CONTROLLING VIDEOLAN CLIENT MEDIA USING LUCAS KANADE OPTIMAL FLOW ALGORITHM AND OPENCV

Dr. ABDUL NABI SHAIK

Professor, Head of the Department in Sreyas Institute of Engineering and Technology, JNTUH,India.

dr.nabi@sreyas.ac.in

TEAM MEMBERS:

E. SAI PRIYA   - 18VE1A0511 eruventysaipriya@gmail.com
G. NIKITHA - 18VE1A0512 nikitha.gowlikar99@gmail.com
K. PRACHEEN KUMAR - 18VE1A0521 pracheen.kommu@gmail.com
N.SHRAVYA SHREE - 19VE5A0505shravyashree33@gmail.com

ABSTRACT:

In this project we've discussed a system which uses some dynamic hand gesture recognition technique to manage the media players like VLC media player. This project consist of certain modules which segments the foreground a part of the frame using detection of skin colour and approximate median technique. the popularity of hand gesture is finished by creating a call Tree, that uses certain features extracted from the segmented part. This hand gesture recognition technique introduces a replacement, natural thanks to interact with computers and is beneficial to several folks in our day-to-day life. Hand gestures are associated with the human hands in hand gesture recognition. This project is employed for controlling certain operations (Pause, Play, Volume up, Volume Down, Mute) on video player by mere hand gestures without getting in the rigmarole of pressing buttons or tapping onto the screen. this may be directly associated with our day to life like in presentations. We have considered hand gestures and their directional motion defines a gesture for the applying. during this application image retrieving is finished employing a Webcam. Some functions in VLC media players are used most often and these functions uses

some predefined gestures. Shows the defined gestures in keeping with the VLC player control operation. We created a VLC Media Player Controller using Hand Gesture Recognition System to form 'HUMAN LIFE EASY AND BETTER'. This project is implemented using two steps: (1.) Creation of Hand Gesture Recognition System: this is often done using image processing using OpenCV library. (2.) Controlling VLC Media Player using hand gestures: during this step we controlled the player using shell commands which were recalled using python commands through OS library.

1.INTRODUCTION :

In this present scenario ,everyone is dependent on computer in performing various tasks . Keyboard and mouse are most essential and major input devices of computer. But continuously working with computer causes various health issues that affects many people. Direct use of hands as an input device makes work faster. Since hand gestures are completely natural form of communication, it does not adversely affect the health of the operator as in case of excessive use of keyboard and mouse. The GUI interface has a better understanding of human hand gestures. One can express their feelings and thoughts easily by using gestures.

In this application ,we will be using dynamic hand gestures as input to perform operations on VLC media player.

The computers are becoming most important part of our life for development purpose. These applications require interaction between human and computer. . Hand gesture is used in people's daily life most frequently. Hand gesture is a major component of human body languages in linguistics. Human computer interaction becomes easy with use of hand than input device. Use of hand gestures to operate machine would make interaction interesting and easier. Gesture recognition has gained a lot of importance and used to control various applications like vlc media player, robot control, gaming etc. In this paper the idea to use hand gestures to control windows VLC media player.

2. RELATED WORK:

In 2015 [1] Harsh S. Jadhav , Sabiha A. Pathan , Neha S, Uma Annamalai projected a system by victimization the gesture commands anyone will use the system to control completely different applications. The separate coaching set isn't need to acknowledge the gestures, thus there's no have to be compelled to maintain any information for storing the frames of pictures .

In 2014 [5] Ginu Thomas was .Proposed Review of various Hand Gesture Recognition Techniques. This application provides a completely unique human laptop interface by that a user will management media player (windows) victimization hand gesture. the appliance defines some gesture for dominant the functions of windows player. The user can give gesture as Associate in Nursing input in line with interested operate. the appliance provides a flexibility of process user interest gestures for specific command that build the appliance additional helpful for physically challenged folks, as they'll outline the gesture in line with their practicability.

In 2012 [3] RuizeXu, Shengli Chow, Wen J. Li. projected "MEMS instrument primarily based whole Nonspecific-User Hand Gesture Recognition" supported the input signals from MEMS 3-axes accelerometers. Associate in Nursing automatic gesture segmentation rule is developed to spot individual gestures in a very sequence.

