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COLOR DETECTION USING OPENCV

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ABSTRACT

The program that displays the user's desired print color is called color recognition technology. It compares the color codes that the program already provides with the image whose colors we want to know. Let's begin by asking, We are aware of a disability that is very common in humans called "color blindness." Though it is very common in humans, most people can live with it because, as long as you don't think too much about the colors, it won't affect your overall performance. The future is self- driving vehicles that require color recognition to make road travel simple. It is true that no one has seen the future, that currently there is no cure for color blindness. How ever is always small). The program compares the R, G, and B values of colors to those in the image. After that, the name of the color is shown to the user in a way that is easy for them to see. This system can help normal people, especially men, understand colors, so it could be very useful. It could also be used to connect this system to goggles or specs and helmets for motorcycle drivers. These things may not seem like they would be of any use right now to most people, but those who suffer from it probably find Because it will help them recognize the color (even if they won't see it, they'll still be able to recognize it). Therefore, it is straightforward to assert that the implementation of this program will benefit a large number of individuals. Asa result, the program is designed with very low sensitivity and is equipped with a large number of colors to provide many comparisons and a very small chance of getting a wrong color or a missing color. This program makes use of OpenCV.

Keywords: Color Blindness, RGB Values, OpenCV.

CHAPTER -1

INTRODUCTION

Before discussing project speculation, it is important to understand the definition of color recognition. This is essentially the most common way to identify any variety name. Not surprisingly, people do this subconsciously and naturally. Computers, on the other hand, do not. The human brain and eyes work together to convert light into color. The brain receives a signal from the light receptors in the eyes, which then recognize the color. Since childhood, people have mapped certain lights with color names, and this is not an exaggeration. This project uses the same method to identify color names. The basics of computer vision are used to track three different colors - red, green and blue. When we run the code after it is successfully built, the window takes us to the image displayed there, and the image path is given as an argument. In addition, we get the name of the pixel color and the values of the three different colors red, blue and green. It helps in color recognition and robotics. Computer vision color recognition is used, for example, in self-driving cars. This system makes decisions to stop, start or continue and is useful for detecting traffic and vehicle backlighting. It can also be widely used in industry to pick and place objects of different colors near the robot arm. Many applications for drawing and editing images

also use color detection as a tool.

BLOCK DIAGRAM

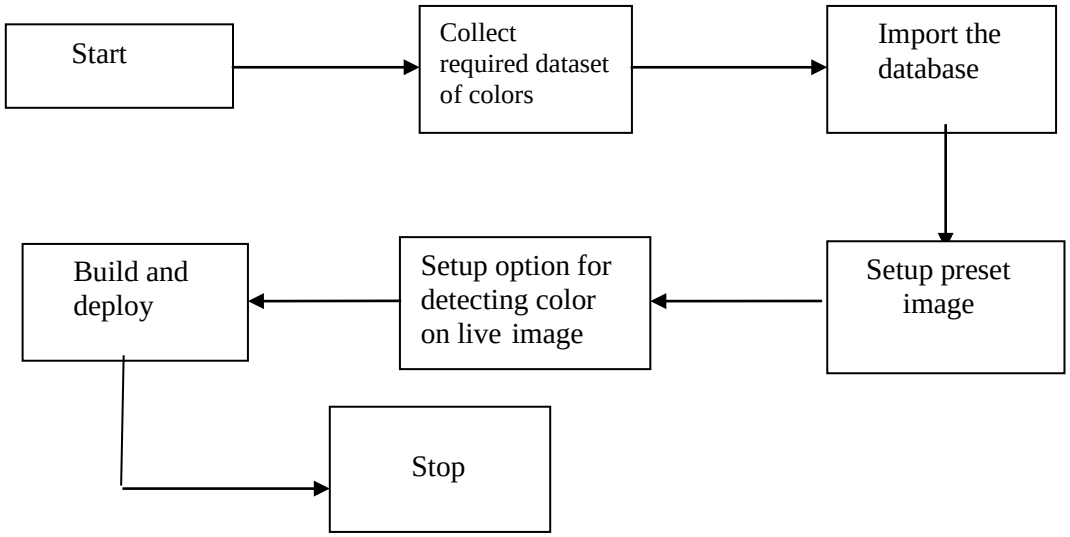

FIG:1.1 Block Diagram

Collect required dataset of colors

Graphic design is based on effective use of color, and choosing colors is a difficult but important task for both amateur and professional designers. Designers often look to many sources for inspiration, including art, photography, and color palette books. Color selection is largely guided by intuition and qualitative rules such as theories of complementary colors and warm and cool colors. It is generally believed that some color combinations are harmonious and pleasant, while others are not. During the past two centuries, many theories of color matching have been proposed to describe and explain these phenomena, but few large-scale experiments have been conducted.

