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**IMPROVED TRAFFIC LIGHT  
BASED ON IMAGE PROCESSING**

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## ABSTRACT

In modern era, roadways are the most important asset for transportation in the world. Vehicles usage continues increase from time to time. Nowadays, traffic jam is always happen by long red light time delays to switch and also the wasting time of green light at empty road. So, traffic control system must need for an improvement and optimized. Microcontrollers and microprocessors using hardware that has been prescribed, that work from the program that does not efficiency for real-time modification of the present traffic light controller. An improved traffic light system detect and count the existence or absence of the vehicles and reacts with that by using an image processing techniques of image detection to control traffic in the country at a crossroad. When cars has count at a fixed number, the green light turn on with the appropriate time that has been set according to the number of car detectd. In terms of efficiency and convenient, it is an improvement for the existing traffic light control system. A tested with a real-time computer simulation, car detection would be done by using method Haar Cascade to count number of cars and identify existing of cars. Python is use to program and can be implement by using Open Computational Vision (OpenCV) as a library image to simulate this project. With this project, it can get rid of time delay by reduce automatically traffic and controlling signal.

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# CHAPTER 1

## INTRODUCTION

### 1.0 OVERVIEW

In this chapter, the background of the study and explain about the improvement of traffic light system. Problem statement and the objectives of the study were also being included in this introduction chapter. This chapter also introduce why the study need to be conducted. It also briefly explains the scope and limitations while conducting the study

### 1.1 BACKGROUND OF THE STUDY

Nowadays, traffic congestion is a huge trouble for big cities [1], particularly city with high population densities and high number of road users in that city [2]. Its major cause by the system traffic light that flow the sequence that has been set for example have 4 junction and each junction had set time for 1 minutes for traffic light to change and the driver spend more unnecessary time waiting at a traffic light. So, it was not efficiency and need to do some improvement. As known, roadways is the important for the land transportation and it always 24/7 hours per day busy by the vehicles on the road. This is a chance for researchers in develop any technique to solve this problem. The objectives of this project are to detect and count of vehicles at traffic light and control the time delay based on number vehicles exist. An Intelligent Traffic Control Systems (ITCS) [3] is developed and it important to have it to guarantee a convenient transportation system [4]. First step to do that is obtain traffic data. Different sensors are used to collect the traffic data [2-3]. For example induction loop, infra-red light sensor, optical flow and any other option. In recent days image processing techniques [5] has been very essential topic to deal with traffic related problems because of its maintenance very ease and being more intelligent system.