Color Detection Using Open--CV

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Abstract -As Per our Study In this project A model has been created which aims to provide a solution for the people that suffer from a well-known vision deficiency called color blindness. The model aims to help people like them in detecting the colors which is hard for them to recognize. As color blind people are also restricted from various areas which also include some professional fields just because of their lack of distinguishing some different colors. By developing this model, we can make a system to reduce this deficiency by the use of technology, so that it can help them without even getting it cured. The technique being used in order to develop a setup for the identification of colors is Image Processing. It uses 2 approaches, first being to detect the color and the second being the edge detection of the object. It then processes the image of the object placed in front of the camera and displays the color along with its corresponding color code depending on the shade of the color. The model after its successful development in future can be later transformed in form of some portable device which can be carried by people suffering from color blindness to use it whenever they are in need.

Key Words:Numpy , OpenCV, Color Blindness, Image Processing

1.INTRODUCTION

Now in order to implement the setup and develop the model which would help as an aid for the color blind people, some techniques and methods need to be put in use which include libraries like Numpy, OpenCV and a technique called Image Processing.

Image Processing technique is used to perform some specific procedure on an image, so as to get an improved image as an output or to separate some valuable data from the image. It goes about as a kind sign handling where info is a picture and yield might be a picture or qualities/highlights related with that picture

OpenCV(Open Source Computer Vision) library focuses on constant Computer Vision. It is for the most part used to do all the activities related with pictures.It was at first propelled in 1999 by Intel. With more updates, it has been changed from that point forward to focus on the constant Computer vision. This library has been composed under programming dialects like C and C+. It very well may be effortlessly run on working frameworks Windows and Linux. This library can be effectively interfaced with

programming dialects like Python, MATLAB, Ruby and others also.

Numpy is a Python Package which represents Numerical Python. This library comprises multidimensional array objects and an assortment of schedules for processing of arrays.

1.1.PROBLEM STATEMENT

Nowadays most of the people can be seen as a victim of Color Blindness that is incurable disease because of genetic disorder. It can be cured by some genetic therapy but it is very much costly. The problem with them is that these people are unable to differentiate between shades of color or when two colors are mixed together so it will be very difficult for them to see the item's colors clearly. So the problem is how it can be analyzed without curing the disease.

2.Objectives

1. To identify the color of the given object kept in front of the camera
2. To represent the color found on the object and generating its respective color code.

3.Methodology

3.1Theory
Color detection model is used to find the respective color, and its shade. Color detection models will be useful for people having disorders of color blindness, agricultural fields and in medical fields as well.For the implementation of this technique, we need to have some python libraries.
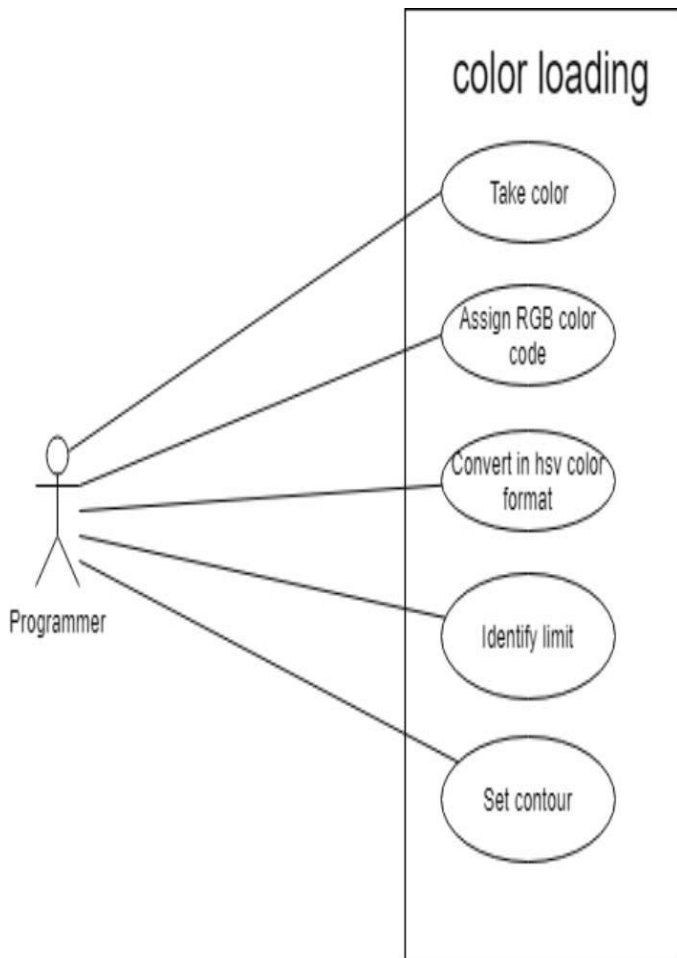
OpenCV
To use the camera and to identify the object's color from that camera in our code.