In 2010[6] Siddharth Swarup Rautaray and Anupam Agrawal was proposed Hand Gesture Interface for dominant VLC Media Player Explained laptop vision and image process stores the photographs in XML file .Uses k suggest that algorithms to grasp what operation have to be compelled to perform .

In 2007 [10] Ki-Sang, K. and Dae-Sik, J projected a true time face tracking with pyramidical lucas-kanade feature hunter, technique science and its applications and this pyramidical rule is principally accustomed confirm actual position of a picture. This rule is enforced in pyramidical fashion.

In 2007 [3] OpenCV-Python Tutorials Documentation" by Alexander Mordvintsev and Abid K. Proposed all concerning Open CV for instance options ,processing, analysis ,computational photography, Implementation of machine learning construct victimization OpenCV.

3. PROPOSED SYSTEM

We have Extended the existing model from single gesture to multiple gestures as well we have designed some small window screen to control all the settings of gesture control.The extent of this media player can help in minimizing human efforts. In future, this technique can be used to control systems using Human-computer interaction(HCI) like pdf reader, power point etc.The gestures give a proper count to the system through the input webcam and operate accurately. Anyone can easily operate in this environment.Can enjoy the video without any interruptions.Provides a user-friendly environment.Works on the trained data and when test data comes in it examines and works based on the inputs given.Get good experience of using media player.Any part of video will not be missed.We have achieved this goal by automating it to a wide extent.We are doing this by using face detection and hand gesture by controlling various features of the media player.

