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GESTICULATION BASED MEDIA PLAYER CONTROLLER USING DEEP LEARNING

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ABSTRACT
In early, the world goes with interaction with complex systems that ensure a response. Gesticulation recognition systems receives attention in past and previous years because of their ability to interact with human and computer. Between the human and systems communication creates a complicated understanding about the signals. Our aim of this paper proposed the easy way to perform fast efficient of media player using gesticulation .In this concept without hardware we can control the media using the movement of hands (Gesture).In major role of deep learning model Keras detecting the motion of hands. This video breaks down this sometimes complicated concept into easy-to-understand parts. You'll learn about 3 concepts: local receptive fields, shared weights and biases, and activation and pool.

Keywords —Tensor flow, pyautogui ,keras ,streamlit, python open cv

1.INTRODUCTION

Nowadays, gesture recognition plays an important part in the interaction between humans and computers. To facilitate simple yet user-friendly communication between humans and computers hand Gestures can be used which enable us humans to interact with machines without having to use devices like keyboards, laser pens, etc. In the proposed system, users can use four simple gestures to control the Media Player without physically touching the PC. Gesture is a symbol of physical behavior or emotional expression. It includes body gesture and hand gesture. It falls into two categories: static gesture and dynamic gesture. For the former, the posture of the body or the gesture of the hand denotes a sign. For the latter, the movement of the body or the hand conveys some messages. Gesture can be used as a tool of communication between computer and human. It is greatly different from the traditional hardware-based methods and can accomplish human-computer interaction through gesture recognition. Gesture recognition determines the user intent through the recognition of the gesture or movement of the body or body parts. In the past decades, many researchers have strived to improve the hand gesture recognition technology. Hand gesture recognition has great value in many applications such as sign language recognition, augmented reality (virtual reality), sign language interpreters for the disabled, and robot control.

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[11]..

Human-Computer Interaction can gain several advantages with the establishment of different natural forms of device-free communication.

This project implements computer vision and gesture recognition techniques and develops a vision based low-cost input software for controlling the media player through gestures.

Media Control Using Hand Gestures Authors: Vallabh Chapalgaonkar, Atharva Kulkarni ,AmeySonawale, 2022, proposed a system Human-Computer Interaction can gain several advantages with the establishment of different natural forms of device-free communication. Gestures are a natural form of action that we often use in our daily lives to interact, so to use them as a way of communicating with computers generates a new paradigm of computing interaction. This project implements computer vision and gesture recognition techniques and develops a vision based low-cost input software for controlling the media player through gestures[1].**Pixel-Based Hand Gesture Recognition with Kinect Depth Camera Authors**: Chong Wang In 2015, Chong Wang, "Super Pixel-Based Hand Gesture Recognition with Kinect Depth Camera" proposed a system that uses the Kinect Deposit Camera. It is based on compact representation in the form of large pixels, which accurately capture shapes, textures, and deep touch features. As this program uses the Kinect camera for depth, system costs are higher[2].**Handwriting The Recognition System Authors**: Swapnil D. Badgujar In 2014, Swapnil D. Badgujar, "Handwriting The Recognition System "proposed a system that said see touching an unknown input by hand tracking and extraction method. This program is used in see one touch. There is a thought that is a fixed background so that the system is smaller search the tracking region. This program only controls the mouse finger using webcam[3] .**Motion MEMS Accelerator Based Non-Specific-User Hand Touch Recognition Author:** Ruize Xu, Shengli Zhou and Wen J.Li In 2012, Ruize Xu, Shengli Zhou and Wen J. Li, "MEMS Accelerometer Based Non-Specific-User Hand Touch Recognition", was able to create a system that he could not identify various hand gestures such as up, down, right, and left, crossing and turning. Three different modules were developed that detect various hand gestures. MEMS (MicroElectromechanical System)

