

## ABSTRACT

*Congestion is a major problem in big cities in Indonesia which is increasing the number of vehicles by not joining the development of supporting road infrastructure. Traffic lights become a very important component in the traffic control system on the road, but less busy during peak hours so there is a build-up of vehicle volume which results in a traffic jam.*

*Based on the above considerations the authors make a tool that can load traffic lights so that this does not happen by using an ultrasonic sensor used this sensor will oppose the queue of vehicles on the road, this ultrasonic sensor will send data wirelessly to the server using a laptop that becomes the brain From this system, after that the server will receive data where the most congested roads and will get a green light with the appropriate time in order to unravel the congestion with the calculations that have been made by the author to the densely populated roads.*

*The system can control each lane and set the lights on at traffic lights. The average ultrasonic examination sensor value is 99.18% with a maximum reading distance of 12 meters and an effective reading distance is 5 meters. by installing a camera to take pictures on the settings and the results are input to the system. After that, digital image processing is performed which requires output of a road segment to count the number of vehicles in the road section. The server will set the time the traffic has finished sending from the system. From the test results obtained from the average value of the object valuation system of 98%.*

**Keywords:** *Traffic Light, PC / Laptop, Ultrasonic Sensor, digital image processing*