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AUTOMATIC TRAFFIC FINE COLLECTOR FOR SIGNAL VIOLATION

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Abstract - A Due to increase in traffic problems we see so many cases of breaking red signal daily, so far overcoming this this problem we have been developed system entitled as "Automatic Traffic Fine For Signal Violation" . The purpose of the project is to track the traffic signal violations correctly using cameras with use of RFID tag and IR sensors. This paper shows all the system of handling traffic rule breakers with latest technologies. Whenever three is red light on system works. In existing system there is sms sent on mobile so we are using email notification. Our system would prove helpful for the traffic management officers to successfully track all traffic signal issues best suitable and desired manner. In this system we are using gas sensors to detect the air pollution

Key Words: **：RFID tags, RFID detectors, GSM, IR sensors, LDR, Smoke Sensors**

1.INTRODUCTION

Traffic signal violation causes frequent accidents. To deal with this problem police department and our traffic department have lot of solutions for it, such as we are having CCTV cameras, RFID tags with registered users. So, when the vehicles passes the line even the red light is on then the tag automatically sense the I'D and it becomes easy to track the rule breaker. The fine details notification is sent to the user immediately. Incase there is no RFID tag, So here we are using Ultra sonic sensor, so when vehicle with no RFID tag passes then sensor (2)sense it and camera captures the picture.

India is the second most populous country in the world and is a fast growing economy. Because of more population the growth in the number of vehicles is increasing exponentially day by day. But the infrastructure growth is slow due to space and cost constraints. As a result, India is facing terrible road congestion problems in it's cities.

There are many issues related to the increasing traffic accidents, numerous types of pollutions, time wastage and health related problems. The main reason for accidents is violating the traffic rules. The main objective of the project is to collect the fine those who violating the traffic signals. (1)The project may include deploying RFID tags on cars and RFID reader at the signal. The RFID reader will be responsible to detect the cars violating the signal. (7)

1.2 Scope of the Project

Our system works immediately as now days all vehicle have RFID tag with registered users. So when red light is on and vehicle passes the line it automatically sense that and tracking the rule breaker becomes easy for system.

The fine details notification is sent to that user immediately. There is application by which we can see all the penalties data with that user details. So users are also able to see how charges made for them and by camera there is also picture of their violations. In case there is no RFID tag, as our old vehicles do not have RFID tags. So here we are using Ultrasonic Sensor, so when vehicle with no RFID tag passes then sensor sense it and camera captures the picture. So the system is useful for tracking all vehicles. It will also use in one way traffic Here to improve the strength of the our project we are merging gas sensor and LDR sensor that will sense the polluted gases in the zone using gas sensor and now a days traffic department considering the light intensity of the vehicles so we are including the light sensor to detect the intensity of the light and may take the proper actions on that just like fine collection.(8)

2. METHOD

In this project, an automated system is proposed. This advanced traffic control approach consists of RFID which is preinstalled in vehicles with unique ID consist of owner and vehicle details.(4) The purposed system involves the functioning as if there is reed signal and any tries to violate the signal it will come under the IR zone of the reader at that moment RFID reader reads the tag and send sms to the owner using GSM module.(5) In our project we proposing a system that can identify the intensity of lights in the cars and we inserted a gas sensor to sense the pollution in the zone.

