Project in Python – Colour Detection using Pandas & Open CV

Abstract :

Today’s project will be exciting and fun to build. We will be working with colors and you will get to learn about many concepts throughout this project. Colour detection is necessary to recognize objects, it is also used as a tool in various image editing and drawing apps. I write a simple Python code to detect the color in the image using OpenCV and pandas (python libraries).

### What is Colour Detection?

Colour detection is the process of detecting the name of any color. Simple isn’t it? Well, for humans this is an extremely easy task but for computers, it is not straightforward. Human eyes and brains work together to translate light into color. Light receptors that are present in our eyes transmit the signal to the brain. Our brain then recognizes the color. Since childhood, we have mapped certain lights with their color names. We will be using the somewhat same strategy to detect color names.

### About the Python Project :

In this color detection Python project, we are going to build an application through which you can automatically get the name of the color by clicking on them. So for this, we will have a data file that contains the color name and its values. Then we will calculate the distance from each color and find the shortest one.

### The Dataset :

Colors are made up of 3 primary colors; red, green, and blue. In computers, we define each color value within a range of 0 to 255. So in how many ways we can define a color? The answer is 256\*256\*256 = 16,581,375. There are approximately 16.5 million different ways to represent a color. In our dataset, we need to map each color’s values with their corresponding names. But don’t worry, we don’t need to map all the values. We will be using a dataset that contains RGB values with their corresponding names. The CSV file for our dataset has been taken from this link:

[Colors Dataset](https://github.com/codebrainz/color-names/blob/master/output/colors.csv) **:**

The colors.csv file includes 865 color names along with their RGB and hex values.

Prerequisites :

Before starting with this Python project with source code, you should be familiar with the computer vision library of Python that is ***[OpenCV](https://data-flair.training/blogs/opencv-python-tutorial/)*** and [***Pandas***](https://data-flair.training/blogs/pandas-tutorials-home/).

## Summary :

In this Python project with source code, we learned about colors and how we can extract color RGB values and the color name of a pixel. We learned how to handle events like double-clicking on the window and saw how to read CSV files with pandas and perform operations on data. This is used in numerous image editing and drawing apps.