

Traffic Signal Automation using Spike Road Block

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Abstract – Generally we observe on the traffic signal, people break the rule of traffic signal and create a disturbance and does not react properly at signal point which create traffic, causes accident. To overcome this problem we provided a road blocker, which stop the vehicle on separate path depend upon traffic signal and stop the violation of traffic signal rule. To minimize or control the speed of vehicles we provided speed breaker from this speed breaker we generate Barricade by using mechanism. This generated Barricade we can used for operating the road blocker, this road blocker are operated on timing sensor. Also we provide the separate entry gate for emergency situation such as ambulance, government class one vehicles etc. On road vehicles waste a large great in amount of energy on speed breakers, where there is a requirement to provide speed breaker to control the speed of the vehicles. The annual rate of growth of motor vehicle crowd in India has been almost 20 percent during the last decade. There is tremendous vehicular growth in year by year. The increasing traffic and number of speed breakers on roads motivate to manufacture an Creative device which can channelize the energy of vehicles that is wasted on speed breakers to some useful work.

Key Words: Speed Breaker, Spike, traffic monitoring, signal automation, alert generation system

1. INTRODUCTION

The traffic congestion problems are increasing day by day because of becoming greater in size of vehicles with limited infrastructure. Under this situation, the existing traffic light systems which are timer based are unable to control traffic. To solve this problem, a real time traffic control system is required which will control the traffic signal according to traffic density. For effective traffic management and signal control, it's important to know road traffic density. Based on this density value time delay of signals can be set up dynamically. The traffic signal was first discovered in 1912 by a Detroit policeman named Lester Wire like two color red and green light with a buzzer to warn going on foot ahead of the impending transition. After that, in 1920, this basic design was up to date by William Potts to include the three-coloured red, amber, and green lights widely used today. This simple, three-color icon has allowed for nearly a century with little change, using modern technologies such as automatic timers, diode lights and motion sensors. Traffic signals are mainly developed to ensure the correct flow of traffic, provide an opportunity for pedestrians or vehicles to cross a junction and help to reduce the number of collisions between vehicles entering intersections from opposite directions. Traffic signals should be considered when they will alleviate more problems than they create. A

warranted signal properly operated may provide for more orderly movement of traffic, and reduce the occurrence of certain types of collisions. Unwarranted signals can result in increased crashes, delays and congestion.

1.1 Motivation of Project

The existing traffic signal system is implemented with delays where the signal transition time slots are fixed and do not depend on current traffic flow. The existing traffic system needs to be upgraded to solve the severe traffic congestion problems. So here we propose a simple, low-cost, and real time traffic signal system that aims to overcome many problems and improves the traffic system. The system is based on PIC microcontroller that evaluates the traffic density using IR sensors mounted on either sides of each road and dynamic timing slots with different levels. Our system will be very useful for solving most of the traffic congestion problems occurs today.

1.2 Problem Defintion:

To overcome the problem of breaking traffic signals we provided a road blocker, which stop the vehicle on respective path depend upon traffic signal and stop the violation of traffic signal rule. To minimize accidents and traffic congestion the road blocker using IOT mechanism is been implemented. The signal status changes automatically with the timing of the traffic and delay is provided with the help of microcontroller. When the signal is red the interfaced barrier gate closes the spikes open up and a buzzer notifies the closing of gate, thereby blocking the traffic but when the signal is green the same barrier opens and allows a proper flow of vehicles to avoid traffic jam. The density of traffic is detected using IR sensor and the output is given to the microcontroller for timing change of the signal, and buzzer action. In front of the barrier gate a stop line is drawn and with the help of another IR sensor, the vehicle is tracked whenever it crosses the stop line.

2. SYSTEM ARCHITECTURE

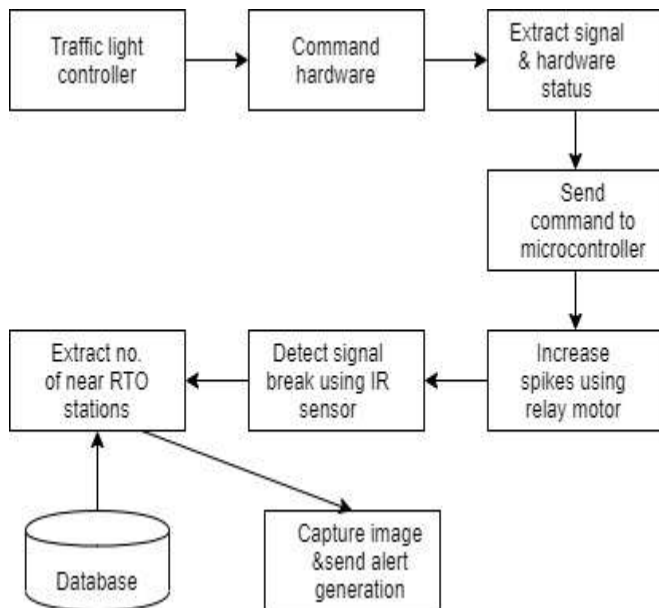


Fig1: System Architecture

Traffic Light Controller: In this approach, traffic light will be monitor and controlled by our system. System will monitor our traffic light flow and send command or status to hardware.

Command Hardware: After detection of signal status the system will command hardware to start or stop motor.

Extract Signal and Hardware Status: To detect status of signal and send command to arduino which will in return turn hardware motor on off.

Increase Spikes Using Relay Motor: To command hardware based on hardware command which will Increase spikes and decrease spikes. In additional it will also retrieve data from database.

Data Retrieval: Based on IR sensor return status system will retrieve data value of near police RTO from database and will generate alert.

3. METHODOLOGY

This project has main three parts viz. Signal Light detection and Detecting signal jump status, Command hardware relay, Extract near police and sending alert. To detect a signal jump, sensor values used. It will work only when RED signal is ON. The logic of using IR sensor here is that, whenever a person breaks the signal, he/she will come in range of the IR sensor and this will turn it ON. The signal will be sent to microcontroller and it will turn the Camera ON. Now, system will click the picture vehicle. Also, if anyone stops the vehicle on the zebra crossing, then it will be considered as a signal jump. This is done to prevent people from stopping on zebra crossings.

Research: To do a complete automation of signal spike and speed breaker control.

Desktop Application:

1. To collect the signal data based on status and light data
2. To monitor speed breaker values and status.

Spike Controllers:

1. Control spike and motor.
2. Monitor the status of the signal

4. APPLICATIONS

- Traffic Signals.
- Railway Barriers.
- Prohibited Areas.
- Security Zones.

5. CONCLUSION

We conclude that The road spike system is used for various application according to condition like controlling traffic management ,BRT system, one way road direction this ensure to obey traffic rules properly. By using this system the count of accident happened be reduces.

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