Import the dataset

Restoring data from such a file to a target database means importing database snapshots. The database can be imported to the same or another database server. The only condition is that the source and targetdatabase type must match.

Build and deploy

The parts must be integrated into a coherent, hopefully functional whole. This integration of codes into a functional unit is called a "build" in software engineering. This integration step is different for different programming languages. Before trying a complex of units, we need to build it. What we mean by this is that, for our purposes, it is sufficient to think of the "build" phase as combining all code units, functions, and methods of the system developers into a single, hopefully functional unit. It was launched at a test site for integration testing. This integration testing can take anywhere from a

few minutes to a day or more to test new or updated backend processes, or even just a few minutes to fix a typo or change a UI color. Software is not released to production until the "test bed" is satisfied that it is working correctly. When errors were detected, the procedure returned to the sandbox stage.

Setup preset image

An image preset, like a macro, is a set of predefined size and format commands saved as a . Consider a scenariowhere each product image on your website needs to be in two different sizes to make sense of the previous images: 150 and 150x500px and 500x500px. You will create two presets: one called "Enlarge" for images with a resolution of 500 x 500 pixels, and another called "Minitrate" for images with a resolution of 150 x 150 pixels. Dynamic Media Image Server looks for the Enlarge Image Preset and Thumbnail Preset definitions to deliver images in "Enlarge" and "Thumbnail" sizes. The server then dynamically generates the image according to the size and format requirements of each predefined image.

MODULE 1-Capturing and Storing Imagecapturing image:

A module is an extension of the main program that performs a specific task. A module is a piece of code that is contained as a whole or is intended for ease of use in programming. A module is a part of a program or software.with one or more routines A program consists of one or more independently developed modules. Business software can have multiple modules, each performing its own business. Modules simplify the programming process by allowing the developer to focus on one aspect of the application's functionality. Interfaces are usuallyused to integrate modules into a program (software).

MODULE 2-Image processing Image processing:

Image processing is the process of performing certain operations on an image to improve it or extract useful information from it. It is a type of signal processing where image is the input and image or its features or functions. serves as a summary. A common misconception about image manipulation is that it involves the arbitrary manipulation of images to support a desired reality or achieve an aesthetic standard. However, a more precise definition of image processing is a means of transition between digital image processing equipment and the human visual system. A two-dimensional array specially arranged in rows and columns can be used to define the image. A digital image consists of a limited number of elements, each of which has a specific value at a specific location. Picture elements, image elements and pixels are the names of these components. The most common way to describe the parts of a digital image is a pixel. Image processing is the process of performing certain operations on an image to improve it or extract useful information from it. It is a type of signal processing where an image is the input and the image or its features or characteristics serve as the output. Image processing is one of today's rapidly developing technologies. It is an important field of study in fields such as Information technology and engineering.

CHAPTER-2

LITERATURE SURVEY

[1] Weiming Hu, Xue Zhou, VOL. 22, NO. 5, MAY 2013 —In this paper, we present a framework for active contour-based visual tracking using layers. The core components of the framework are contour-based tracking initialization, color-based contour evolution, adaptive shape-based contour evolution for non-periodic motions, dynamic shape-based contour evolution for periodic motions, and sudden motion manipulation. To initialize contour-based tracking, we develop an optical flow-based algorithm to automatically initialize contours in the first frame. Color-based contour evolution uses Markov random field theory to measure correlations between neighboring pixel values to estimate the posterior probability. For adaptive shape-based contour evolution, global shape information and local color information are combined for hierarchical contour evolution, and a flexible shape update model is constructed. For dynamic shape-based contour evolution, a shape-shape transition matrix is taught to characterize the temporal relationships of object shapes. Sudden movements are handled by particle swarm optimization, which captures the total movement aligned with the contours of the current frame to create the original shape in the next frame.

[2] ClaudiaNieuwenhuis,VOL35,NO.5,MAY2013-We propose an algorithm for segmentation of natural images based on texture and color information, which uses a sparse analysis model for image segmentation. As a core component of this method, we present a novel text similarity metric based on a joint sparse representation of image locations. We propose a statistical MAP inference approach to combine texture similarity with color and location information. Combined with newly developed convex multi-label optimization methods, the result is an efficient interactive segmentation algorithm that is easily parallelized on graphics hardware. The proposed approach outperforms the state-of-the-art interactive segmentation methods in the Graz benchmark.

