

# Governing System for Rule Breaking Vehicle at Traffic Signal

Smita Chavan<sup>1</sup>, Kajal Bhosale<sup>2</sup>,

<sup>1,2</sup>Student - Bachelor of Engineering, Electronics & Telecommunication Engineering Department  
Dr. DaulatraoAher College of Engineering, Karad,  
Maharashtra, India

P. I. Kinikar<sup>3</sup>

<sup>3</sup>Assistant Professor, Electronics & Telecommunication Engineering Department  
Dr. DaulatraoAher College of Engineering, Karad,  
Maharashtra, India

**Abstract:-** Nowadays, traffic congestion is a major problem in cities of developing countries like India because of the increasing number of vehicles. As result traffic is becoming one of the important problems in big cities and urban areas all over the world. The existing traffic lights follow the static traffic control mechanism. These lights are called static traffic lights. So, we propose a dynamic traffic control system using RFID. In this, each individual vehicle is equipped with the special radio frequency identification (RFID) tag to track the vehicle and we use RFID reader to read the RFID tags attached to the vehicle's windshield.

## I. INTRODUCTION

### A. Dynamic Traffic Control Systems

for traffic signals include communication systems, adaptive control systems, traffic responsiveness, real-time data analysis and collection and maintenance of the system that enable dynamic traffic control system to operate with greater efficiency.

Traffic signal control system coordinates individual traffic signals to achieve network-wide traffic operations objectives. Traffic light posts are positioned at the traffic junction. Traffic light set the green passage for a specific period of time which is not a complete systematic system as it cannot solve the traffic problems fully. The proposed system will have RFID readers at the traffic junctions and that will read RFID tags attached to the vehicles coming towards the junction. RFID technology uses digital data within RFID tag, which is made up of integrated circuits which contain a small antenna for transferring information to RFID readers.

The RFID tags contain an integrated electromagnetic circuit along with antenna for transmitting and receiving RF signals. Frequency ranges differ from low frequencies of 125 to 134 kHz and 140 to 148.5 kHz, and high frequencies of 850 to 950 MHz and 2.4 to 2.5 GHz. Wavelengths in the 2.4 GHz ranges are limited because they can be absorbed by water.

### B. RFID Technology Radio-Frequency-Identification (RFID)

Tag uses electromagnetic signals to identify and track the tags that are attached to vehicle automatically. The tags contain electronically saved information. Passive tags gain energy from a nearby RFID reader's interrogating radio waves. Active tags have their own power source such as a battery and may operate at hundreds of meters from the RFID reader.

### C. Problem Statement To avoid the traffic congestion problem

The proposed system gives the solution using RFID technology. To control traffic efficiently and avoid the congestion problem in urban areas a combination of RFID tag and RFID reader are used along with IR sensor. To provide a special service for emergency vehicles such as ambulance, fire brigades, VIP vehicles, police, etc. As soon as such vehicles are detected the system will dynamically set green passage to let the vehicles go, also this system provides service for stolen vehicle by reporting to concerned authority and updating the tag info as stolen for easy detection by RFID this system provides service for rule violation.