Numpy
To store the range of the color on the screen, i.e. to identify the location of the colors present on the screen.
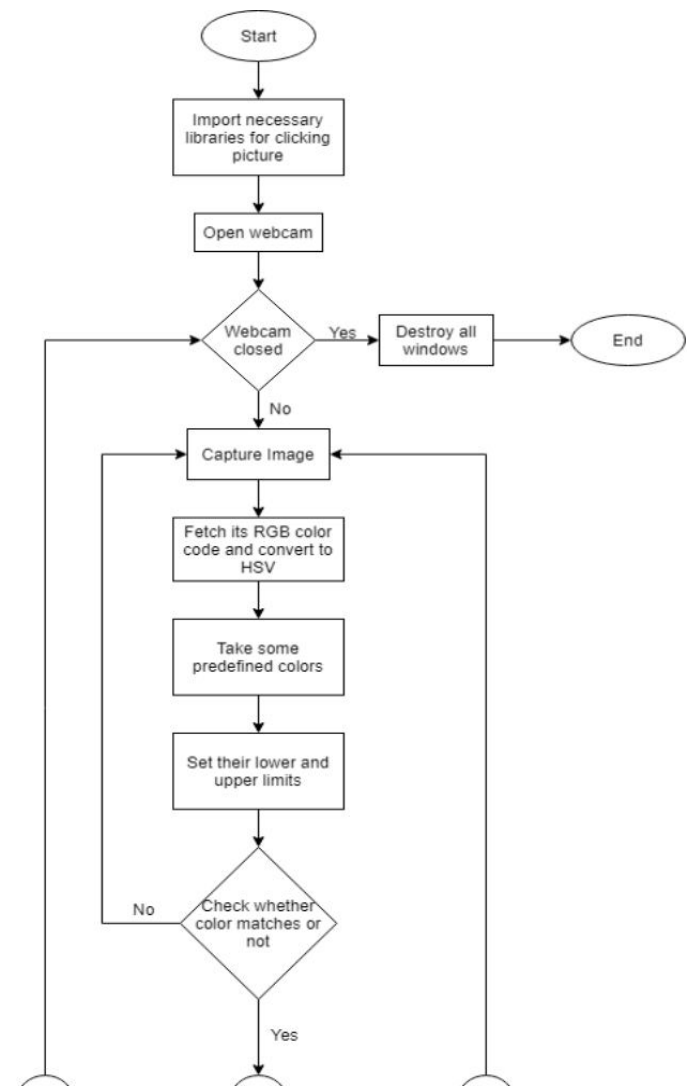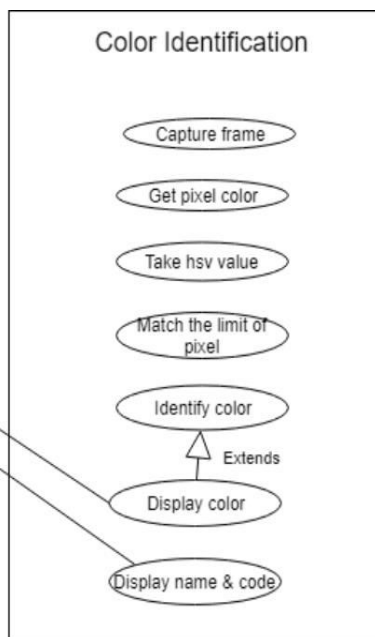
3.2Design

