

A Survey on Detecting Hand Gesture

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Abstract - This project presents a way to improve visual real-time visual perception using only a webcam and Computer Vision technology, such as image processing that can detect multiple touches to be used in computer interactions. almost anywhere we interact with computers. An important feature of this project is the simulation of the mouse as a visual input device with all its functions such as left click, right click

touch of human hands. The app is designed to be inexpensive and uses inexpensive input tools like a webcam to capture hand as input. Material manipulation is done by means of a preconceived notion based on hand gestures.

1. INTRODUCTION

People's Computer Interactions today are mostly interactive with nature. The Graphical User Interface (GUI) on Personal Computers (PCs) is being upgraded, providing an efficient visual interface for the user to interact with the computer and access various applications easily. Today the technology used for mobile communication especially the touch screen. But these technologies are not yet cheap enough to be used on laptops and desktops. Our to build a virtual mouse system with an easy-to-use interface and another touch screen. Visual devices (web camera) can be used and upgraded to new input devices in the future. Gives installation command to the computer has a computer connection. We can perform additional implementations to convert computer vision tools into an input command device to access a function such as a keyboard or mouse. One of the ways to signal at computer visual aids is to use the touch of a hand.

Direct hand gestures are used as a signal or input method. A specific signal can be detected by a computer as an input into a computer. This will benefit every user without the use of a straightforward device and can do what they want as long as the computer vision device can hear you. This makes the computer user easier than using a keyboard or mouse. A future computer or laptop computer may eliminate keyboard and mouse usage in exchange for vision-based translation tools. Interactions between people occur in different sensory systems such as touch, speech, facial expressions and body language. The great advantage of using hand gestures is computer interaction as a personal computer input method. Our app provides efficient and easy-to-use methods for intelligent computer interaction and the use of hand gestures. Mouse functions such as controlling the movement of the visual object have been replaced by hand gestures. The complexity that exists is consistent with the stages of acquisition and recognition of a simulated application. Challenges faced by a noisy environment creates a severe impairment in the acquisition and functioning of the

2. AIM OF THE PROJECT

The main goal is to make a visual mouse using a hand-held touchscreen camera so that we can interact with a computer and access various applications easily.

3. SCOPE

- For most laptop touch pad is not comfortable and convenient
- This is real time application
- User friendly

4. PROBLEM STATEMENT

- Designing a vision-based mouse that receives hand-held patterns instead of a visual mouse.
- Basically for this project using hand gestures captured by a webcam.
- Camera captures and detects hand movements and performs mouse functions.

5. PROPOSED SYSTEM

The proposed program is based on a vision, which uses image processing and input techniques from a web camera or digital camera. The input frame will be photographed on a digital camera and the system is divided into four stages, skin detection, manual contour removal, skin area will be detected skin detection of trauma. The contour of the hand will then be detected and used for tracking the hand and touch detection. Manual tracking will be used to navigate to the Personal Computer identifier and manual touch will be used to perform mouse functions such as right click, left click, scroll up and scroll down. So the scope of the project will be to design a vision-based CC system.

6. METHODOLOGY

The main input of the proposed system is three parts:

- **Skin Detection** - 5 skin color pattern scanners using gray values
- **Contour Extraction** - Extends hand contour using histogram values
- **Manual tracking and touch recognition**-Manual tracks using clear image points and algorithms
- **Cursor controls** - Map touch controls to the cursor controls

Acquiring the skin using color details can be a daunting task, as the appearance of the skin in the photos is affected by light, camera features, background and quality. To reduce the effects of light, the image can be converted to a chrominance color scheme, which is less sensitive to light changes.

After finding a binary image separated by skin elements, a border detection process is performed to search for contours within the image using the OpenCV function `cvFindContours()`.

The movement of the cursor is controlled by the tip of the finger. In order to see the tip of the finger, first the center of the palm must first be found. The shortest distance between each point within the engraved circle to the spear is measured and the point by the largest distance was recorded as an institution. The space between the navel of the hand and the palm of the hand is considered the width of the hand. The hand center is calculated across the entire sequence and using the hand center, When hand gestures are detected, it will be a simple matter of mapping hand gestures that are completely different from specific mouse functions. It seems to control your Computer cursor.

7. LITERATURE REVIEW

7.1 Virtual mouse using gesture hand

- Proposed cursor control system for camera view, using hand gestures taken from a webcam using color detection method.
- The system will allow the user to navigate on a computer screen using hand-held color caps or tapes and left clicking and dragging will be done using a different hand gesture.
- The Hand Recognition employs a simple colour bearing on the finger to operate the pointer using basic touch and hand controls, without the need for any extra hardware. This is accomplished via the use of intuitive touch recognition and webcam input.

Advantages - real time application

Disadvantages- User needs color tapes or caps

7.2 Virtual Keyboard

The virtual keyboard, or "on-screen" keyboard, allows you to directly type your local language script easily and seamlessly, no matter where you are on any computer you use.

Other common uses of virtual keyboards include:

- Allowing a person to type in their own language on external keyboards
- Gives user more accessible typing information by allowing on-screen typing,
- Provide a quick, easy way to switch between sets of different characters and / or alphabets.

7.3 Touch Music Player

Touch music player can be used to play songs using hand gestures. Which means a keyboard or mouse is not needed. Touch may include play, pause, next, past, volume boost, volume drop etc.

7.4 Visual Piano

The visual piano is similar to the function of a virtual keyboard. We can play the piano directly with the help of a hand gesture of the map to the corresponding key holding the corresponding music.

7.5 Visual Artist

With the touch of a hand we can paint on the screen. Which helps us make our efforts easier. We can paint the screen easily with the touch of our body. Traditionally, we use a visual mouse. For example in windows with paint we use a visual mouse to draw pictures. By using a visual artist we can easily draw objects using the movement of our hand.

8. DISCUSSION

The visual mouse is an effective way for people to communicate with the touch of their hands. The technology method is often used to increase the performance of the algorithm. According to the literature review, the current system limits the use of external sensors and pre-processing which may result in slower speeds. Therefore in the present system We find that We should not use external sensors as it requires extensive pre-processing. Several proposed systems use a few algorithms that work well and produce high accuracy as well. But even if they use functional algorithms, they have some uncertainties like external sensors, a large

algorithm that works slowly. This program has a wide range of applications.

9. CONCLUSION

In this project, a track-based mouse app was developed and implemented using a webcam. The program is made in place of PYTHON. We have performed mouse functions such as left and right clicks. Most applications require additional hardware that is often more expensive. The goal is to make this technology cheaper and older under the standard operating system. Different application programs can only be written for this technology to create a variety of applications with minimal need for resources.

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