

## TOUCH LESS SCREEN FOR ONLINE CLASS

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**Abstract-** Due to the health emergency situation, which forced universities to stop using their centers as a means of teaching, many of them opted for virtual education. Affecting the learning process of students, which has predisposed many of them to become familiar with this new learning process, making the use of virtual platforms more common. Many educational centers have come to rely on digital tools such as: Discord, Google Meet, Microsoft Team, Skype and Zoom. This system can be beneficial to everyone, especially who are taking online classes. We used computer vision so that user can select colour of pens and use fingers to write on screen using a yellow-coloured cap on his fingertip, and can also erase content on screen using eraser. Once the user is in screen writing controlling mode, user can perform all the drawings and writings operations only by moving fingers.

**KEYWORDS:** Display, Screen, Technology, Touch, Leap Motion Controller.

### 1.INTRODUCTION

The idea for this tool is a result of interest in digital drawing and smart photo recognition software. The initial motivation came when there was a need for a dustless class room for the students to study in. We

know that there are many ways like touch screens and more but what about the schools which can't afford it to buy such huge large screens and teach on them like a T.V. OpenCV in python to draw on the screen using a virtual pen i.e, any marker can be used to draw using the technique of

contour detection based on the mask of the desired colored target marker.

In the era of digital world, traditional art of writing is being replaced by digital art. Digital art refers to forms of expression and transmission of art form with digital form. Relying on modern science and technology is the distinctive characteristics of the digital manifestation. Traditional art refers to the art form which is created before the digital art. From the recipient to analyse, it can simply be divided into visual art, audio art, audio-visual art and audio-visual imaginary art, which includes literature, painting, sculpture, architecture, music, dance, drama and other works of art. Digital art and traditional art are interrelated and interdependent. Social development is not a people's will, but the needs of human life are the main driving force anyway. The same situation happens in art. In the present circumstances, digital art and traditional art are inclusive of the symbiotic state, so we need to systematically understand the basic knowledge of the form between digital art and traditional art. The traditional way includes pen and paper, chalk and board method of writing. The essential aim of digital art is of building hand gesture recognition system to write digitally.

Digital art includes many ways of writing like by using keyboard, touch-screen surface, digital pen, stylus, using electronic hand gloves, etc. But in this system, we are using hand gesture recognition with the use of machine learning algorithm by using python programming, which creates natural interaction between man and machine. With the advancement in technology, the need of development of natural 'human – computer interaction (HCI) systems to replace traditional systems is increasing rapidly.

## 2.LITERATURE SURVEY

### ***Robust Hand Recognition with Kinect Sensor***

In the system proposed used the depth and color information from the Kinect sensor to detect the hand shape. As for gesture recognition, even with the Kinect sensor. It is still a very challenging problem. The resolution of this Kinect sensor is only 640×480. It works well to track a large object, e.g., the human body. But following a tiny thing like a finger is complex.

### ***LED fitted finger movements:***

Authors in suggested a method in which an LED is mounted on the user's finger, and

the web camera is used to track the finger. The character drawn is compared with that present in the database. It returns the alphabet that matches the pattern drawn. It requires a recolored LED pointed light source is attached to the finger. Also, it is assumed that there is no red-colored object other than the LED light within the web camera's focus.

### **3.EXISTING SYSTEM:**

A wide range of eye-tracking devices are currently available commercially on the market, offering many functionalities, accuracy level, and price range.

2. A virtual keyboard interaction system using eye gaze and eye blinking. Their system first detects face and then detects eye and nose region to recognize an eye blink.

### **DISADVANTAGES OF EXISTING SYSTEM:**

Many research studies require eye-tracking devices of high precision to test a range of eye characteristics, but they are expensive such as infrared.

- Ambient lighting conditions required for this system. This system can analyze 3 frames per

second.

### **4. PROPOSED SYSTEM:**

The aim of this project is to implement a computer application which uses alternative methods to use screen as board for drawing and writing using opencv and python. This application tracks users hand movement from live web cam and use opencv colour features to track hand movement and implement draw, erase and write on screen features.

### **ADVANTAGES OF PROPOSED SYSTEM:**

The device would last for a long time and is simple and easy to use.

- Because the screen is touchless, a transparent image is always visible.
- Because commands are accepted via sensors such as verbal or hand gestures, the GUI necessitates the use of lie space. As a result, the touch area is reduced, and the text quality on the screen improves.
- No screen desensitization required
- Suitable for people with physical disabilities.

### **5. MODULES:**

## IMAGE CAPTURING:

In this step used a webcam to acquire the RGB image (frame by frame) and based on only bare hand without glove:

## Pre-processing:

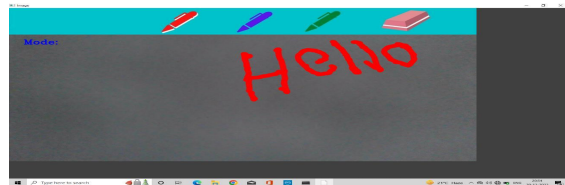
In this step in order to minimize the computation time we took only the important area instead of the whole frame from the video stream and this is called Region Of Interest (ROI). In image processing prefers to convert the color images into a grayscale images to increase the processing and after complete the processing can restore the images to its original color space, therefore, we convert region of interest into a grayscale image. Then blurring the (ROI) by Gaussian blur to reduce the objects that have high frequency but not the target. Notice that in this step the algorithm will fail if there is any vibration for the camera.

## Hand Landmark Detection:

Media Pipe is a framework mainly used for building audio, video, or any time series data. With the help of the MediaPipe framework, we can build very impressive pipelines for different media processing

functions.

## 6.RESULT



## 7. CONCLUSION

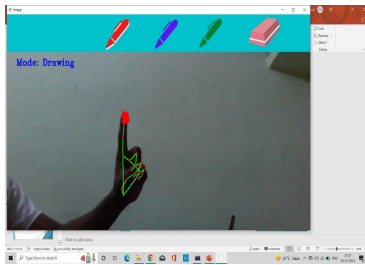
we have developed a hands-free drawing program that uses OpenCV to detect the user's pointer finger. Colorful lines can be drawn wherever the user desires and the brush can even be modified. It is truly like drawing in the air.

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