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Hand Gesture based Virtual Mouse

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Abstract: ***Currently, The strategy of building up a cycle of connection among human and PC is developing since the innovation of PC innovation. The mouse is an incredible creation in HCI (Human-Computer Interaction) innovation. Despite the fact that remote or Bluetooth mouse innovation is created still, that innovation isn't totally gadget free. A Bluetooth mouse has the necessity of battery power and interfacing dongle. Presence of additional gadgets in a mouse expands the trouble to utilize it. The proposed mouse framework is past this limit. This paper proposes a virtual mouse framework dependent on HCI utilizing PC vision and hand signals. Signals caught with an inherent camera or webcam and prepared with shading division and location method. The client will be permitted to control a portion of the PC cursor capacities with their hands which bear shaded covers on fingertips. Fundamentally, a client can perform left snaps, right snaps, and double taps, looking up or down utilizing their hand in various motions. This framework catches outlines utilizing a webcam or underlying cam and cycles the edges to make them track-capable and after that perceives various motions made by clients and play out the mouse work. So the proposed mouse framework wipes out gadget reliance to utilize a mouse. Consequently it very well may be demonstrated helpful to create HCI innovation.***

Keywords: Virtual Mouse, Open CV, Image Processing, NumPy, PyAutoGUI.

I. INTRODUCTION

As the advancements are creating step by step the gadgets getting reduced in size. A few gadgets have gone remote, some of them gone idle. This paper proposes a framework that could make some the gadgets go dormant later on that is the eventual fate of HCI (Human-Computer Interaction). The proposition is to advancement of a Virtual Mouse utilizing Gesture Recognition. The point is to control mouse cursor capacities utilizing just a basic camera rather than a conventional or normal mouse gadget. The Virtual Mouse functions as a mechanism of the user and the machine just utilizing a camera. It assists the user communicating with a machine with no mechanical or actual gadgets and control mouse capacities. In this gesture recognition, it is truly conceivable to catch and track the fingertip of hand with a webcam or inherent cam which is bearing a shading cap or shading tacky note paper and the framework track the shading and movement of the hand and move cursor with it.

This framework is executed in Python programming language utilizing the Computer Vision based library OpenCV. This framework can possibly supplant the common mouse and furthermore the distant regulator of machines. The solitary obstruction is the lighting condition. That is the reason the framework actually can't be sufficient to supplant the conventional mouse as the greater part of the PCs are utilized in helpless lighting conditions.

II. LITERATURE SURVEY

Cursor control application utilizing hand signal is utilized in numerous ways, however more often than not, it expects of wearing a DataGlove. This lessens the effectiveness of execution between the client and the framework. Furthermore, framework intricacy is likewise an issue in this cycle. Meanwhile, the vision-based hand gesture recognition is also two types: marker-based & non-marker based. Non-marker based recognition generally is not as accurate as the marker based recognition. And the maker based recognition has better accuracy compared to the other gesture recognition systems, though the user has to use a simple color cap on the fingertip. But this way is lighter and almost nothing in comparison with the DataGlove of the hardware-based system. Gesture recognition might be a futuristic way to the computers to understand human gesture.. It will build a greater interaction between human & computer machines rather than primitive text-based interaction.

III. EXISTING SYSTEM

We as a whole know about the current situation of controlling PC through hands which require actual work. Subsequently this can be some of the time strainful to individuals. To work a basic force point show on the PC we use hand developments by being in contact with the optical gadget. Eg.Clicking the mouse for going to the following slide or utilizing scroll button for zooming in and out. Aside from the PC interaction we likewise go over the difficulties individuals face while in their homes.The existing system is highly strain related work,time consuming and also leads to health problems.

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IV. PROPOSED SYSTEM

For the Mouse click events, and controlling mouse for PC based exercises like left click or right click, zoom in, zoom out, preview we need certain equipment necessities like a PC, some color caps, and a sensor(webcam). For the specific application the user creates a hand motion which is then identified by the sensor. The sensor passes on this message to the PC and afterward a specific activity as indicated by the signal is taken. Here we will build up the Virtual Mouse utilizing Hand gestures.

V. WORKING METHODOLOGY

A. The fundamental necessity of any framework are its sensors. So in this framework too a sensor (webcam) is utilized to associate with the environment. Its functionality is to record the live video which is taken as contribution through hand signal by the user.

B. It process this input and afterward sends it to OpenCV . here in CV a code is produced which is utilized to change over the live video into frames of images. This action is actually named as "cutting of video".