Features 3- accelerometers axes are provided as inputs. Movement hand in three perpendicular direction was received by three accelerometers and sent to the system via Bluetooth. The segmentation algorithm was used and finally various hand gestures were recognized by the same touch is already saved in the system. People often prefer theinternet to have a daily update weather, news etc. So, for this purpose they do keyboard and mouse functions. This program offers little accuracy in obtaining final touch points due the smallest size of the hand touch website[4].**Robust The Vision based Hand Gestures Interface for Operating VLC Media Player Authors:** Anupam Agrawal , Siddharth Swarup Rautaray In 2010, Anupam Agrawal and Siddharth Swarup Rautaray, "The Vision based Hand Gestures Interface for Operating VLC Media Player Application "program, in that the nearest K neighbor algorithm was used see various touches. Features of VLC media player which were driven by hand gestures including play, as well pause, Full screen, pause, increase volume, and decrease capacity. Lucas KanadePyramidical's Optical Flow The algorithm is used to detect hand input video. The algorithm mentioned above detects movement points in the image input. Then the methods of K find a hand centre. By using this facility, the hand is the same noticed. This program uses the database it contains various hand gestures and inputs compared with this image stored and appropriately VLC media player it was controlled. The current application is not very robust recognition phase[5]

2. EXISTING SYSTEM

To develop an interface between the system and its environment such that the system could identify particular colours to take input as a referral point that can interact with the system to perform some simple tasks such as controlling media player and manipulate its various functions. Gestures has the potential to solve some major real-world problems like:

Demerits of Existing System

1. Communicate at Distance

It enables users to communicate with the system even they are not close to the system. Hence if high quality web cameras are used then they are able to capture gesture at some adequate distance e.g User can access the media player by sitting anywhere in the room just gesture should be visible i.e captured by web cameras.

2. Beneficial for Person with Disability

More than 1 billion persons in the world have some form of disability. This corresponds to about 15% of the world's population. Hence gestures help to solve this problem. This people can directly show gestures and control the media environment.

3.Substitute for Keyboard and Mouse

Gesture control for media has the potential to replace computer hardware like mouse and keyboard. Due to this, the cost of computer hardware can be reduced. A large portion of e-waste is generated from computer hardware. With the help of this application, the ewaste generated due to these hardware components can be reduced.

3.PROPOSED SYSTEM

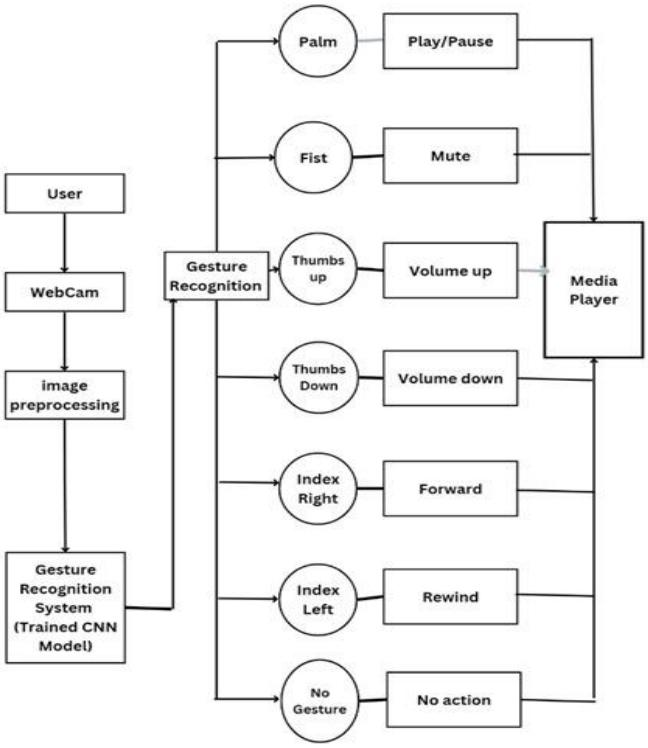
The project allows you to control a media player using hand gestures and provides the user with a new form of interaction that mirrors their experience in the real world. They feel natural and require neither interruption nor an additional device. Furthermore, they do not limit the user to a single point of input, but instead, offer various forms of interaction. Here when we capture an image the image gets converted into RGB. Now we will check whether there are multiple hands in our image. This code has an empty list where we store the list of elements of the hand, which we have detected by using the media pipe i.e the no of points on the hand. Now to manipulate the volume i.e to control the volume here we have 2 loops 1 for id and 2 for hand landmark. the landmark information gives us x, y coordinates, and the id number is assigned to various hand points. Then we get the height and width of the image. Then we find the central point of the image and then we finally draw all landmarks of the hand. Now for controlling volume we need the index finger and thumb so first as discussed above the list should be empty so when our hand is detected we will assign co-ordinated to the thumb and index finger. Then we will draw a circle on the tip of the thumb and index finger. Then we will draw a line connecting the thumb and index finger (tip of thumb and index finger). Then we will find the distance between fingers by hypothesis and accordingly increase or decrease the sound. Similarly, we can control play and pause just their gestures and range are different.