A proposed system would be accustomed show the link between completely different elements. Typically they are created for systems that embrace hardware and software system and these are depicted within the diagram to point out the interaction between them. However, it may also be created for net applications.
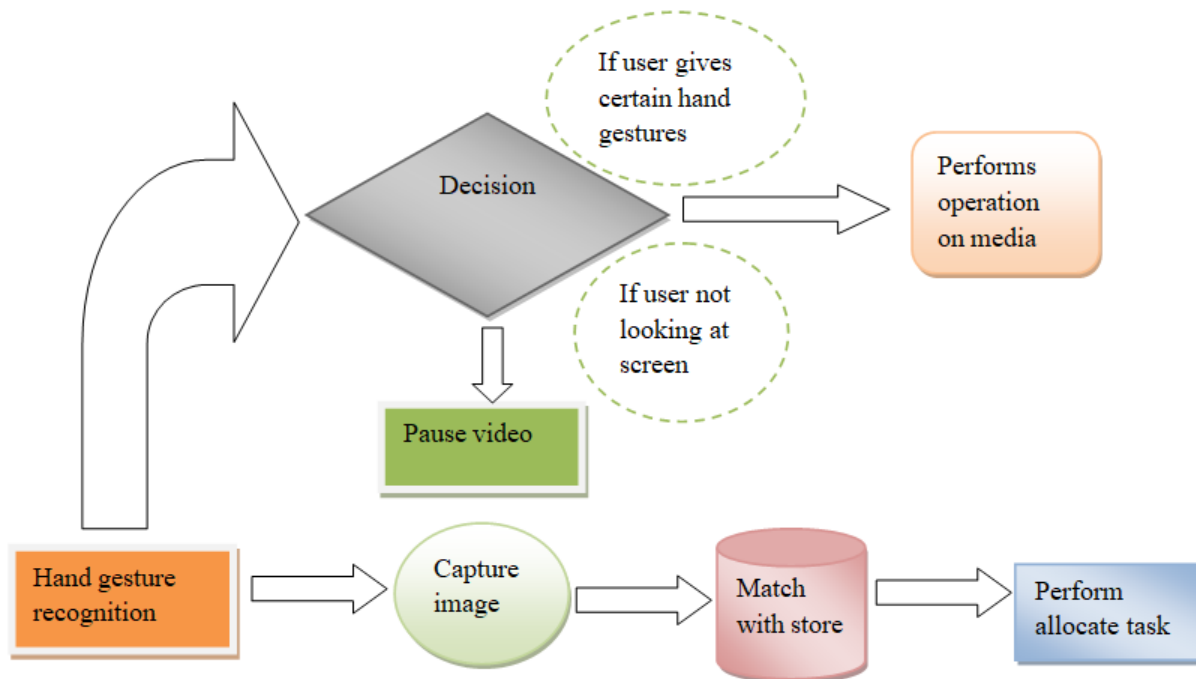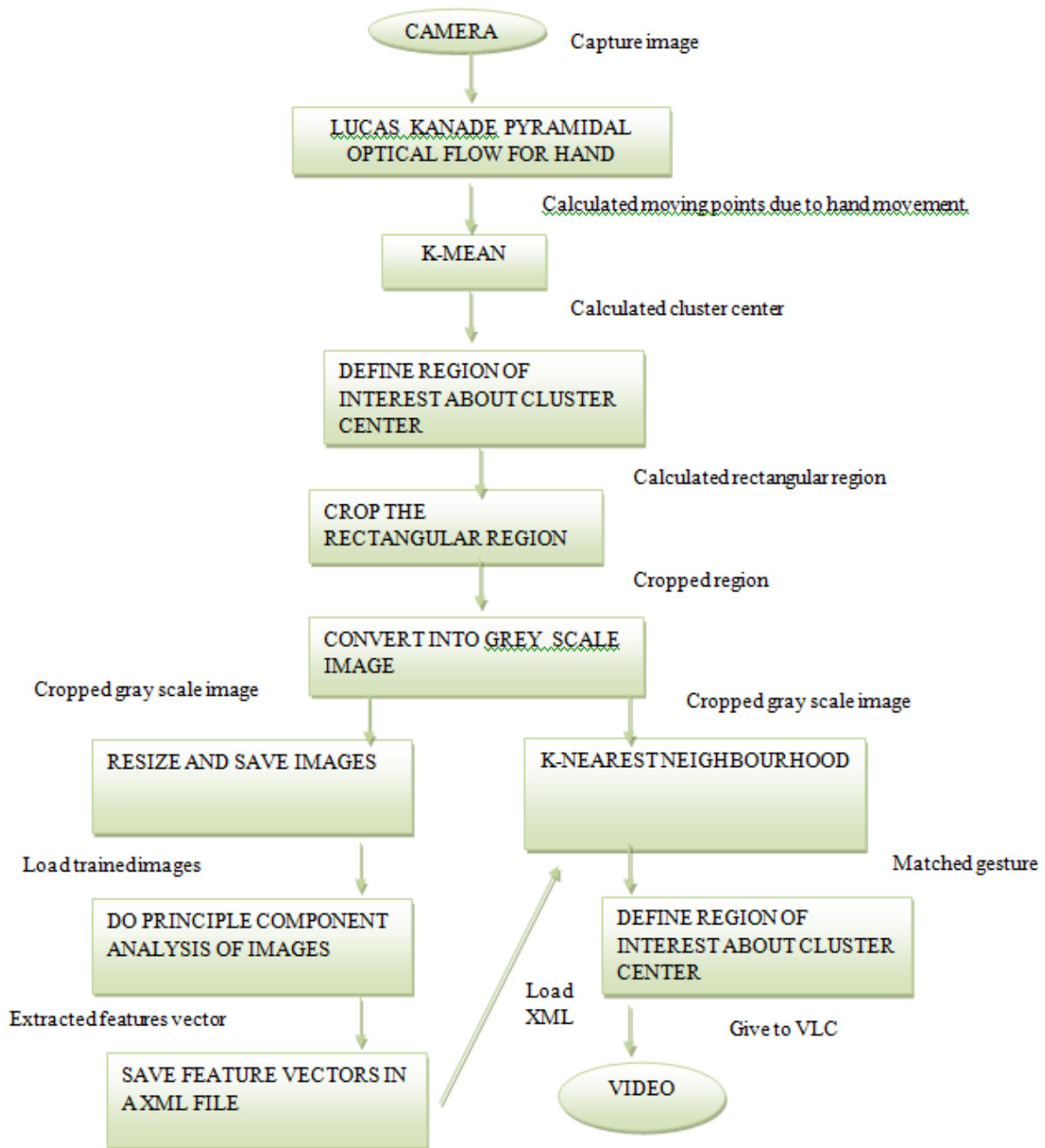

Fig 1: Data Flow Diagram

4. IMPLEMENTATION

Fig 2:Architecture

Pyramid Lucas-Kanade Optical Flow: this is often used for recognition of gestures. Hand detection is finished victimization 2 techniques i.e. skin colour and motion trailing. Motion

pursuit is finished exploitation Lucas-Kanade Optical Flow algorithmic rule. Figure three shows the optical flow field generated by optical algorithmic program.