[3]G.M. Snoek ,VOL. 32, NO. 9, SEPTEMBER 2010-Image class detection is important for acquiring visual information at the level of objects and scene types. Until now, intensity-based descriptors have been widely used. Color descriptors have only recently been proposed to increase luminance variance and discrimination. Due to the large number of descriptors, a structured overview of color-invariant descriptors is needed in the context of image category recognition. Therefore, this paper investigates the invariance and distinctiveness of color descriptors in a structured way. The invariant properties of color descriptors are presented analytically using a taxonomy based on invariant properties of photometric transformations. The discrimination performance of color images is experimentally evaluated using two reference values of image and video areas. From the theoretical and experimental results, it can be concluded that invariance to changes in light intensity and changes in light color affects category recognition. The results further show that the utility of invariance to light changes is class-specific.

[4] RaniNS,Verma SK& Joseph A, Vol.6, No.4,(2016)-Achieving high accuracy and efficiency of South Indian character recognition systems is one of the main goals that are always pursued to promote the use of Optical Character Recognition (OCR) in South Indian languageslike Telugu. The character recognition process includes preprocessing, segmentation, feature extraction, classification and detection. The feature extraction step is

designed to uniquely identify each character image in order to classify it. The choice of feature extraction algorithm is very critical and important for any image processing application and is mostly directly proportional to the type of image objects to be detected. In optical technologies like South Indian OCR, feature extraction technique plays a very important role in recognition accuracy due to huge characters. In this work, we mainly focus on evaluating the performance of various feature extraction techniques on Telugu character recognition systems and analyze its effectiveness and accuracy in Telugu character recognition.

[5] Senthamaraikannan D, Shriram S & William J, Vol.2, No.3,(2014)-People see the world in colors. Whenit comes to just looking at it, it's just pleasing to the eye, but when you question that label, it becomes a challenge. It is much easier to gain valueswithout the tedious task of finding a person who understands colors. This paper proposes the idea of teaching a computer to perceive and define colors well enough for useful applications. The proposed detection algorithm takes advantage of the camera and even inputs data for color detection based on RGB values. The algorithm involved calls to a function that creates a loop to adjust the distance based on the closest match. It helps to easily define a color based on the RGB color space with a peak resolution

CHAPTER-3

EXISTING SYSTEM

The current system is based on the color association probability function, where the centroid of colors and the co-occurrence histogram of color edges are searched, which reduces the accuracy of that system. Here, we use HSV to transform colors, non-scale feature transformations to extract features from the image, and the color object is detected based on the corresponding key points. In the existing system, they passed with OpenCV, but the wrong outputs were obtained when extracting the colors. There is no accurate color representation.

PROPOSED SYSTEM

Our color recognition system project is compatible with any computer with minimum requirements. The identification process takes less than a second, which is very useful for businesses. Perception is the first step in the right direction. Color recognition makes it easier for users to recognize and name a color. The goal of this project is to reach all colorblind people in society so that everyone can benefit from it. There is no reason to doubt the accuracy of color recognition technology. Our project can be used with any basic camera. No special cameras are needed for this to work. However, if you want to use it as an assistant in self-driving cars, you need a good camera, and you should use more than one to get a full view of the car.

CHAPTER-4

RESULTS

If you notice, most of the software we use in real life requires user input, whether it's a search engine, a generic application, or even email. First let's enter our email address and password. Python has many built- in functions to help get data from the user and display the data after you've processed some logic in your code. The flowchart below will help you understand how the data entry and display system works in some devices. The user may want to make the code output better and more

attractive to the viewer. We have built-in extra features for this. Here we talk about the two most common approaches. We have the Str.format() method with the Format() function, the output looks better. The accompanying braces { } in the code are passed as wildcards. By putting numbers as placeholders, we can also specify the order in which these variables are displayedThe print command is the most basic way to print. To end the print line with a new line, add a print statement without objects. It prints to any object, including file objects, that implements write().

FIG :4.1 OUTPUT SCREEN

CHAPTER-5
CONCLUSION

Technology for color detection has come a long way, but it still has a long way to go. When we observe self- drivingvehicles operating in accordance with traffic regulations on public roads. The machines are prepared for it right now. Tesla leads the way in this technology .However, the color detection programs of the next generation will feature a greater number of upgrades. The applications in smart environments, where equipment and computers function similarly to personal assistants.

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