4.METHODOLOGY

OpenCV is a Python open-source library, which is used for computer vision in Artificial intelligence, Machine Learning, face recognition, etc. In OpenCV, the CV is an abbreviation form of a computer vision, which is defined as a field of study that helps computers to understand the content of the digital images such as photographs and videos. The purpose of computer vision is to understand the content of the images. It extracts the description from the pictures, which may be an object, a text description, and three-dimension model, and so on. For example, cars can be facilitated with computer vision, which will be able to identify and different objects around the road, such as traffic lights, pedestrians, traffic signs, and so on, and acts accordingly. Computer vision allows the computer to perform the same kind of tasks as humans with the same efficiency. In the object classification, we train a model on a dataset of particular objects, and the model classifies new objects as belonging to one or more of your training

categories. The picture intensity at the particular location is represented by the numbers. In the above image, we have shown the pixel values for a grayscale image consist of only one value, the intensity of the black color at that location. There are two common ways to identify the images: Grayscale images are those images which contain only two colors black and white. The contrast measurement of intensity is black treated as the weakest intensity, and white as the strongest intensity. When we use the gray-scale image, the computer assigns each pixel value based on its level of darkness. An RGB is a combination of the red, green, blue color which together makes a new color. The computer retrieves that value from each pixel and puts the results in an array to be interpreted.

5.SYSTEM ARCHITECTURE



CONCLUSION

With the advancements in technology to provide novel, convenient and fast methods of human computer interaction, gesture recognition has received wide appreciation. The various existing systems have good working features but have not been well received by customers. The main problem lies in the fact that these systems have low accuracy rates and complex algorithms. The proposed system will aim to combat these issues and stand out in the crowd of gesture recognition systems. It will provide a touch less user interface for controlling multimedia files and applications such as video players and music players. It will act as a helping aid for manipulation of systems for people who have disabilities, who cannot access their input devices or anyone who prefers this more natural method of communication compared to other methods.

RESULTS AND FUTURE SCOPE

In current world many facilities are available for providing input to any application some needs physical touch and some without using physical touch (speech, hand gesture etc.).But not many applications are available which are controlled using current and smart facility of providing input which is by hand gesture .By this method user can handle application from distance without using keyboard and mouse. This application provides a novel human computer interface by which a user can control media player (VLC) using hand gesture. The application defines some gesture for controlling the functions of VLC player. The user will provide gesture as an input according to interested function. The application provides a flexibility of defining user interest gestures for specific command which make the application more useful for physically challenged people, as they can define the gesture according to their feasibility. The present application is less robust in recognition phase.Robustness of the application can be increased by applying some more robust algorithms to reduce noise and blur motion.For controlling VLC, presently the application uses global keyboard shortcut in VLC and making keyboard event of that global shortcut with keybd_event () function. It's not the smart way of controlling any application. Inter-process communication technique can be applied for this. By applying inter-process communication then VLC can be replaced with other application very easily.

