

ABSTRACT

An increasing number of vehicles from year to year has increased while the size of the roads remain. This leads to a lot of congestion in some roads. Traffic light system is currently not effective enough to break the bottleneck because the system is still using fixed-time traffic signal where the system is working with a predetermined time.

At this thesis, developed a traffic light system that can detect where the road that has the longest queue at a crossroads. If one road has the longest queue, then the traffic lights on the road will turn green ahead of other roads. The workings of the detector is to record video on each road and the frame on 40 seconds were taken to be processed using edge detection and segmentation. Centroid calculation and thresholding is done so that the system can distinguish the color of asphalt with the vehicles. Video capture is done in three (3) conditions that morning (sunny), daylight (sunny) and afternoon (cloudy).

The results obtained from this study is a system that is able to determine which road has the longest queue by calculating the length of the centroids of each road. After testing the system, it can be concluded that the system works optimally in the morning and afternoon with a level of accuracy is 82.85%. While the system works less than optimal during the daylight with a level of accuracy is 77.14%. Thus the average rate of system accuracy is 80.93%.

Keywords: traffic lights, images, queues, edge detection, segmentation.