K-Mean Algorithm: Optical flow generates a vector of moving purpose. These moving points square measure organized in clusters for more process like cropping, resizing etc. K-Mean [7] is employed for clump. Its method is outlined as if there square measure N given points, wherever every purpose may be a d-dimensional , then k-means clump partitions the N points into k sets (k < n) S= thus on cut back the within-cluster total of squares:

K-Nearest Neighbourhood: This algorithmic program is employed for recognition that takes the input image and acknowledges the category from that it belongs. The K-NN algorithmic program will summarized as follows: K-nearest neighbours algorithmic program (k-NN) may be a technique for classifying objects that relies on choosing nearest coaching examples within the featured house .

Hand Segment: The task is to convert camera input frame into a picture that has a lot of data. Following Square measure the steps: dynamical Image to grey Scale: during this image is 1st remodeled to grey scale colour. In optical flow contains 3 assumptions, one in all that is constancy. For increasing constancy image must be reborn to grey scale colour. police investigation Moving Points: For detection of hands usually 2 ways square measure followed: skin colour pursuit of moving hand This application uses the second technique. The hand is emotional before of camera in a very non-moving background once the user uses it or at the time of feature learning. Flim producer Kanade Optical flow technique is applied for pursuit the moving points from a streaming video by examination previous frame with current frame.

Making Clusters: once police investigation moving points that square measure done through optical flow the points must be clustered that generates a lot of data concerning the image. K-Mean algorithmic program is employed for this purpose.

Cropping of Images: The clusters square measure cropped and keep in a very totally different image. The cropped image moves the background, noise etc that generates a lot of share of data than previous image. 1st making a parallelogram round the cluster and clipping that parallelogram to a replacement image.

Saving Images: once cropping the image is saved for learning method. throughout learning it reads all saved image and apply algorithms.
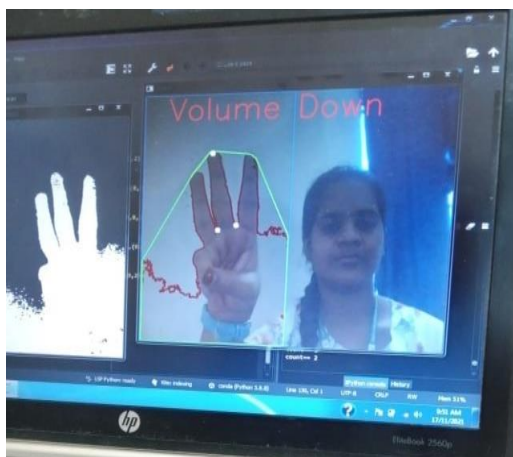
5.RESULTS

Following figures shows results when user giving certain gestures
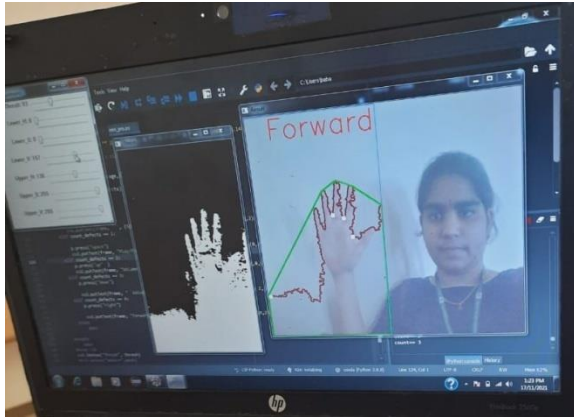

