COLOUR RECOGNISATION

Prince Bharti
18SCSE1010733

Palak Yadav
18SCSE1010733

Avneesh Kumar
Professor

INTRODUCTION

Before going into the speculations of the project it is important to know the definition of color detection. It is simply the process of identifying the name of any color. It is obvious that humans perform this action naturally and do not put any effort in doing so. While it is not the case for computers.

Human eyes and brain work in co-ordination in order to translate light into color. Light receptors that are present in eyes transmit the signal to the brain which in turn recognizes the color. There is no exaggeration in saying that humans have mapped certain lights with their color names since childhood. The same strategy is useful in detecting color names in this project.

Three different colors Red, Green and Blue are being tracked by utilizing the fundamentals of

computer vision. After successful compilation when we execute the code a window redirects to the image displayed on it whose path is given as an argument.

Additionally, we obtain the color name of the pixel along with the composition of three different colors red, blue and green values. It is helpful in recognizing colors and in robotics. One of the applications of color detection by computer vision is in driver less cars. This system is useful in detecting traffic and vehicle backlights and takes decision to stop, start and continue driving. This also have much application in industry to pick and place different coloured object by the robotic arm. Color detection is also used as a tool in various image editing and drawing apps.

METHOD AND MATERIAL

Image Capture: The first step is to fetch a high-quality image with resolution. To load an image from a file we use

Cv2.imread(). Image should be in working directory or full path of the image should be given.
Img=cv2.imread(img path)

Extraction of RGB Colors:

In this phase, the 3 layered colors are extracted from the input image. All the color images on screens such as televisions, computer, monitors, laptops and mobile screens are produced by the combination of red, green and blue light. Each primary color takes an intensive value 0 (lowest) to 255 (highest). When mixing 3 primary colors at different intensity levels a variety of colors are produced. For Example: If the intensity value of the primary colors is 0, this linear combination corresponds to black. If the intensity value of the primary colors is 1, this linear combination corresponds to white. Index=["color", "color_name", "hex", "R", "G", "B"] Calculate minimum distance from coordinates: The minimum distance is calculated by considering moving towards the origin point from all colors to get the most matching color. The pandas library serves as an important utility to perform various operations on comma-seperated values like pd. read_csv() reads the csv file and loads it into the pandas data frame.

D = abs (R-int(csv.loc[i,"R"])) + abs (G-int (csv.loc [i,"G"])) + abs (B- int (csv.loc [i,"B"]))

Image Display with Shades of Color

: The rectangle window is used to display the image with shades of color. After the double-click is triggered, the RGB values and color name is updated.

To display an image Cv2.imshow () method is used. By using cv2.rectangle and cv2.putText () functions, the color name and its intensity level can be obtained.
text=getColorName(r,g,b) +
'R='+str(r) + 'G='+str(g) + 'B=' +str(b).

III. SYSTEM ARCHITECTURE

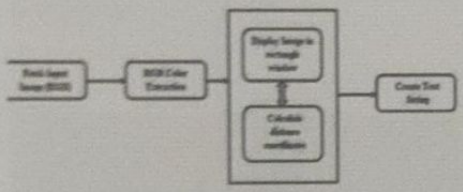
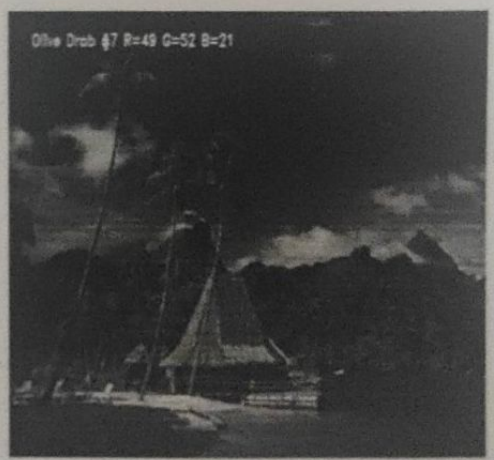


Figure 1 : Architecture Diagram

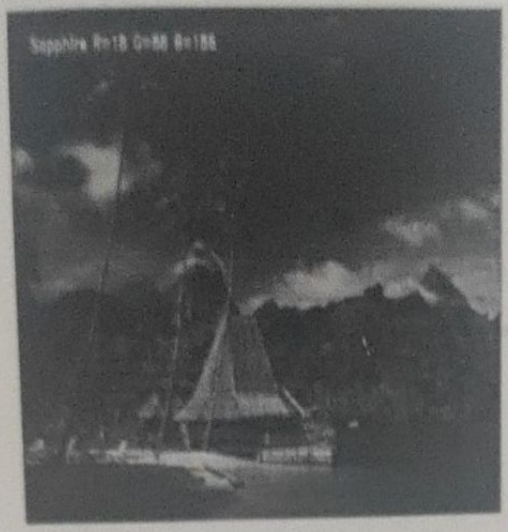
The above architecture shows the capability for the project. It consists of a well-defined sequence diagram that is abstracted from the source code. It leverages the rich capabilities of the technology such as OpenCv library in python. The above architecture makes the process more efficient based on principles and properties related to each other.As we know that Red, Green and Blue are the primary colors that can be mixed to produce different colors. The present color detection project takes the path of an image as an input and looks for the composition of three different colors red, green and blue in the given image.