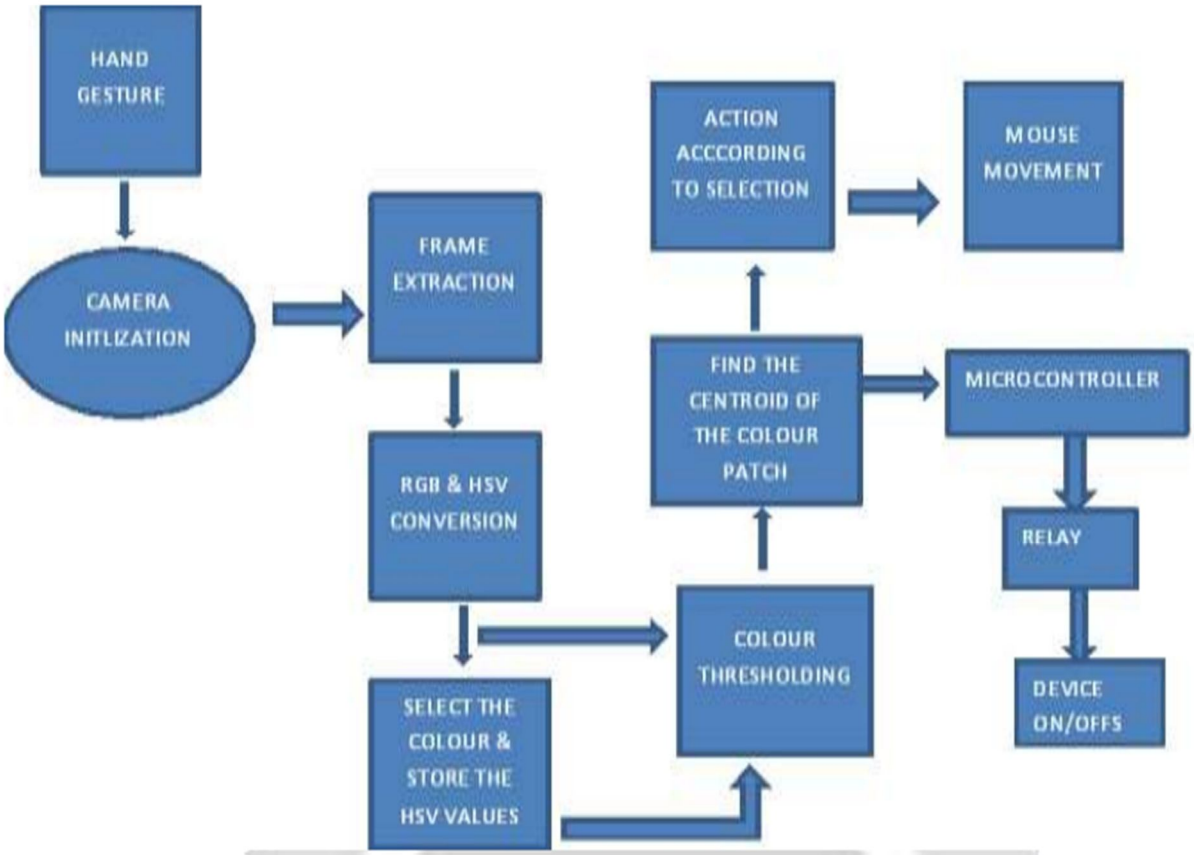
C. At that point this frames are processed for color recognition process, where just images with colors referenced in the code are kept. Rest images are disposed of by the framework.

D. The speed at which output images are shown is equivalent to the speed at what cutting of the video is finished. This output shown appears to be a film running where information is the actual world while yield are just those colors which are available on the fingertips of the user.

E. These colors notify mouse cursor on the screen. As these colors move the mouse cursor on the screen moves.

F. In this way output is produced and the mouse click is replaced by finger clicks, gesture recognition and image processing.