.
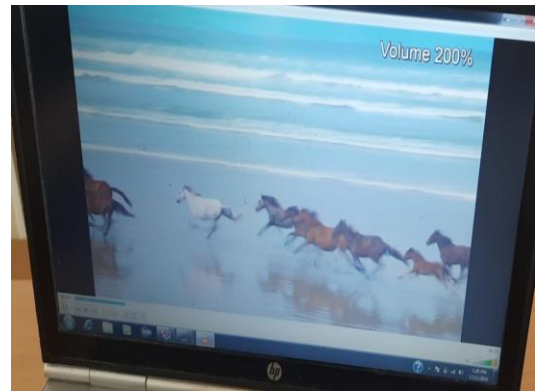
Due to convexity defect,two far points are generated.Based on two far points it performs Volume Up operation.
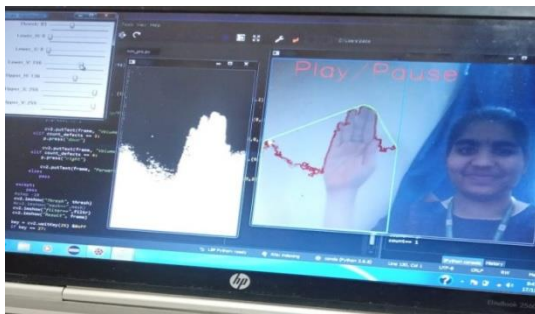
Fig: 3 Volume Up

Due to convexity defect,three far points are generated.Based on three far points it performs Volume Down operation.

Fig 4: Volume Down

Due to convexity defect,four far points are generated.Based on four far points it performs Forward operation.

Fig 5: Forward

Due to convexity defect,one far point is generated.Based on this far point it performs Play/Pause operation.

Fig 6: Play/pause

6.CONCLUSION AND FUTURE SCOPE

In present 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 smart facility of providing input which is by

hand gesture .By this method user can handle application from distance without using devices like keyboard and mouse.

The proposed system is to control VLC media player through hand gesture recognition and face detection. This project is more efficient when comparing to the existing VLC media player by making it automated. A better way of controlling media player is implemented. Instead of using keyboard and mouse to control a media player, user controls media player.

by recognizing the gestures and detecting face, which reduced the use of external devices.

This application provides a novel interface by which user can control media player (VLC) using hand gesture.The gestures will be provided by the user as an input according to interested function. This application provides a flexibility and more useful for physically challenged people, as they can define the gesture according to their feasibility.

In future, this technique can be used to control systems using HCI [human computer interaction] like pdf reader, power point etc.This type of media player has a wide range of use in future and this type of technology is useful in many fields so this can be commercializable and very useful.In future this technique can be used to extending the gestures for the gaming and voice for mute.

7.REFERENCES

https://www.superdatascience.com/

[1] "The Hand Gestures Recognition for Controlling multimedia player" by Neha S. Rokade, Harsha S. Jadhav, Sabiha A. Pathan , Uma Annamalai.

[2] "OpenCV-Python Tutorials Documentation" by Alexander Mordvintsev&AbidK.

[3] RuizeXu, Shengli Chow, Wen J. Li. MEMS instrument based mostly whole Nonspecific-User Hand Gesture Recognition. IEEE, 2012. Vol:12, 1166-1173.

[4] Sheng-Yu Peng, Wattanachote K., Hwei-Jen sculptor and Kuan-Ching Li. IEEE, July 2011

[5] Ginu Thomas. Review of assorted Hand Gesture Recognition Techniques. VSRD-IJEECE, Vol. 1 (7), 2011, 374-383

[6] SiddharthSwarupRautaray and Anupam Agrawal. It's a Hand Gesture Interface for dominant VLC Media Player. International Journal of pc Applications, 2010. Vol: 10, 0975-8887

[7] Turk, M.and Oscar Robertson, G. 2000. activity user interfaces.

[8] Liu, J Pastoor, S., Seifert, K. and Hurtienne, J. 2000. 3D pc: It's a novel styles of human-computer interaction. In 3D Video and Display: Devices and Systems SPIE CR76, (2000).

[9] Liu, N and man of science, B. 2001. Mmx-accelerated quantity of it slow hand chase system. In IVCNZ, (Nov. 2001), pp. 26–28.

[10] Ki-Sang, K. and Dae-Sik, J. 2007. Real time facetracking with pyramidallucas kanade feature hunter, technique science and its applications. ICCSA (2007). 4705: 1074–1082.

[11] Z. Vamossy, Z., Toth, A. and Hirschberg, P. 2004. PAL based mostly whole Localization victimization pointed Lucas-KanadeFeature hunter.

[12] Kang, M and Kim, J. 2007. Real Time ObjectRecognition victimization K-Nearest Neighbor in ParametricEigenspace, LectureNotes inComputer Science, Vol. 4688/2007, (2007), 403-411.