An Experimental Study on Automatic Traffic Light System using IR Sensors

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Abstract: *Traffic jam turns out to be key crisis in these days. Traffic jam mainly occurs in urban areas. Due to traffic jam, there are several problems arise such as increase in noise pollution, air pollution, accidents and delay in travel time etc. The present traffic signals deployed in all parts of the cities are not enough to solve above mentioned problems because these have specific pre- determined time for red and green signals. In this view various attempts were done for traffic lights to behave smartly based on density of vehicles on the road. Therefore, many techniques have been used in traffic control systems. This paper summarizes different techniques of traffic control system that were used for the improvement of conventional traffic control system. Congestion is a serious issue due to vehicular traffic. One of the known causes of traffic congestion is the amount of time spend waiting for the red light to change to green. The changing of traffic light is hard-coded and it is not reliant on traffic volume. There is therefore need to simulate and optimize traffic control to better accommodate density based traffic rather than time based. This system attempts to lessen Possibilities of traffic jams brought about by traffic lights to a reasonable degree. This project, a density-based traffic control system is been implemented to solve this problem. The system entails programming an Arduino using Arduino integrated development environment to enable traffic lights give the right of access to the road by selecting the lane with the high number of cars. The traffic lights are modified to chip away at an auspicious premise until there is a signal identified by the infrared sensors. The sensor identifies an object (i.e., a vehicle, a motorcycle etc.) and signals the Arduino to control the traffic lights for its individual path. Once there is no sign identified by any of the four sensors the traffic lights keep on dealing with an auspicious premise. The mean response time of the sensor was found to be 0.39 seconds. Further research is recommended to produce the device on a large scale to be deployed to all roads in the country.*

Keywords: Arduino, IR Sensors, control systems, traffic, Resistors

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