1.2 Color Blindness

Color Blindness, or Color Vision Deficiency, is an eye condition where a person is not able to distinguish certain colors or shades of colors to some degree. Color Blindness does not mean that a person can only see black and white. A person with color blindness is able to see different color, however they are not able to see some colors due to deficiencies in the eyes.

Color blindness is a hereditary condition but can also be caused by eye diseases, damage to the retina and macula, and aging or when the lens is darkened over time from a cataract. Although there is no absolute treatment for hereditary color blindness, there are methods, techniques, and special glasses that may help people with color blindness differentiate different colors but not truly see them.

There are four type of color blindness; Deuteranamolous (red and green color confusion), Protanamolous (red and bluish-green color confusion), Tritanamolous (blue and yellow color confusion), Achromatopsia (only seeing black, white and grey). As stated above, color blind people facing many problems regarding abilities to choose products, to notice information in advertising and on packaging, and to operate effectively in store settings as consumer.
There are four type of color blindness; Deuteranamolous (red and green color confusion), Protanamolous (red and bluish-green color confusion), Tritanamolous (blue and yellow color confusion), Achromatopsia (only seeing black, white and grey). As state above, color blind people faced many problems regarding abilities to choose products, to notice information in advertising and on packaging, and to operate effectively in store settings as consumer. Besides that, traffic lights are generally dependent upon color and position recognition; such signals sometimes vary between horizontal and vertical rows of lights, which can cause confusion. The color cue could be supplemented by a uniform system of stripes or shapes embedded in the lens of the signal.

Therefore, this project intention is to help color blind people to recognize the object color. It is because there many difficulties to them such as in driving, they cannot recognize traffic light and emergency signal so they cannot get the driving license. They also faced problems in judging quality of goods that they want to buy by color. Besides that, they faced many problems that related to color recognizing in their daily life.

So, by developing the program that able to recognize colors maybe can help color blind people in their daily life. Hopefully this project will be used to invent mobile sensor that can help color blind people for their daily life.

1.2 Problem Statement (Research Question)

This study aims to seek the following research question:

i. How to determine the color in RGB?
ii. How to process the captured image?
iii. How to define and differentiate major color in an image?
iv. How to develop GUI to make this system is user friendly to be operated
1.3 Research Objectives

i. To identify the variables that determined the pixel color.
ii. To identify the pixel value of captured image.
iii. To identify the method of color extraction
iv. To develop Graphical User Interface (GUI)

1.4 Significance of Study (Main Objectives)

Objective of this project are;

i. To study the concept of image processing.
   For this project, this is the important aspect that should be consider and understand before start running the project and also the main target of this project.

ii. To develop a program that able to recognize an object color by using MATLAB and Image Processing Toolbox.
   Therefore, the project will be focus on developing a program that able to recognize an object color by using MATLAB and Image Processing Toolbox as image processing tools.