International Journal of Multidisciplinary Research and Development

IJMRD 2015; 2(3): 191-193
www.allsubjectjournal.com
Received: 25-02-2015
Accepted: 08-03-2015
E-ISSN: 2349-4182
P-ISSN: 2349-5979
Impact factor: 3.762

Rajni Sharma
Department of Electronics and Communication Engineering, World College of Technology and Management, Maharshi Dayanand University, Rohtak.

Ajay Dagar
Department of Electronics and Communication Engineering, World College of Technology and Management, Maharshi Dayanand University, Rohtak.

Lalit Sharma
Department of Electronics and Communication Engineering, World College of Technology and Management, Maharshi Dayanand University, Rohtak.

Correspondence:
Rajni Sharma
Department of Electronics and Communication Engineering, World College of Technology and Management, Maharshi Dayanand University, Rohtak.

Use of automated enforcement for red light violation

Rajni Sharma, Ajay Dagar, Lalit Sharma

Abstract
The paper presents a simple design and implementation of a how to control Trespassing. It enables the user to operate a suitable traffic from some distance. The sensor transmits a signal using an infrared light-emitting diode. This tone is decoded by a receiver, since the camera only switches on when the car is above the trespass and sensor is active. The system was broken down into simpler functional blocks namely; infra-red transmitter, infra-red sensor, signal amplifier, control logic, sampler, control stepper, output control logic, load and display unit , ultrasonic range detection sensor. Application is in law enforcement.

Keywords: Infra-red, Control, Receiver, Transmitter, Display, Camera, 40Hz Ultrasonic Range Detection Sensor.

1. Introduction
The system calls for a necessity to control vehicle trespassing at traffic signals. Whenever a commuter trespasses the traffic signal without permission (i.e. when red light is in operation), this system would detect it and activate the sensors. The sensors would then send a trigger to the camera above which will further click the image of that vehicle and store it .This system helps in operation of law enforcement in a dense traffic around the city or street or in a full traffic anywhere in the state. It provides a system that is simple to understand and also to operate, a system that would be cheap and affordable, a reliable and easy to maintain system of red light and the persons breaking rule and durable system irrespective of usage. It adds more comfort to everyday living by removing the inconvenience of having to move around to operate traffic. The system seeks to develop a system that is cost effective while not under mining the need for efficiency.

1.1 Objectives:
1. The objectives of this research were as follows:
2. Identify the extent of the problem of red light violations.
3. Evaluate legal, legislative, and social issues associated with automated enforcement of red light violations.
4. Review the current technology being used for automated enforcement and identify its strengths and weaknesses.
5. Review previous and current applications in the United States and abroad using automated enforcement for red light violations.
6. Formulate a strategy for the implementation of an automated enforcement program for red light violations.
7. Demonstrate the implementation strategy using a hypothetical application.

2. Trespassing and its Applications
2.1. Information security threats to organizations have changed completely over the last decade, due to the complexity and dynamic nature of infrastructures and attacks. Successful attacks cost society billion a year, impacting vital services and the economy. Examples include StuxNet, using infected USB sticks to sabotage nuclear plants, and the DigiNotar attack, using fake digital certificates to spy on website traffic. New attacks cleverly exploit multiple organizational vulnerabilities, involving physical security and human behavior. Defenders need to make rapid decisions regarding which attacks to block, as both infrastructure and attacker knowledge change rapidly.

2.2. Current risk management methods provide descriptive tools for assessing threats by systematic brainstorming. Attack opportunities will be identified and prevented only if people can conceive them. In today's dynamic attack landscape, this process is too slow and exceeds the limits of human imaginative capability. Emerging security risks demand tool support to predict, priorities, and prevent complex attacks systematically.

2.3. The Trespass project will make this possible, by building an "*attack navigator*". This navigator makes it possible to say which attack opportunities are possible, which of them are the most urgent, and which countermeasures are most effective. To this end, the project combines knowledge from technical sciences (how vulnerable are protocols and software), social sciences (how likely are people to succumb to social engineering), and state-of-the-art industry processes and tools.

2.4. By integrating European expertise on socio-technical security into a widely applicable and standardized framework, TRESPASS will reduce security incidents in Europe, and allow organizations and their customers to make informed decisions about security investments. This increased resilience of European businesses both large and small is vital to safeguarding the social and economic prospects of Europe.

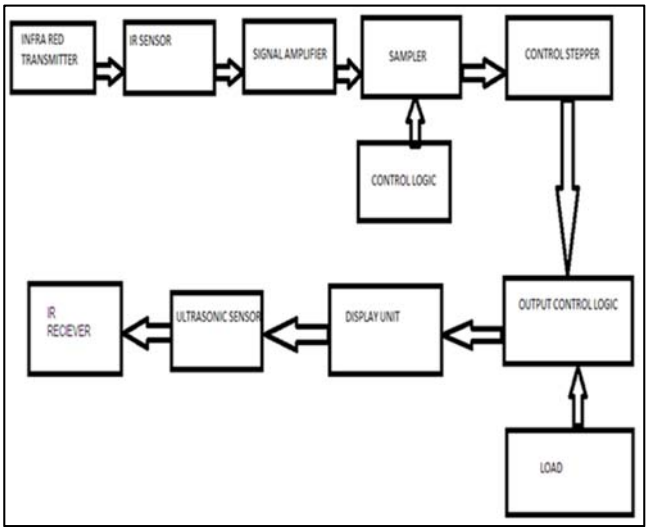

Fig: 1 Block diagram

3. Components

- Ultrasonic Sensors
- IR Sensors
- Camera(Preferably IP Cam)
- Development Board (16kb)

3.1. 35-mm Cameras: Thirty-five millimeter cameras are the most common cameras used for automated enforcement of red light violation systems. Most automated enforcement systems equipped with 35-mm cameras produce black and white photographs, but some systems may produce color photographs. Although black and white photographs are less expensive than color photographs, it is often difficult to tell which light is illuminated on the traffic signal. In Maryland, color photography is used to eliminate any doubt as to whether the traffic signal is actually red and the use of color photography has been found to be very acceptable by the courts.

