ABSTRACT

In general, setting the duration (length) of the green light on traffic lights currently uses the same and fixed time for each direction of the highway, for example at the intersection of each road direction is made equal for one minute. In an unbalanced condition where there is a long queue on the one hand and a very short one on the other hand, then this setting same equal duration is not fair.

In this final project, a tool (prototype) is made to adjust the duration of the green light that is proportional to the length of the queue of vehicles using an image processing method based on vehicle color conversion from Red Green Blue (RGB) to gray scale and to black white by using a vehicle. toys of various colors as a simulation. In the experiment the number of road directions was limited to only two directions due to camera limitations. Furthermore, the number of black pixels is calculated to represent the area and which then after being compared between the two directions of the road will be a comparison of the queue length to determine the length of the green light in each direction.

The test results show the function of the tool where the sequence and duration of the traffic lights are in accordance with what has been planned with the accuracy of the ratio accuracy of the queue length of vehicles from both directions of the highway image processing results compared to the ratio of queue lengths using a ruler with an average accuracy of 75% for road directions A and 100% for the road in the direction of B.

Keywords: *Digital Image processing, Edge Detection, Real-Time, Traffic Light, White Pixel, Vehicle Density, Length Queue of Vehicle*