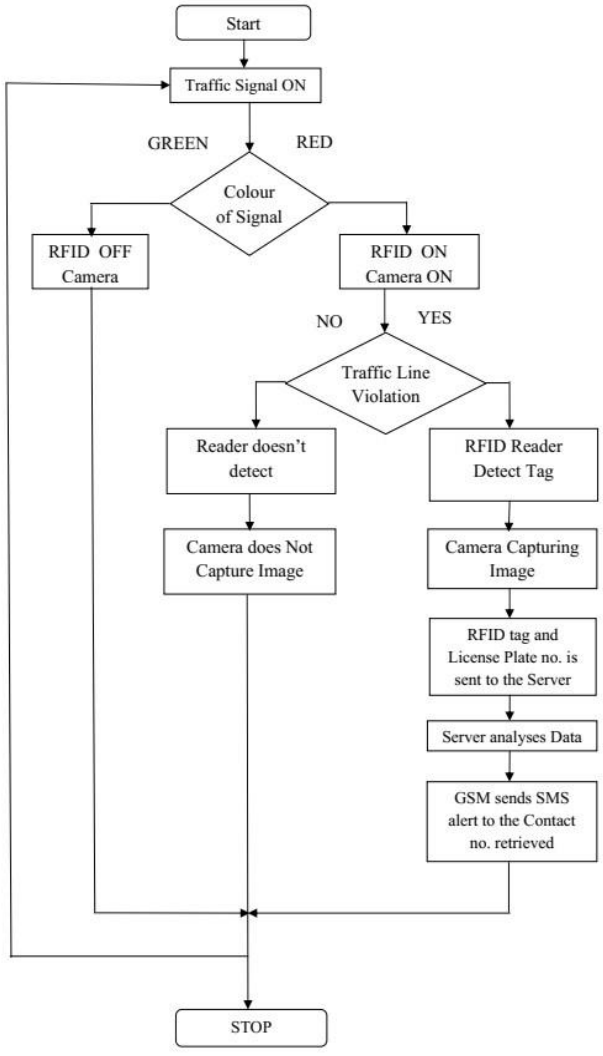

Fig 1: Flow chart

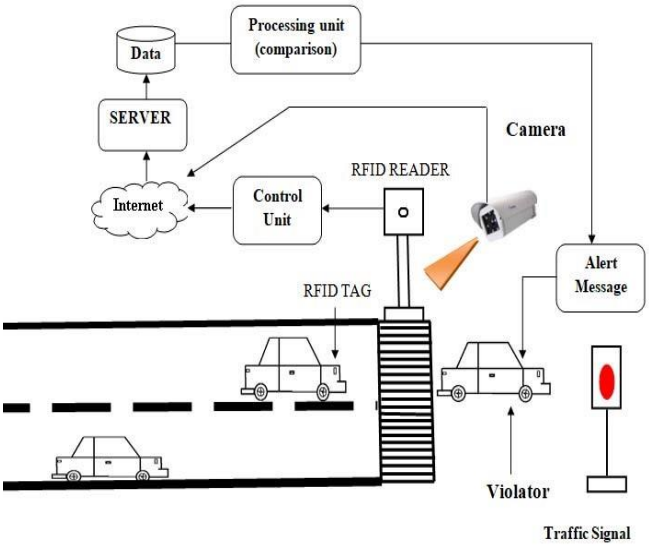

Fig 2: Traffic violation system

Experiment

To validate our proposed system in experimental analysis is performed. Here we go, RFID tag detector is used and mounted at the stop line on the road and a camera also placed to capture the photo of the car if RFID tag is absent. The tag detector is used to detect the tag which is placed on the car. The tag detector produce the electromagnetic field through its antenna which is of 13.56 MHz frequency. After getting triggered the RFID tag transfer the data in the form of hexadecimal values to the detector. The RFID has 4 pin Serial Peripheral Interface (SPI) which is used for communication with a microcontroller.

After the RFID detector reads the tag and debit the fine from the tag and then send a message (sms) to the registered number using GSM Module. And also we are using the LDR and Smoke sensors. If the intensity of light high then the alert signal will go to the control room then the fine will be debited by traffic system, and here we are also using gas sensor to detect pollution in the traffic zone .