## II. BLOCK DIAGRAM

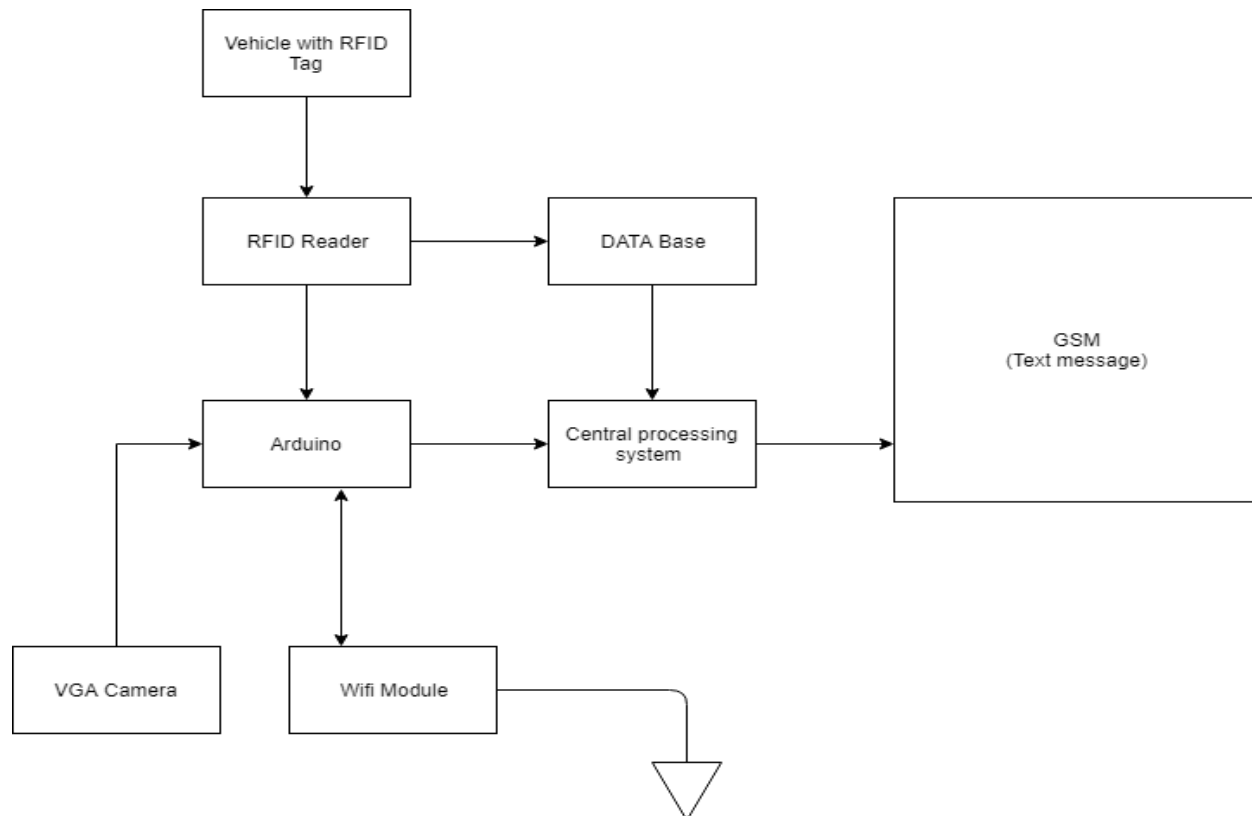


Fig 1:- Block Diagram of Proposed System

### ➤ Block Diagram Description

#### A. RFID Tag

A Radio-frequency identification tag also called as interrogates that uses electromagnetic signals to automatically identify and tags equipped to vehicles. The RF energy from the reader is collected by the RFID tag and used to power up the microchip. This tag is associated with every object and in this case we are associating the tags with the vehicles so as to provide better services.

#### B. RFID Reader

A radio frequency identification reader is a device used to read information from an RFID tag, which is used to track individual objects. Radio waves are used to transfer data from the RFID tag to a RFID reader. To control the traffic the RFID readers will be linked to Arduino Microcontroller. The RFID readers will be allocated time in round robin fashion and reader reads more number of tags that lane will be set as green passage by the Arduino Microcontroller. Then microcontroller will continuously transmit the information to central database.

#### C. Microcontroller

This microcontroller is used for processing and setting the green passage signal depending upon the count. The microcontroller is mainly used for manipulating the signals depending on the count of vehicles.

#### D. IR Sensor

The IR Sensor is a proximity sensor. It is used for detecting the collisions. The module consists of an IR emitter and receiver. The IR receiver always detects an emitted IR signal. The output of sensor is high whenever the IR frequency is low. It gives a digital output. IR sensors are used for counting the number of vehicles based on proximity of vehicle.

#### E. Central Processing System

The central database is used for storing the vehicles RFID tag that passes through the traffic junctions. The stolen vehicle's RFID tag will be registered at the central database if the match is found then the software send message to the owner and police station.