The camera system is typically connected to both the traffic signal system controller and to loops or piezoe sensors. The traffic loops or piezoe sensors are placed in the pavement to detect on coming vehicles and determine vehicle speeds. Cameras are located in a special unit to protect them from the elements and vandalism and placed atop poles. Poles may be either hinged or contain specially designed "elevator" systems to allow access to the cameras. Figure 2 shows a schematic diagram of a red light automated enforcement configuration used in New York City.

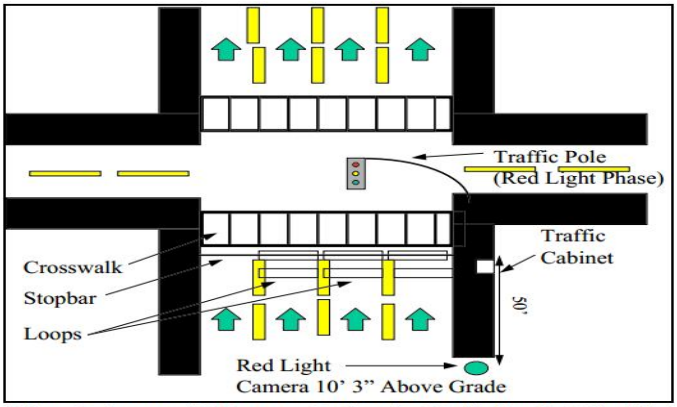

Figure 2. Automated Enforcement Configuration Used in New York City (20)

4. Description

- IR TRANSMITTER AND RECEIVER: The transmitter modulates an IR LED to send a set of pulses to the receiver, which detects the signal and converts it back to the set of pulses.
- IR SENSOR: An infra-red sensor is an electronic sensor that measures infrared (IR) light radiating from objects in its field of view.
- SAMPLER: A sampler is a device that obtains various discrete samples of a signal for its processing.
- CONTROL LOGIC: The control logic decides the functions the microcontroller has to perform and gives out various controls.
- DISPLAY UNIT: Display unit will show the number plate and the timing of the vehicle violating the traffic light.
- ULTRASONIC SENSOR:

Fig 3: Ultrasonic sensor

Pin 1 : VCC;
Pin 2 : trig（T);
Pin 3 : echo（R);
Pin 4 : OUT (Don't Connect);
Pin 5 : GND

They evaluate attributes of a target by interpreting the echoes from radio or sound waves respectively. Ultrasonic sensors generate high frequency sound waves and evaluate the echo which is received back by the sensor. Sensors calculate the time interval between sending the signal and receiving the echo to determine the distance to an object.

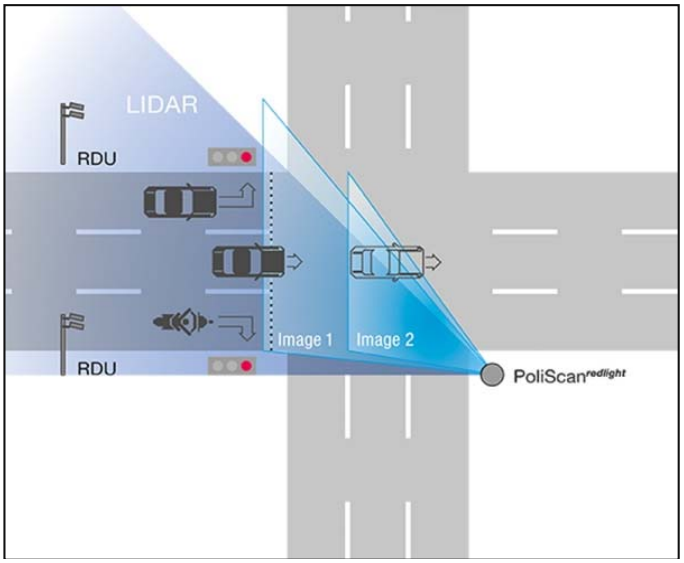

Fig 4: Red light detection system

5. Application

1. To detect the culprit for trespassing the traffic light.
2. To save it's data in the record for use in future.
3. To generate history of trespassing the traffic lights for a particular commuter by searching in the records.

6. Conclusion

The use of automated enforcement systems provided police departments and jurisdictions with the ability to consistently enforce red light violations without placing the total responsibility on police departments. By following the strategies presented in this report, agencies will be able to implement an automated enforcement program that may improve the safety of intersections. The automated enforcement program will also be acceptable to law enforcement agencies, highway and traffic engineers, supporting governments, and the general public.

7. References Books & Website

1. 8051 microcontroller- Mazidi and Mazidi
2. Embedded Systems- Raj Kamal
3. en.wikipedia.org
4. www.alibaba.com
5. www.omega.com
6. www.nex-robotics.com
7. www.tinbert.com