture-based real-time gesture recognition systems received great attention in recent years because of their ability to interact with systems efficiently through human-computer interaction. In today's world, everyone goes for fast interaction with complex systems that ensure a quick response. Therefore, with increase sing technological advances, response time and ease of operation are a major concern. This is where human computer interaction begins. This interaction is not limited, and challenges used devices such as keyboard and mouse input. Touch recognition has received a lot of attention. Touch is natural and is often used in everyday interactions. Thus, communication using touch and computers creates a new level of interaction. In this paper we have discussed a low cost system which uses hand gesture recognition technique to control media player. increases efficiency and makes interaction effortless by letting the user control his/her laptop/desktop from a distance.

Introduction

Hand Gesture Recognition System for Controlling Media Player is a computer vision-based system that allows users to control media players using hand gestures. In today's digital world, media players have become an essential part of our daily lives, and we often use them to watch movies, listen to music, or play games. However, controlling media players using traditional input devices like keyboards, mice, or remote controls can be cumbersome, especially when the user is far away from the device.

Hand gesture recognition is an emerging technology that has gained significant attention in recent years due to its potential to provide an intuitive and natural way of interacting with computers and digital devices. By using hand gestures, users can communicate with machines without the need for physical contact, making it ideal for controlling media plThe Hand Gesture Recognition System for Controlling Media Player leverages computer vision techniques to capture live video of the user's hand movements and recognize gestures in real-time. The system can recognize several hand gestures, including play, pause, next, previous, and volume control. Users can control the media player by performing these gestures in front of the webcam.

The system has the potential to revolutionize the way we interact with media players, providing a more convenient and intuitive way of controlling them. Moreover, the system can also be useful for people with physical disabilities, making it easier for them to control media players. This paper aims to describe the Hand Gesture Recognition System for Controlling Media Player in detail and explore its potential applications.

RELATED WORK:

Many applications have been developed that are controlled through gestures that include gaming, signlanguage recognition, control through facial gestures, controlling mouse, VLC media player etc. In 2012 RuizeXu, Shengli Zhou and Wen J. Li developed a system that recognizes seven hand gestures like up, down,right, left, cross and circle. Three different modules were built that recognized hand gesture. Signals from MEMS 3-axes accelerometers were given as input. The motion of the hand in three perpendicular direction is detected by 3 accelerometers and transmitted to the system through Bluetooth. Segmentation algorithm was applied and finally the gestures are recognized by comparing gestures that are already stored in the system. People always use the internet to get daily information about weather, news etc. For this they have to repeat same keyboard and mouse actions. In 2011 Kuan-Ching Li, Hwei-Jen Lin, Sheng-Yu Peng, Kanoksak Wattanachote used hand moments to retrieve information from the internet which reduces time and also convenient to use. Once the user provides the

gesture, appropriate function is selected, then the system will report the action to the user in form of speech. This system also uses face recognition to identify and personalize each user as requirements are different for different users. They used the PCA method to recognize hand and face. Hand gestures were acquired and stored in the system and the later compared this with input gestures and perform tasks. This system results better with the small scale of face recognition and hand gesture recognition. In 2011 Ginu Thomas presented an article on A Review of Various Hand Gesture Recognition Techniques where he compared the results obtained by different techniques. The different methods used are edges method, pixel by pixel comparison and orientation histogram. Image database was used that contained various static hand gestures images. These images are subset of American sign languages. Filtering of the image was done to reduce noise present in it and then segmentation to analyze it. It was then transformed into feature vector and then compared with a trained set of gestures.

In 2010 Anupam Agrawal and Siddharth Swarup Rautaray used hand gestures to control the VLC media player. The K nearest neighbor algorithm was used to recognize the gesture. A VLC media player function that was controlled by hand gesture includes play, pause, Full screen, stop, increase volume, decrease volume. Lucas Kanade Pyramidical Optical Flow algorithm was used to detect hand from video. This algorithm detects moving points in the image. After this K _MEAN was used to find a center of the hand. Using this centre motion of the hand is recognized. This system used database that contains different gestures and then input was compared with this stored image and accordingly VLC media player was controlled. In 2007 Yikai Fang, Jian Cheng and Hanqing Lu, Kongqiao Wang recognized hand through trigger followed by tracking and segmentation and used this gesture for image browsing. Segmentation is done during detection and tracking using motion and color cues. Palm and finger like structures are then determined using Scale Scape features. Using this palm finger configuration, hand gesture is determined.

PROPOSED SYSTEM:

This project we are going to present software which uses dynamic hand gestures as input to control the media player. We have considered single handed gestures and their directional motion defines a gesture for the application. In this software image acquisition is done using a Webcam. we used a webcam to find user input. In transferring input such as images through the image processing process to process the image and to obtain information from the images. A proposed system for hand gesture recognition for controlling a media player could consist of the following components:

Input Device: The system could use a camera, such as a webcam, to capture images or video of the user's hand gestures.

Preprocessing Module: The preprocessing module could perform operations like noise reduction, color normalization, and segmentation of the hand region from the background.

Feature Extraction and Selection: The feature extraction and selection module could extract relevant features from the segmented hand region, such as hand shape, finger positions, and hand movement direction.

Classification Algorithm: The classification algorithm could use machine learning techniques, such as a convolutional neural network, to classify the hand gestures based on the extracted features. The system could be trained on a dataset of hand gestures and their corresponding media player commands to improve itsaccuracy.

Media Player Control: The output of the classification algorithm could be used to control the media player. For example, a gesture for increasing the volume could send a command to the media player to increase the volume.

