**PROJECT REPORT**

(Project Term AUG-DEC 2021)

## COLOR DETECTION using OPEN-CV

Submitted by

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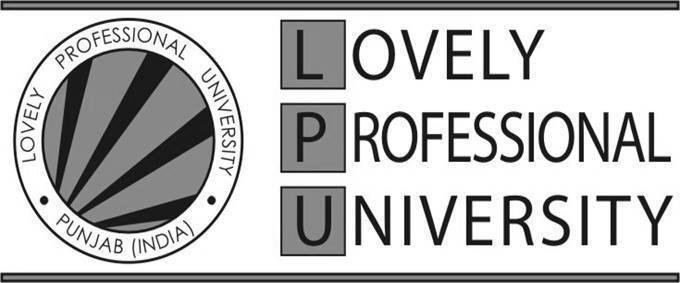
**Project Group Number:**

**Course Code: INT-246**

Under the Guidance of

**Dr. SAGAR PANDE**

# **School of Computer Science and Engineering**



**DECLARATION**

We hereby declare that the project work entitled (“COLOR DETECTION using OPEN-CV”) is an authentic record of our own work carried out as requirements of Project for the award of B.Tech degree in COMPUTER SCIENCE & ENGINEERING from Lovely Professional University, Phagwara, under the guidance of Dr. SAGAR PANDE, during August to December 2021. All the information furnished in this project report is based on our own intensive work and is genuine.

Project Group Number:

Name of Student 1: Bharath Mamindla

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Bharath

Date: 20-11-2021

Ishika

Date: 20-11-2021

**CERTIFICATE**

This is to certify that the declaration statement made by this group of students is correct to the best of my knowledge and belief. They have completed this Project under my guidance and supervision. The present work is the result of their original investigation, effort and study. No part of the work has ever been submitted for any other degree at any University. The Project is fit for the submission and partial fulfillment of the conditions for the award of B.Tech degree in Computer Science & Engineering from Lovely Professional University, Phagwara.

**Signature and Name of the Mentor**

**Designation**

**School of Computer Science and Engineering,**

Lovely Professional University,

Phagwara, Punjab.

Date :

**ACKNOWLEDGEMENT**

*I am overwhelmed in all humbleness and gratefulness to acknowledge my depth to all those who have helped me to put these ideas, well above the level of simplicity and into something concrete.*

*I would like to express my special thanks of gratitude to my teacher DR. SAGAR PANDE who gave me the golden opportunity to do this wonderful project on the topic COLOR DETECTION, which also helped me in doing a lot of Research and i came to know about so many new things. I am really thankful to them.*

*Any attempt at any level can ‘t be satisfactorily completed without the support and guidance of MY parents and friends.*

*I would like to thank my Friends who helped me a lot in gathering different information, collecting data and guiding me from time to time in making this project, they gave me different ideas in making this project unique.***TABLE OF CONTENTS**

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**1. INTRODUCTION**

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Color is a feature that has been exploited to a great extent in digital image processing, since it is a powerful tool that often facilitates the classification and identification of objects, which can be discriminated based on the large number of appreciable color tones. In the area of computer vision it is common to find problems in which it is required to use the color information to carry out the detection of reference points that allow the tracking and definition of the behavior of objects that present particular characteristics and that are observed through sequences of images, obtained in a controlled environment. On the other hand, in other areas such as agriculture and biology, the need has arisen to use color-based image processing techniques in order to apply them to problems such as the detection of weeds in crops, the classification and study of different types of fruits that present significant changes in their color during the different stages of ripening, or due to the presence of defects or associated pests, counting of organisms, among others.

One of the problems that has become relevant in image studies is associated with the detection and segmentation of landmarks with high color intensity, mainly related to primary colors and their complements, which are used in the definition of color spaces, since there are specific applications, in which the objects of interest are easily distinguishable due to their high saturation in one of the RGB color components (Red-Green-Blue). Therefore, in the literature there are several techniques used for the detection of landmarks with a high saturation in one of the primary or complementary colors CMY (Cyan-Magenta-Yellow), which are defined as extreme colors.

After an extensive literature review it was found that there is no study on the techniques of detection of RGB extreme colors and their complements. Therefore, in this study we analyze the techniques found in the literature for the detection of the extreme colors that constitute the components of the RGB color space. In addition we introduce a new method for detecting the R, G, B, C, M, Y extreme colors. The exposed techniques are compared using a color table and a photograph, to study the quality of the approached methods and to define the cases in which their use is more appropriate, taking into account the detection ranges of the analyzed extreme colors.

### 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.

### 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/).

OpenCV, Pandas, and numpy are the Python packages that are necessary for this project in Python. To install them, simply run this pip command in your terminal:

pip install opencv-python numpy pandas

**Hardware Requirement:**

1. i3 Processor Based Computer or higher

2. Memory: 1 GB RAM

3.Hard Drive: 50 GB

4.Monitor

5.Internet Connection

**Software Requirement:**

1. Windows 7 or higher

2. Python

**SOURCE CO**

## Future Outlook

Artificial intelligence has already become an interest to computer science research, however in the next 10 years, artificial intelligence is likely to continue developing at faster rate as people continue to increase the level and availability of artificial intelligence in the future. Artificial intelligence are programs that develop humanlike consciousness. In the future their aim is that they become cheap, reliable, digital smartness running behind every operation. They will be able to aid you as much as you want but no more than you need.

Scientists are currently working on a type of artificial intelligence that can be used as a medical diagnosis tool. As the artificial intelligent system continues to improve and learn, the AI program can soon become the world’s best diagnostician within robots and humans. At the rate of improving technologies, when a child born today reaches an adult they will most likely not need to visit a doctor for a standard diagnostic.There currently exist many prototypes of an artificial intelligence that humans could potentially use on a daily basis such as selfdriving cars, chatterbots, body trackers, personal photo archivist, universal translator, smarter newsfeeds and many more.A self-driving car is essentially and AI. Google has been developing this research for over 5 years. The car is initially programmed with a route. This allows the system to know what general direction it must follow in order to reach its final destination. The car is also programmed with a GPS map so it knows where all the stop signs and traffic lights are located. Finally the car is equipped with roof-mounted lasers, cameras and radar systems to spot anything out of the ordinary as well has other cars or pedestrians on the road.Chatterbots are a form of AI program currently in testing, which was created to observe human conversation and try to replicate it. It is used to simulate a human’s conversation by talking through the computer to the user. It learns and remembers everything you tell it. This is currently used when you are bored butcould eventually be helpful to communicate with humans by translating speech in to multiple languages.

**CONCLUSION**

In conclusion, artificial intelligence will become more valuable to humans than its capabilities. It will become a part of our daily lives. Some worry about the development of this new technology where a robot that can learn and develop skills on its own. Artificial intelligence will surpass humans on an IQ level and become better than humans at many skills or knowledge. This leaves some people in an identity crisis. Why makes humans so unique and what is their purpose if artificial intelligence can simply replace them by taking all of their traits and habits? Artificial intelligences are designed to learn on their own and resemble a human brain and physical and mental properties. One thing is for sure, is that artificial intelligence will continue to develop because of humans. Humans will continue to make new discoveries and discover new things. Artificial intelligence will never be able to accomplish that, however they may assist a human by providing theories. The future is unknown and maybe artificial intelligence and humans will be able to work together on many different topics.

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