APPENDIX:

SCREENSHOTS:

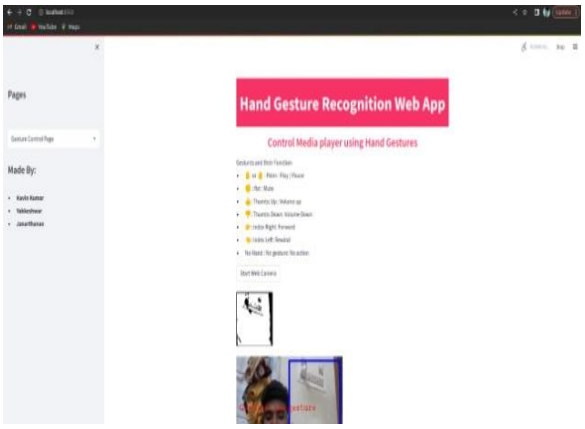


Fig1:web-page

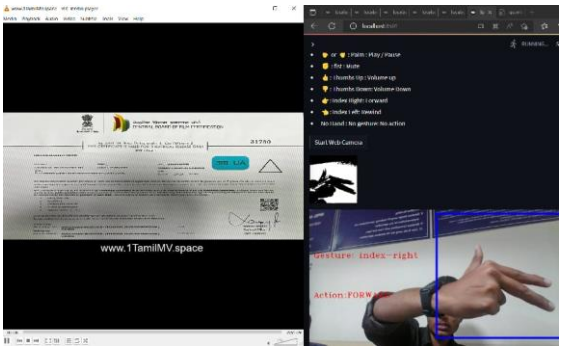


Fig2:Index right:-Forward

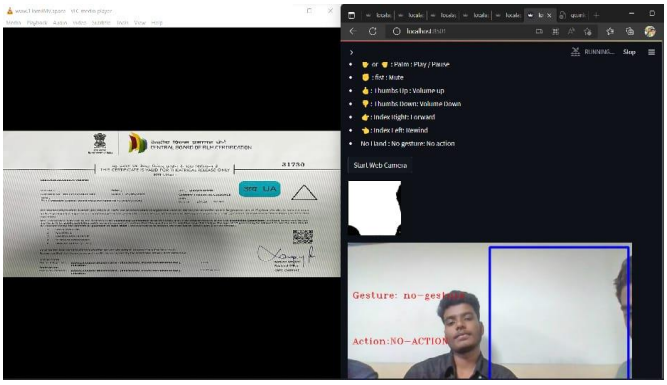


Fig3:No Gestures:-No Action

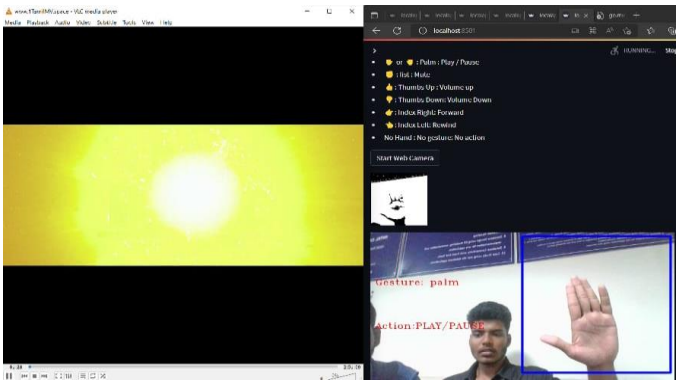


Fig4:Palm:-Play\Pause

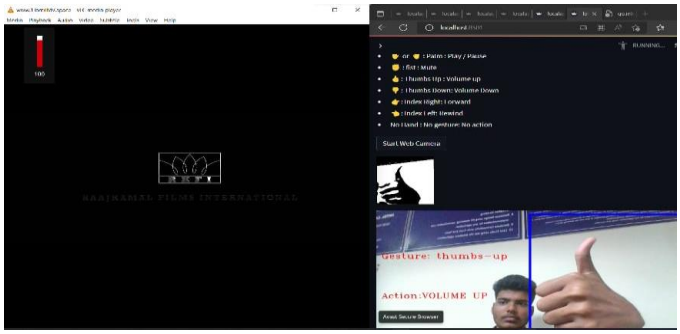


Fig5:Thumbsup:-Volume-up

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