LIVE SKETCH USING OPEN CV

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ABSTRACT

Virtual Sketch is a fascinating project that leverages computer vision techniques in Python, particularly with the OpenCV library. The core concept revolves around capturing the motion of a colored marker, typically placed at the tip of a finger, using a camera. Python's appeal lies in its extensive libraries and user-friendly syntax, making it an ideal choice for this endeavor. The foundation of this project hinges on color tracking and detection processes, wherein the chosen color marker is identified, and a corresponding mask is generated. Subsequently, morphological operations, specifically Erosion and Dilation, are applied to the mask. Erosion helps reduce impurities in the mask, while Dilation restores the eroded main mask, resulting in a refined representation. In essence, Virtual Sketch harnesses the power of OpenCV, Python, Erosion, Dilation, Color Tracking, Color Detection, and Masking to achieve its innovative goals.

1. INTRODUCTION

Sketching On Air leverages cutting-edge technology, specifically OpenCV and Python, to achieve its remarkable capabilities. OpenCV, short for open-source computer vision and machine learning software, is renowned for its extensive library of over 2400 algorithms. These encompass a comprehensive range of both classic and state-of-the-art computer vision and machine learning techniques. These algorithms are instrumental in tasks such as face detection and recognition, object identification, human activity classification in videos, camera movement tracking, object motion tracking, and 3D extraction. Python, a high-level and versatile programming language, plays a pivotal role in our project. Its object-oriented approach empowers developers to craft clear and logical code, making it well-suited for projects of varying scales. In this particular endeavor, we focus on morphological operations, a set of image processing techniques that manipulate images based on their shapes. These operations involve applying a structuring element to an input image, resulting in the generation of an output image. The fundamental morphological operations we employ are Erosion and Dilation.

Erosion:

- Eliminates away the boundaries of foreground object.
- Mainly used to diminish the features of an image.

Dilation:

- Mostly increases the object area.
- Used to make the features get elevated.

2. LITERATURE SURVEY AND RELATED WORK

Here is the paragraph with text alignment:

Details about the literature review that webserves on the topic Virtual Air Sketching are viewed in this section. The papers' contents are listed below.

An Economical Air Writing System Converting Finger Movements to Text Using Web Camera: [1]

The system is being developed using fingertip detection and finger movement techniques. Fingertip is first detected using Python, OpenCV, and CNN techniques, and then its trajectory is tracked and shown on the screen. The tracking of the hands and the tips of the fingers are the three main steps of a video analysis procedure being typically the detection of the object, tracking its movement from frame to frame, and preliminary analysis of the object's nature.

Virtual Air Sketching is a hands-free digital drawing canvas that utilizes a Raspberry Pi, a Picampere, and OpenCV to recognize and map hand gestures onto a screen. The user's "brush" can be modified in color and size by using built-in buttons. The direction of the brush is controlled completely using OpenCV software and modified to map the pointer finger onto the screen using Pygmy following a calibration screen to measure and record the color of the user's hand.

The idea for Virtual was a result of our interest in digital drawing. Four different types of issues are considered when tracking an object: picking an appropriate method of object representation, choosing the features needed for tracking, finding the object, and tracking the object. The algorithms related to object tracking are an essential component of many applications today, including automatic surveillance, vehicle navigation, and video indexing. The survey identifies this gap and is focused on creating a motion-to-text convert application that may one day be used as computer software for devices for air sketching. To track the finger's movement, it uses computer vision. It might be a way for deaf people to communicate. It is a potent communication technique that does away with paper-based writing.

3. EXISTING SYSTEM

The current system only functions with your fingers, not crayons or paints. We concentrate on the difficult task of identifying and separating a finger from an RGB image without a depth sensor. The lack of a top and movement under the pen is additional issues. One RGB camera is used by the system, which you can

replace. It is impossible to discover the bottom up, and a pen cannot be followed up. The result is an abstract, model unseen image because every finger path has been drawn. It takes a lot of code care to change the position of the process from one region to another using real-time hand touch. To properly control his plan, the user should also be familiar with numerous movements.

4. PROPOSED SYSTEM

Creating a proposed system for a live sketch application using OpenCV involves designing system that not only generates live sketches but also includes additional features and

improvements. Here's a proposed system for a more advanced live sketch application:

Design a user-friendly graphical user interface (GUI) that allows users to interact with the Include start

Stop the sketch, adjust sketching parameters, and save sketches.

application Allow users to select their preferred camera if multiple cameras are available.

Implement sliders or input fields in the GUI for users to adjust parameters in real-time.