IV. EXPERIMENTAL RESULTS

(a)

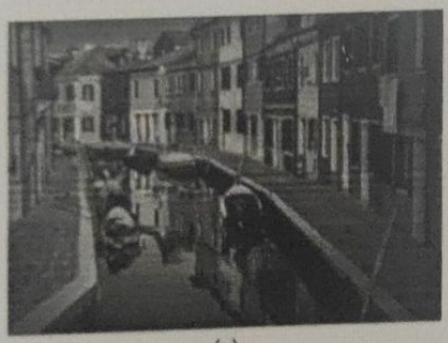


(b)

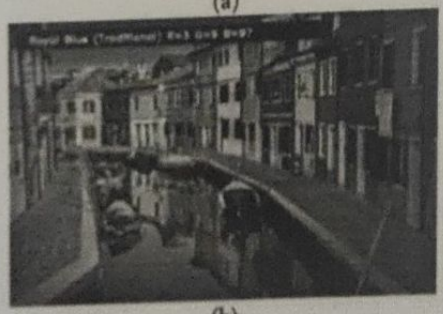


(c)

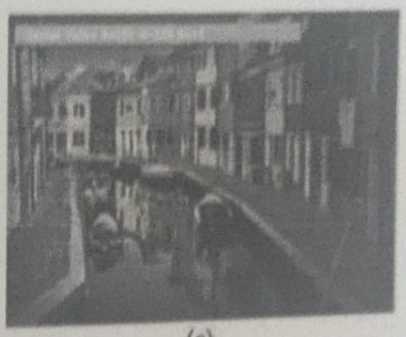
Figure 2: (a) Original input image of nature (b) Output image with Color intensity RGB values as R=49 G=52 B=21 for Olive Drop (c) Output image with Color intensity RGB values as R=18 G=88 B=186 for Sapphire



(a)



(b)



(c)

Figure 3: (a) Original input image of Salt Lake (b) Output image with Color intensity RGB values as R=3 G=9 B=97 for Royal Blue (c) Output image with Color intensity RGB values as R=252 G=229 B=13 for Golden Yellow.

V. CONCLUSION

In this paper we defined to get the required color field from an RGB image. In this various steps are implemented using openCv platform. The main positive point of this method is its color differentiation of a mono color. In the future scope, the detection of the edge detection techniques has different other applications like facial detection, color conversion for grey scale image etc. that can also be implemented

VI. FUTURE WORK

In existing system there is no exact color representation of colors with accuracy. In proposed system, we are introducing the CV datasets and according to it the number of shades that can be identified using 865 color names along with their RGB and hex values. Whenever the cursor clicks the image, it automatically shows the RGB shades color values. Proposed system uses OpenCv for sorting of primary colors.

VII. REFERENCES

[1]. Weiming Hu, Xue Zhou, "Active Counter-Based Visual Tracking by Integrating Colors, Shapes and Motions", IEEE TRANSACTIONS ON IMAGE PROCESSING, VOL. 22, NO. 5, MAY 2013

[2]. G.M. Snoek, "Evaluating Color Descriptors for Object and Scene Recognition", IEEE TRANSACTIONS ON PATTERN ANALYSIS AND MACHINE INTELLIGENCE, VOL. 32, NO. 9, SEPTEMBER 2010

[3]. Claudia Nieuwenhuis, "Spatially Varying Color Distributions for Interactive Multi Label Segmentation", IEEE TRANSACTIONS ON PATTERN ANALYSIS AND MACHINE INTELLIGENCE, VOL 35, NO. 5, MAY 2013

[4]. Kok -Meng Lee, "Effects of Classification Methods on Color-Based Feature Detection with Food Processing Applications", IEEE TRANSACTIONS ON AUTOMATION SCIENCE AND ENGINEERING, VOL. 4, NO. 1, JANUARY 2007

[5]. J. Van de Weijer, "Curvature estimation in oriented patterns using curvilinear models applied to gradient vector fields", IEEE TRANS PATTERN ANALYSIS AND MACHINE INTELLIGENCE, VOL. 23, N0. 9, PP. 1035- 1042, APRIL 2001

[6]. Alexander Toet, "Multisource Information Fusion Architectures Algorithms and Applications" SPIE 6947 BELLINGHAM WA USA THE INTERNATIONAL SOCIETY FOR OPTICAL ENGINEERING, 1 12, 2008