VI. BLOCK DIAGRAM



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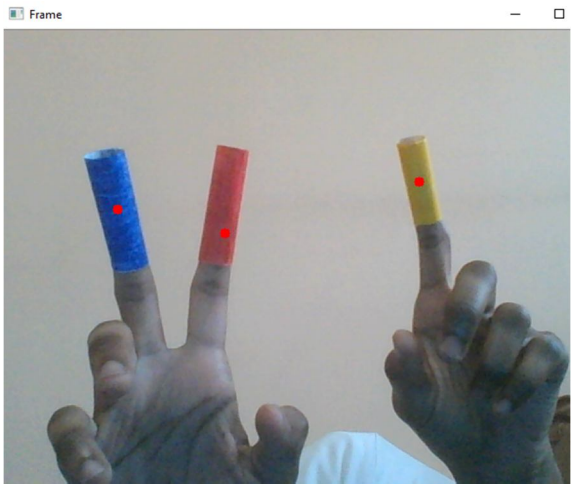
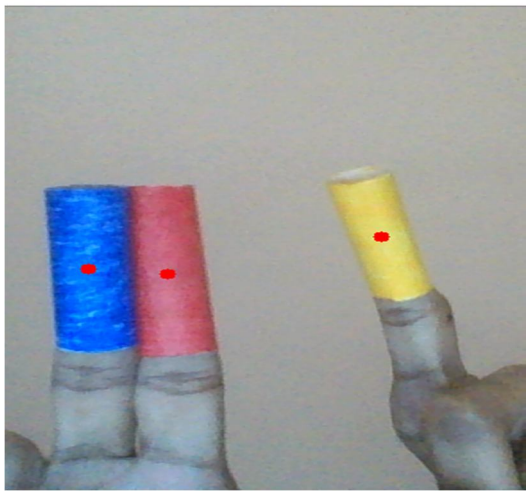
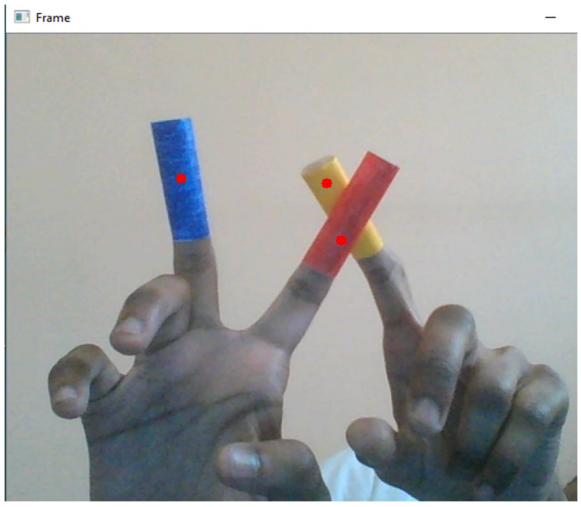
VII. RESULTS



1 . YELLOW FOR MOUSE MOVEMENT



2. LEFT CLICK(RED,BLUE TOUCHED)



3. RIGHT CLICK(YELLOW,RED TOUCHED)

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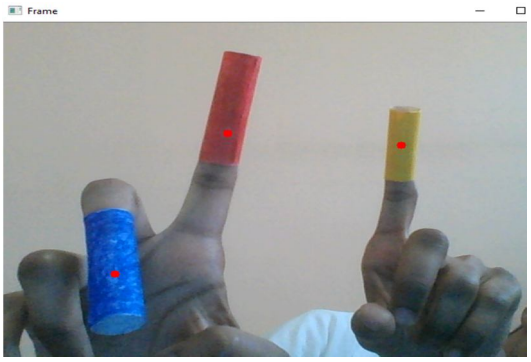

4. SCROLL UP(RED IS UP AND BLUE IS DOWN)

5. SCROLL DOWN(BLUE IS UP AND RED IS DOWN)

VIII. CONCLUSION

This Virtual gesture control mouse is a framework that significant to direct the mouse cursor and execute its work utilizing a realtime camera. We carried out mouse movements, choice of symbols and its capacities and assignments like left, right, double tap and scrolling. This framework depends on image comparsion and motion detection to do mouse movements and determination of the symbol. Examining results, it tends to be expected that on the off chance that we give sufficient light, fair camera, it can work at any area. At that point our framework will be more organized. In future, we need to combine more highlights like association in numerous windows, extending and contracting windows, shutting window, and so on by utilizing the palm and different fingers. This project can be valuable for lessening workspace and weight of additional equipment gadgets. In basic occasions, this project will actually want to withstand itself, as it is wispier than some other contemporary framework on the lookout for PC association. Since it eliminates the burden of gadgets, it brings the user and the workspace more nearer than previously.

REFERENCES

[1] D.L. Quam, “Gesture recognition with a Data Glove,” 10.1109/NAECON.1990.112862, vol. 2, pp. 755 - 760, 1990.

[2] C.-Chiung Hsieh, D.-Hua Liou, & D. Lee, , “A real time hand gesture recognition system using motion history image,” Proc. IEEE Int'l Conf. Signal Processing Systems (ICSPS), 2. 10.1109/ICSPS.2010.5555462, 2010.