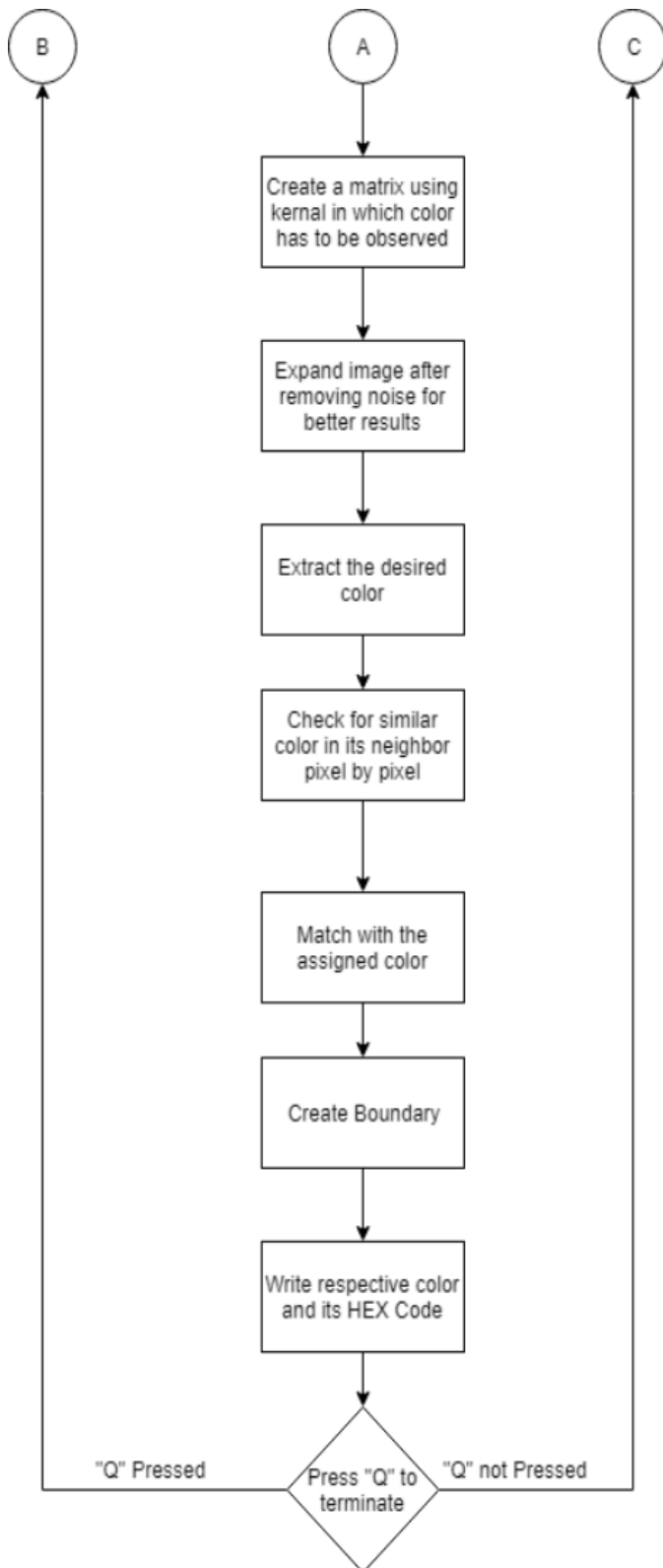### 3.2.2.Color Identification

4.Algorithm

1. Import required Modules
2. Capture live stream video through webcam
3. Converting image frame from BGR(Blue-Green-Red) to HSV(Hue-Saturation-Value)
4. Defining the range of each color in the image.
5. Find range of the colors in the frame
6. Track the color and draw a rectangle around it
7. Display output as a video stream in a window with the colors being tracked displaying their names and color codes as soon as it tracks an object.
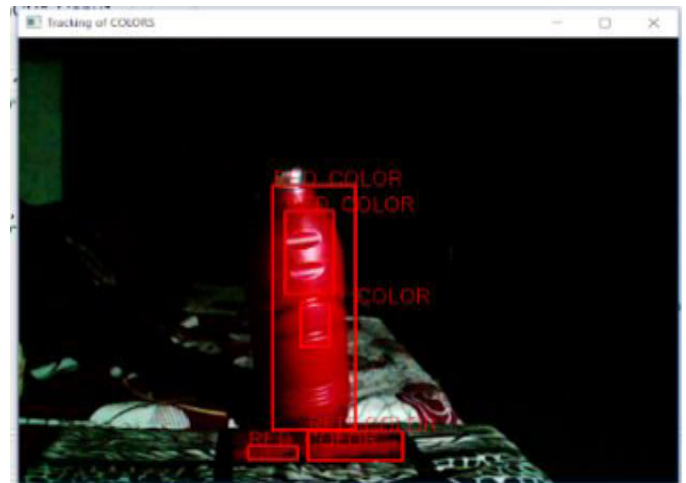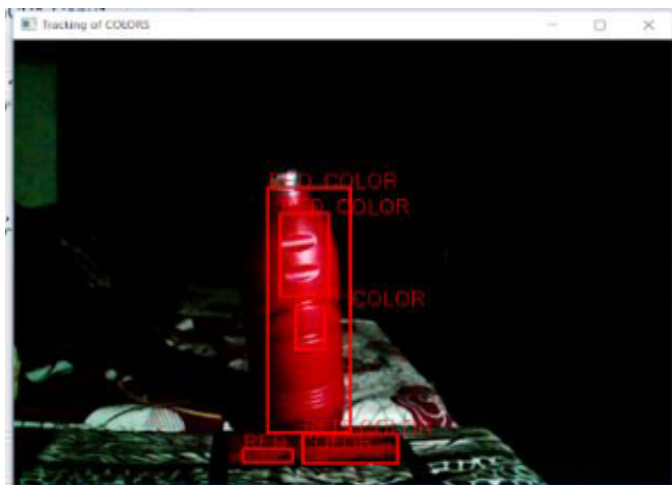
4.1.Architecture Diagram

