
VIRTUAL PALM POINTER MOUSE

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ABSTRACT

This paper proposes a method to control cursor position with bare hands without electronic devices, using hand gestures for clicking and dragging objects. The system uses a webcam as input, and the virtual palm pointer mouse project uses various methodology to process the webcam input. It identifies the fingers through image processing and allows you to control commands using hand gestures. It combines computer vision and interaction.

Keywords: Virtual Pointer, Hand Customizable Gestures, Navigations.

I. INTRODUCTION

The virtual Palm pointer allows you to control your laptop or computers by using hand gestures. Using image processing techniques with a Webcam as input, The project recognizes your hand movement and translate them into various command like clicking, dragging, adjusting volumes and even interacting with voice assistants. It is a convenient and hands-free way to The goal is to provide unencumbered interaction with humans. Hand gestures are widely recognized for their personality and accessibility for all. Virtual Palm pointer mouse using a low-cost USB Web camera for system input. The virtual palm pointer is accessible to the deaf and dumb, making it a valuable tool for communication. Navigate and control your device. It has practical applications as well.

It can be applied, for instance, to stop the COVID-19 virus from spreading and to do away with the requirement for Wearable technology. Using hand gestures feels more intuitive and natural compared to traditional mouse and keyboard inputs, allowing for a more immersive and engaging users experience. This technology has the potential for virtual reality, gaming, and other interactive experiences.

II. LITERATURE REVIEW

The study proposes a real-time hand gesture identification system with adjustable skin tone and motion history photos. detection model to reduce misclassification utilized background subtraction, skin detection, and the HSV color model to simulate mouse-clicking operations using two colored tapes, utilizing Java software [1].

The camera zone creates a rectangular field for the computer window area that moves the mouse cursor over the window when a hand is identified and determines which finger can perform the specified mouse operation [2].

Combining voice commands and hand motions, the Gesture Controlled Virtual Mouse facilitates computer connection with humans while needing less physical contact. It employs the powerful Computer Vision and Machine Learning techniques without the use of any additional hardware [3].

A camera-controlled virtual mouse employs a number of image processing techniques. Hand movements are used to understand mouse clicks. A web camera's default setting is for continuous image capture. Facial recognition security software has lately begun to be utilized on PCs equipped with webcams.[4].

As technology develops, there are even more options available than just using a mouse. Hand gestures and vocal commands to make using a computer with a human being easy. Very little of it is done directly on the computer. Almost all input and output tasks can be completed by a voice assistant and both static and dynamic hand gestures. The application uses the OpenCV library and the Media Pipe framework for computer vision tasks, enabling user interaction without a hardware mouse device, and uses machine learning algorithms. [5].

III. PROJECT DESCRIPTION

The virtual palm pointer mouse is a Python-based application that utilizes the power of Mediapipe and OpenCV library. It allows user to control their computer or laptop by using hand gestures captured through a webcam.

By leveraging image processing techniques, the project Identifies and record the motions of user’s hand in real-time. With a single-shot detector type, the hand or palm can be detected and identified in real-time. The concept of a single-shot detector is employed by Mediapipe. Because learning palm is easier.

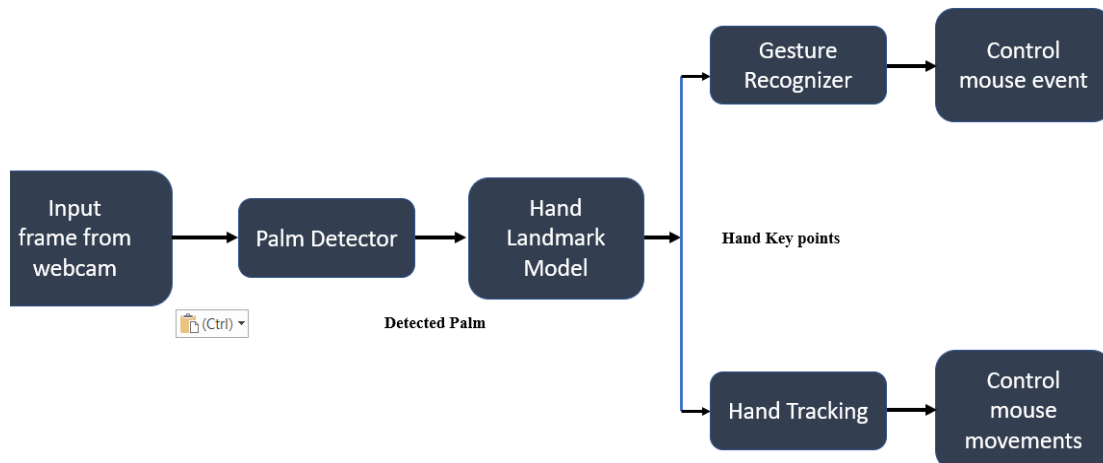


Figure 3.1: Flowchart

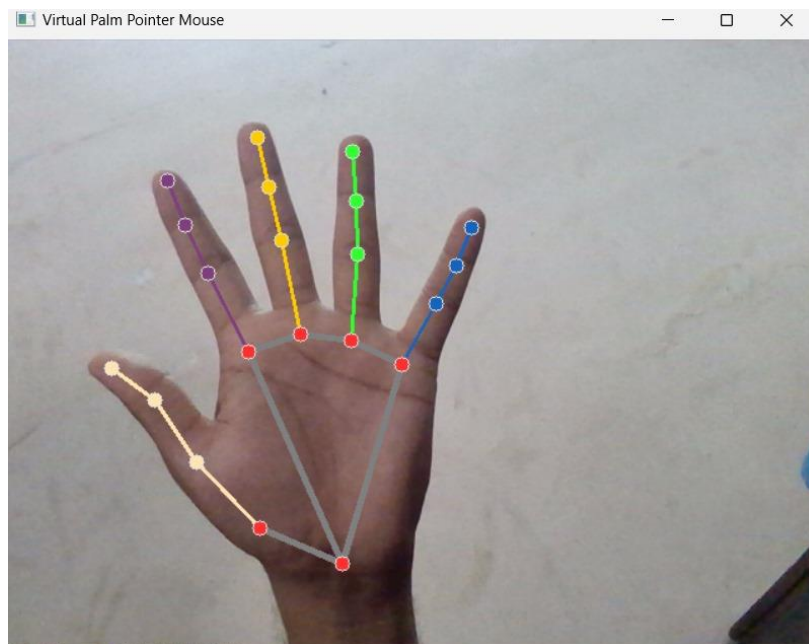


Figure 3.2: Virtual Palm Pointer Mouse

IV. CONCLUSION

In conclusion, virtual palm pointer mouse offer a convenient and intuitive way to interact with digital devices, enhancing user experience and potentially reducing the need for physical peripherals. It offers a unique and intuitive way to interact with technology.

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