**III. FLOW DIAGRAM**

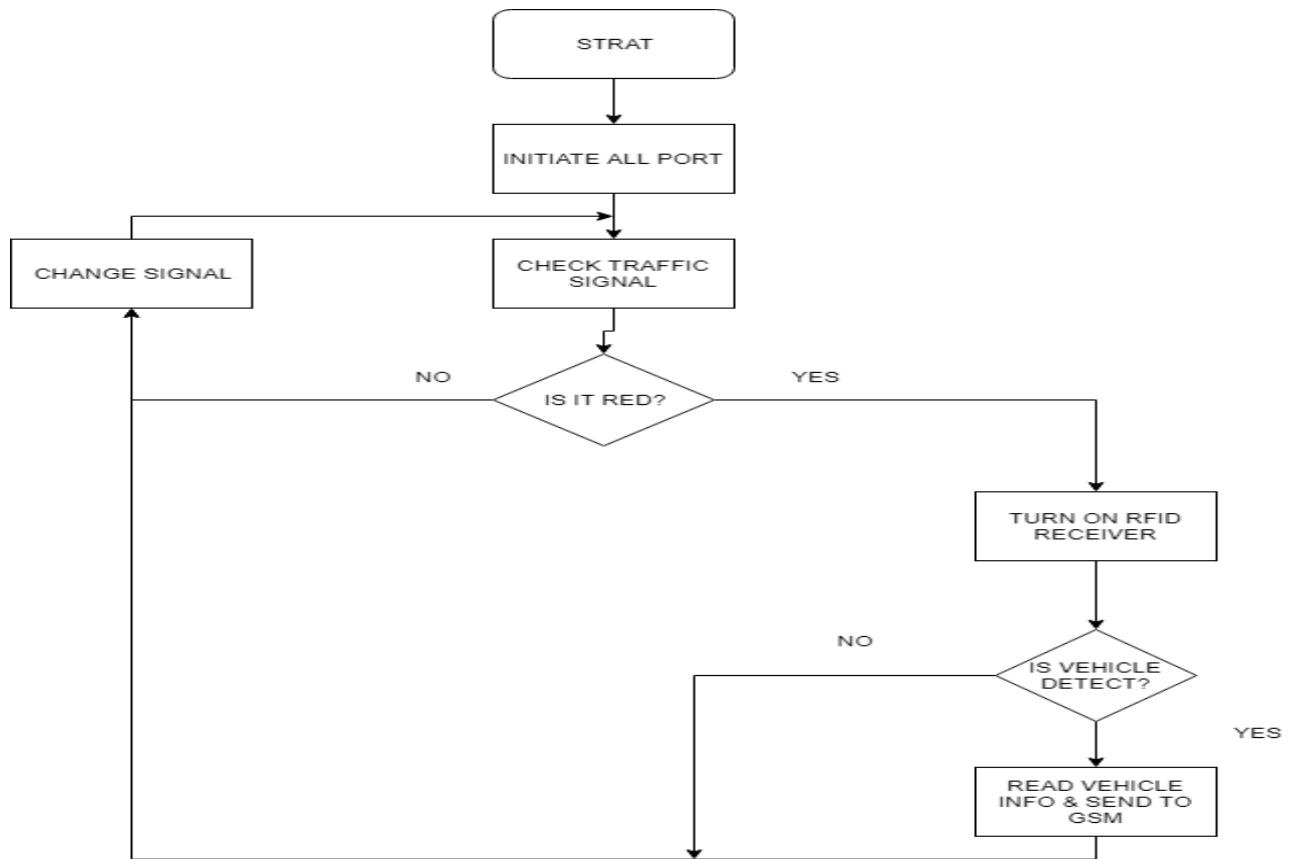


Fig 2:- Flow Chart

**IV. WORKING**

In this project, we placed RFID Tag on vehicles and RFID Reader positioned at traffic junction. RFID Reader gets activated when traffic signal is ON. If any vehicle break the traffic rule then the information which is saved in RFID tag is passed to arduino and to data base.central processing system verify this information and send this information of vehicle which break the rules to authrised unit with the help of gsm module. We also used VGA Camera which gives us the live footage of traffic singnal area.

**V. CONCLUSION**

In this project, the system uses radio frequency identification with biometrics technology to differentiate between valid and invalid users. The switch will be controlled by RFID tags. User will able to control the access of that switch. Also protect the battery from over charging.It can be also used in many military application where authorization is required.

**REFERENCES**

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- [2]. Dynamic traffic management system using infrared (ir),internet of things,raspberry pi.IOT based traffic light control system using raspberry pi, internet of things.



Fig 3:- Project Setup