3.2.1Color Loading

5. EXPERIMENT AND RESULT

The primary intention is to distinguish varied shapes and color in a very given example picture. Some Of the Output Images are

Color can be identified from the sensory optic nerves of the eyes. Color can only be seen or identified when a source of light is applied to an object. Color blindness can be termed as inability of the differentiation between colors. It is an incurable disease that can be termed as lifelong disease. Edgescan be very helpful in color differentiation boundaries.

Color detection models can be used in mixing of colors especially in paints, dyes and color pigments. It can be also very helpful in differentiating colors that are used in robotics and in other medical fields. It can also be used in the Graphic Arts Industry. Other implementations can also be used in the agricultural industry like especially detection of quality of soil.

Color Detection can be used in the agriculture industry tofind

the weeds along with the crops. Via color detection weeds can be identified and destroyed and the crops can be saved. It can be also used in medical industries to detect the disease and other disorders done by the human eye, whether especially in the face and other internal diseases like cancers.

The main aim of computer vision is to analyze the behavior of the human eye and the reduction of human effort. Through computer vision various tasks can be to detect the object or identify its color. By this method it is very helpful to detect the symptoms of the disease and the other applications in other industries like agriculture.
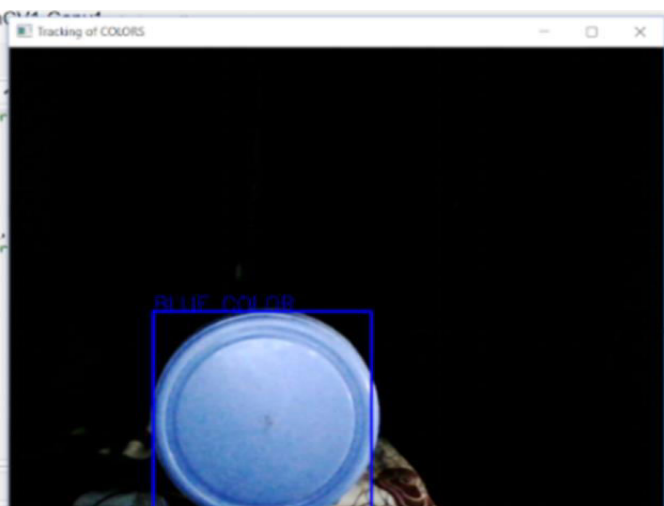
6. CONCLUSIONS

By using the concept of color detection model, we were able to identify different colors of different objects placed in front of the camera and produce the corresponding accurate color output. The future of this model is that it can be implemented in some IOT based devices which can then be utilized by color blind people in order to identify and recognize those colors in which they have problems. The model can further act as a helping source for them which will also prevent the high cost for getting the deficiency treated.
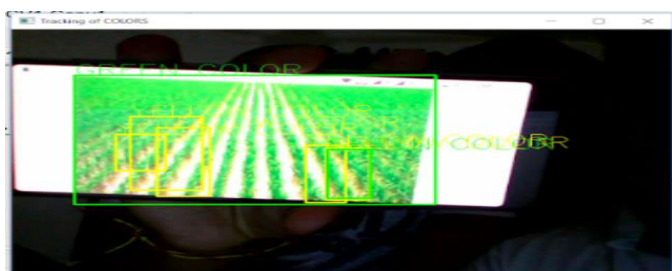
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