User Interface: The user interface could show the recognized hand gestures and their corresponding media player commands, allowing the user to see which gestures they can use to control the media player. The interface could also allow the user to customize the gesture recognition system to add new gestures or modify existing ones.

Real-Time Feedback: The system could provide real-time feedback to the user, such as displaying the recognized gesture on the user interface or providing haptic feedback.

The proposed system would provide a natural and intuitive way for users to control their media players using hand gestures, enhancing the user experience and providing a more accessible way for people with disabilities to control their media players.

ARCHITECTURE:

An architecture is an representation of a system, organized in away that supports reasoning about thestructures and behaviours of the system.A system architecture can consist of system components and the sub-systems developed, that will work together to implement the overall system.

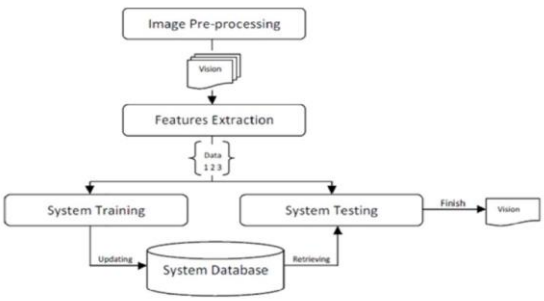
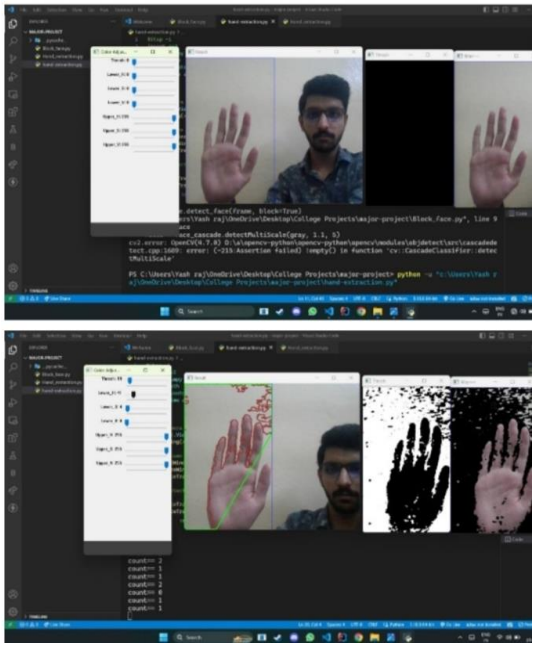


Figure 1: Architecture of the Model.

RESULTS:

This is the Snapshots of the project which displays the threshold setting of users palm and pausing and playing the media player using hand gesture which also can user changing volume of the media player using hand gesture.



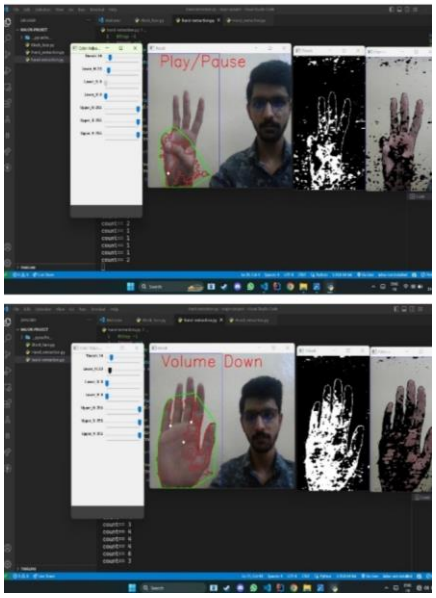


Figure 2: Real time gestures for controlling windows media player

CONCONCLUSION:

In today's world Human computer interaction is much limited to the device-based input. This application defines some gestures for performing various operations of VLC media player and users can perform a respected gesture for the desired function. In the current world many resources are available to provide input to any application some require physical touch and some without the use of physical touch (speech, hand touch etc.), the user can manage the system remotely without using the keyboard and mouse. This application provides a novel human computer interface where the user can control the media player (VLC) using hand gestures. The system specific touch to control the VLC player functions. The user will provide a touch as inserted depending on the activity you are interested in. The app provides the flexibility to define a user's touch of interest with a specific command that makes the app more useful for people with physical disabilities, as they can define touch according to their ability**.**

ACKNOWLEDGEMENT:

We thank CMR Technical Campus for supporting this paper titled "Hand Gesture Recognition System For Controlling Media Player", which provided good facilities and support to accomplish our work. Sincerely thank our Chairman, Director, Deans, Head Of the Department, Department Of Computer Science and Engineering, Guide and Teaching and Non- Teaching faculty members for giving valuable suggestions and guidance in every aspect of our work.

REFERENCES:

1. Abdul Hadi, R. H., et al. "Real-Time Hand Gesture Recognition for Media Control: A Review." Sensors 21.4 (2021): 1304.

2. Patil, R. B., et al. "Gesture Recognition for Media Control: A Systematic Review." Journal of Ambient Intelligence and Humanized Computing 10.11 (2019): 4223-4237.

3. González-Castro, R. C., et al. "Hand Gesture Recognition for Controlling Multimedia Systems: A Comprehensive Review." Sensors 20.10 (2020): 2944.

4. Dhakal, S. S., et al. "Gesture-Based Media Player Control Using Deep Learning and Computer Vision."

Proceedings of the 2020 IEEE International Conference on Artificial Intelligence and Computer Applications (ICAICA). IEEE, 2020.

5. Ahmed, N. K., et al. "Real-Time Hand Gesture Recognition for Media Control Using Convolutional Neural Networks." Proceedings of the 2021 International Conference on Innovations in Information Technology (IIT). IEEE, 2021.