[3] C.-Y. Kao, C.-S. Fahn, "A Human-Machine Interaction Technique: Hand Gesture Recognition Based on Hidden Markov Models with Trajectory of Hand Motion,"in Procedia Engineering 15 pp. 3739 – 3743, 2011

[4] P.S. Neethu,”Real Time Static & Dynamic Hand Gesture Recognition,” International Journal of Scientific & Engineering Research, Vol. 4, Issue3, March 2013.

[5] A. M. Patil1, S. U. Dudhane1, M. B. Gandhi1,” Cursor Control System Using Hand Gesture Recognition”, International journal of advanced research in Computer and communication engineering, vol. 2, issue: 5, May 2013.

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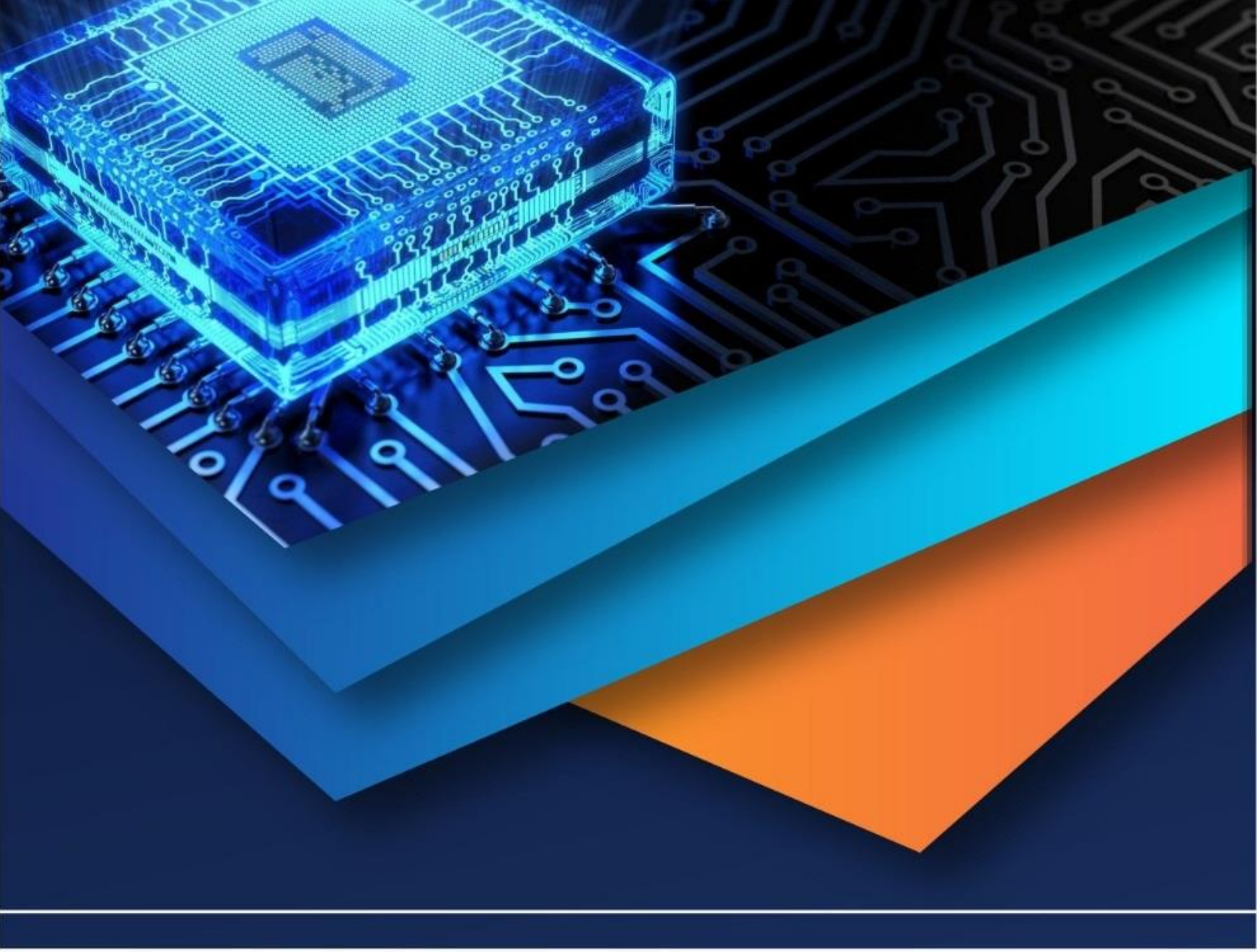

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