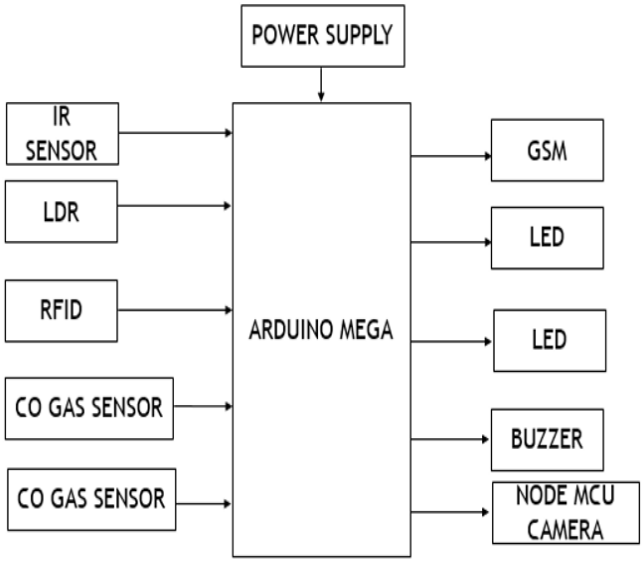

Fig 3: Block Diagram

AT command are used to configure a SIM800L GSM module a Fine alert message is sent to registered number. This message contains information about the vehicle's as well as the owner with the fine amount charged as per law guidelines.

RESULTS

The proposed system explained above was tested and simulated on different vehicles and different distance by using RFID detectors. The whole system takes 1 to 3 secs for sending the alert message to the registered number of owner and the RFID tag work synchronously and the gas sensor present in the system detect the pollution in the zone and the other hand the LDR sensor detects the light intensity, if the intensity of light is high than the regulations it will also generate the fine and sends alert message to the registered number.

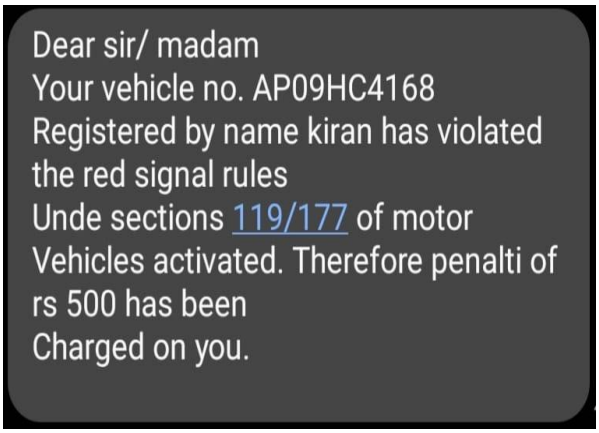

Fig 4: message format

Fig 5: Gas display

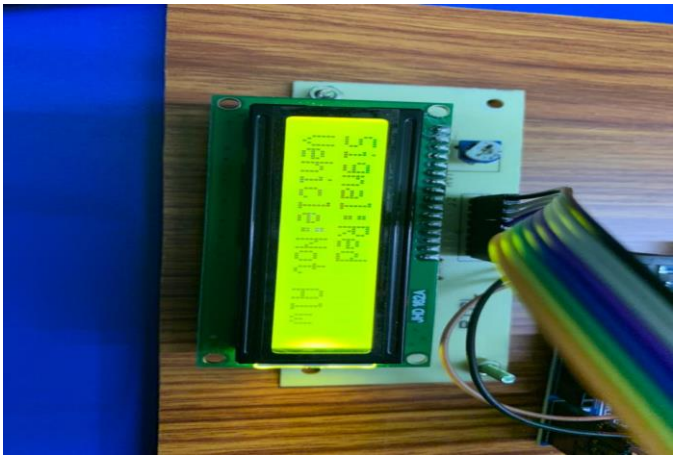

Fig 6: Vehicle detection

CONCLUSION

By this system it will automatically detect the fine for violation of rules and in turn will lead to disciplined traffic in our country. It will help to minimize the problems in the traffic which brings the disturbance to the whole system and also helps to reduce the accidents. In our system we are monitoring the traffic at signal poles but it can also helpful in monitoring the no entry areas and one way routes etc. Application designed for "automatic traffic fine collector" is user friendly, time saving, efforts saving application. The application work efficiently and helps traffic system management to reduce their manual work.

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