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DETERMINING IMAGE COLOR THROUGH MATRIX IN C++ PROGRAMMING LANGUAGE

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Abstract: C++ programming in the language OpenCV library from the possibilities using graphics and the images analysis to do This is used . in the thesis matrices through image colors determination about word is maintained .
Key words: RGB, OpenCV, RGB, iostream, namespace, const.

OpenCV (Open Source Computer Vision Library) is it computer see and images again work for intended free library . It is similar to C++, Python , and Java languages with It works . OpenCV image and videos again work , objects identify , face recognizing to take , image filtering and distance measurement such as tasks to do opportunity The library provides real - time work for optimized scientific projects , robotics and artificial intellect in the fields wide is applied .
C++ programming in the language matrix through image color determination for the image matrix as seeing exit possible . In this process image pixels RGB (Red, Green, Blue) color values as is expressed . Every one pixel color to its RGB composition looking at is determined . Below simple example and OpenCV using image color determination about information cited .
Simple RGB matrix through the color to determine .
Image matrix as is expressed as , and every one of the element color analysis will be done .

```
#include <iostream>
using namespace std ;
int main( ) {
   const int rows = 3, cols = 3;
// RGB values with image matrix
   int image[rows][cols ][ 3] = {
{{255, 0, 0}, {0, 255, 0}, {0, 0, 255}}, // Line 1
{{255, 255, 0}, {0, 255, 255}, {255, 0, 255}}, // line 2
{{128, 128, 128}, {0, 0, 0}, {255, 255, 255}} // Line 3
};
   int redCount = 0, greenCount = 0, blueCount = 0;
   // Ranglarni aniqlash
   for (int i = 0; i < rows; i++) {
      for (int j = 0; j < cols; j++) {
         int red = image[i][j][0];
         int green = image[i][j][1];
         int blue = image[i][j][2];
         if (red > green && red > blue) redCount++;       // Qizil piksel
         else if (green > red && green > blue) greenCount++; // Yashil piksel
         else if (blue > red && blue > green) blueCount++;   // Ko‘k piksel
      }
   }
   // Natijalarni chiqarish
   cout << " Red" pixels count : " << redCount << endl ;
```

```
    cout << " Green" pixels count : " << greenCount << endl ;
    cout << " Blue pixels count : " << blueCount << endl ;
return 0;
}
```

OpenCV Library using image color determination

If true image file with work need if , **OpenCV** from the library Use . Below the image loading and the colors analysis to do example cited .

```
#include <opencv2/opencv.hpp>
#include <iostream>
using namespace cv;
using namespace std;
int main() {
    // Tasvirni yuklash
    Mat image = imread("image.jpg"); // "image.jpg" ni ishlayotgan papkaga joylashtiring
    if (image.empty()) {
        cout << " Image" " not loaded !" << endl ;
return -1;
}
    int redCount = 0, greenCount = 0, blueCount = 0;
// Every one pixel analysis to do
    for (int i = 0; i < image.rows; i++) {
        for (int j = 0; j < image.cols; j++) {
            Vec3b pixel = image.at<Vec3b>(i, j); // Pikselning RGB qiymatlari
            int blue = pixel[0];
            int green = pixel[1];
            int red = pixel[2];
            // Ranglarni aniqlash
            if (red > green && red > blue) redCount++;
            else if (green > red && green > blue) greenCount++;
            else if (blue > red && blue > green) blueCount++;
        }
    }
    // Natijalarni chiqarish
    cout << " Red" colored pixel count : " << redCount << endl ;
    cout << " Green" colored pixel count : " << greenCount << endl ;
    cout << "Ko'k rangli piksel soni: " << blueCount << endl;
    return 0;
}
```

RGB Matrix : Any one pixel red (R), green (G) and Blue (B) values range from 0–255 numbers with is expressed .

OpenCV : Image loading and pixels management for wide applicable library . Image files with to work makes it easier .

DLL and Libraries : OpenCV with work for relevant libraries installation and to your project connect need .

References .

1. "C++ Primer" (Stanley B. Lippman, Josée Lajoie, Barbara E. Moo)
2. "Programming: Principles and Practice Using C++" (Bjarne Stroustrup)

3. "Data Structures and Algorithm Analysis in C++" (Mark Allen Weiss)
4. "Introduction to Algorithms" (Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein)
5. "Learning OpenCV 4: Computer Vision with Python and C++" (Adrian Kaehler, Gary Bradski)
6. "OpenCV By Example" (Prateek Joshi)