These parameters may Control the level of blurring applied to the image.

- Adjust the thresholds for edge detection.
- Determine the thickness of sketch lines.
- Allow users to choose between grayscale or color sketches.
- Enable users to save or export their sketches in various image formats (e.g., JPEG, PNG).
- Integrate additional image filters that users can apply to their sketches. For example, users can apply various artistic filters to make their sketches resemble different artistic styles.

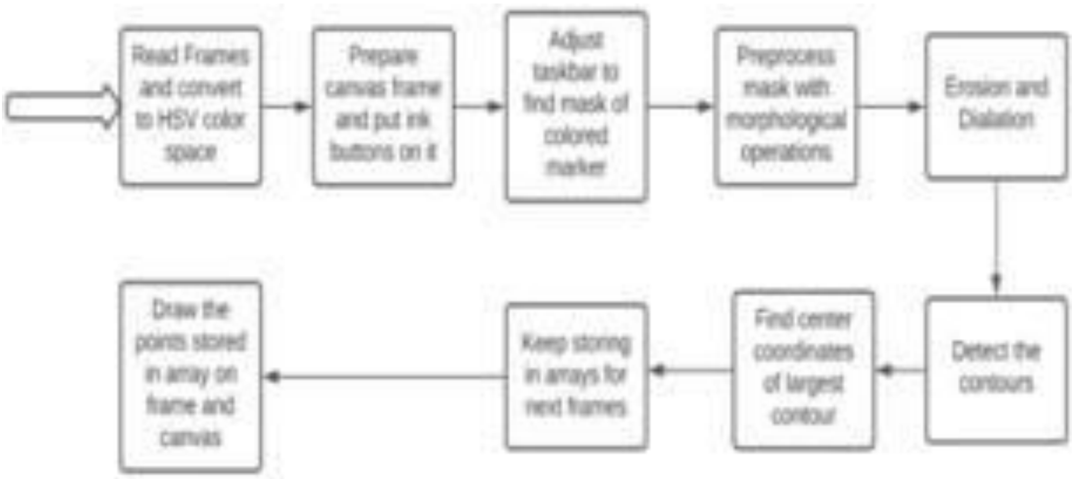

FIG 1 – SYSTEM ARCHITECTURE

5. METHODOLOGIES MODULE

MODULES

6. RESULTS AND DISCUSSION SCREENSHOTS

Screen shots:

FIG 1 - READING FRAME FROM THE WEBCAM:SCREEN SHOTS

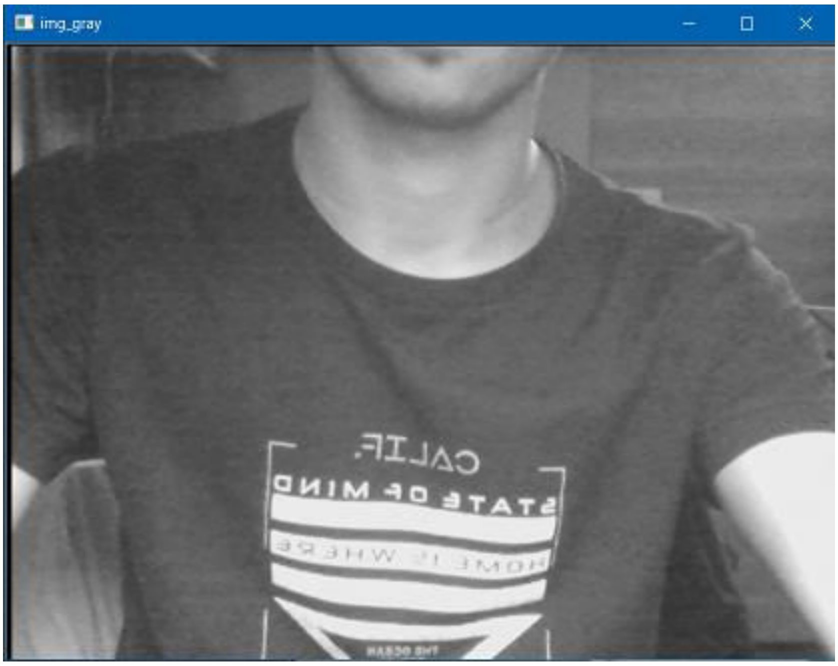

FIG 2 - GRAYSCALING IMAGE

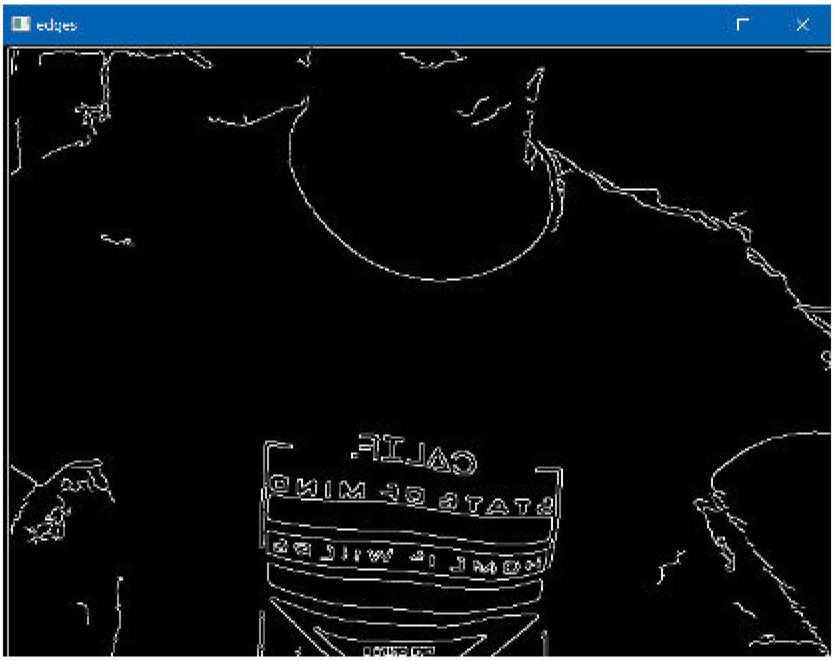

FIG 3 - DETECTING EDGES

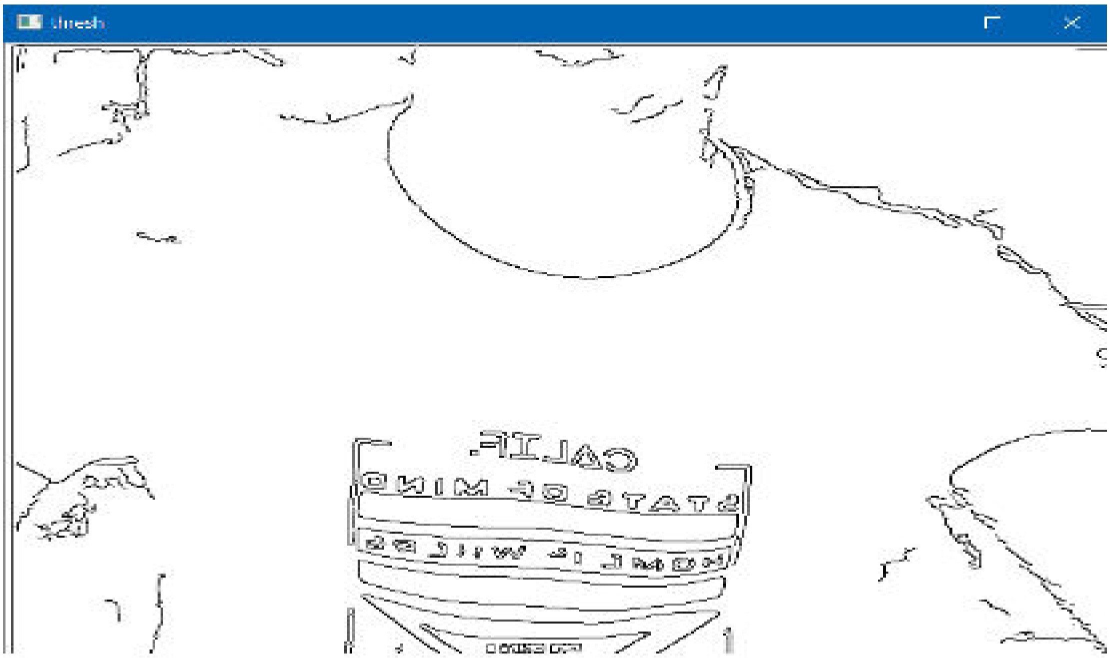

FIG 4 - APPLYING THRESHOLD INVERSE

7. CONCLUSION AND FUTURE SCOPE

This project makes the user to have an interactive environment where the user can draw whatever he wants by choosing his required colours from the displayed ones. So, we conclude that Virtual Sketch is developed using the library NumPy and in Open CV where we have many libraries and algorithm in built which makes the interfaces more active while using.

We used python as; it has many inbuilt libraries and many modules which represent the imagination virtually when used along with OpenCV as well as its morphological processes

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