

Detection of Traffic Violation using RFID

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Abstract— In the present-day scenario, number of accidents has been on the rise and the reason for this is attributed to over-speeding and traffic rules violation. In order to the task easy for Police, a lot of research has been going for building and effective traffic monitoring system. Such a system is proposed here that aims to effectively detect speed violation on the road and to identify the vehicles taking in the wrong lane and alert the same to the police. The system consists of PIC (ATMEGA328P-pu) Arduino, a RFID unit, RFID readers along with the passive tag that is attached to a vehicle, a (LCD) and a WSM unit that is utilized to notify the vehicle's owner and police through (SMS). The system offers low cost, reliable, efficient results and real time notification.

Key words: Speed Detection, RFID Control, Traffic Violation Prevention

I. INTRODUCTION

The vehicle speed detection is a method having a very important application worldwide. Although there are many systems prevailing to detect the speed of the vehicle, they are not effective. The key factor of selecting RFID technology as a core component of proposed system is to propose a cost effective accurate and flexible system to help in preventing over speed violations and to reduce fatal accidents compared to existing system. The main idea is to design a system that can be employed to detect speed violation occurring on the road and then send SMS to both to both owner of the car and the police by using WSM. The speed calculation is done by the Arduino with the help of time-distance calculation. Here the distance is a known factor and time taken by the ultimately, time can be calculated from these parameters.

This system is also enhanced in such a way that verifies the right direction of vehicle and also it checks for insurance updating. The direction of the vehicle is detected by RFID reader and RFID tag and this information is displayed in LCD. The memory of the Arduino contains information about the vehicle and is extracted by unique code received from with the help of RFID reader. Radio frequency (RF) waves are used for communication between reader and tag. In this project, two readers are used to emit electromagnetic waves in order to activate the passive tag that is embedded in the vehicles number plate which contain unique code.

II. DESIGN AND DEVELOPMENT OF MECHANICAL FRAME

Over Speed Violation Management and Control of Vehicle Based on Zigbee. It presents the present-day scenario traffic rules are frequently violated by the drivers and over speeding occur due to bad driving behavior. So, a driver assistance system is provided to prevent over speeding, violation of road rules and also to display alert messages. The proposed system has an alerting, recording and reporting system for over speed violation management. The Zigbee transmitter sends the

speed limit of the particular lane entered by the vehicle and also gives alerts like "road works", "steep slopes", "school zone" in the form of acoustical messages and also in LCD. The receiver unit placed in the vehicle receives the messages and sends to the microcontroller. When speed of the vehicle nears the speed limit it displays the warning and if exceeds the limit, the microcontroller records the violated speed and time. The LCD displays the lane speed limit and shows the number of times, speed was violated.

A GSM module sends message to the nearest traffic personnel immediately after a violation occurs. An authenticated device is also provided, which can be operated only by the traffic police in whom he can retrieve the data stored at any time. Increase in the count of violation increases the penalty amount which can be collected in toll gates located nearby.

III. PROPOSED BLOCK DIAGRAM OF THE IDEA

In this Paper, we propose a system a system to monitor the traffic. It includes detecting over speed and monitoring the right direction in one way. This system uses Arduino, RFID Tags, RFID reader, WSM and LCD. An RFID tag is attached with the vehicle's number plate whereas RFID reader is kept in the road side. Two readers are kept static at a fixed distance. The RFID reader, WSM and LCD are interfaced with the Arduino. LCD is used to notify the over-speed violation and wrong direction. GSM used to intimate the isolations to the Police and the driver of the vehicles. Every tag has a unique code which can be read by a RFID reader. Here tags are of passive type. RFID reader emits electromagnetic radiation to activate the tags once it enters the reader range. Arduino has data for every unique code and data contains all information about the vehicles.

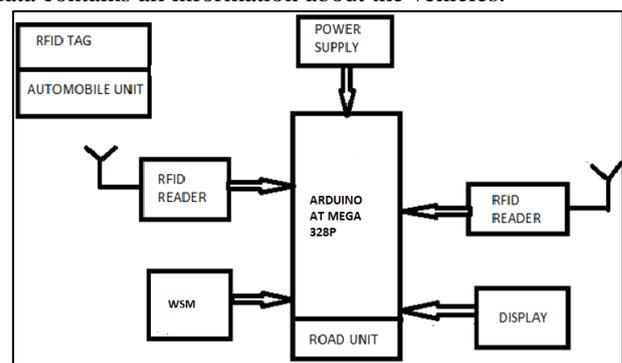


Fig. 1: Block Diagram

A DC power supply is one that supplies a constant DC voltage to its load. Depending on its design, a DC power supply may be powered from a DC source or from an AC source such as the power mains. The Arduino UNO is an open-source microcontroller on the Microchip ATmega328P microcontroller and developed by Arduino.cc. The board is equipped with sets of digital and

analog input/output (I/O) pins that may be interfaced to various expansion boards (shields) and other circuits.

The board has 14 Digital pins, 6 Analog pins, and programmable with the Arduino IDE (Integrated Development Environment) via a type B USB cable. It can be powered by a USB cable or by an external 9 volt battery, though it accepts voltages between 7 and 20 volts. NodeMCU is an open source IoT platform. It includes firmware which runs on the ESP8266 Wi-Fi SoC from Espressif Systems, and hardware which is based on the ESP-12 module. The term "NodeMCU" by default refers to the firmware rather than the development kits.

The firmware uses the Lua scripting language. Radio-Frequency Identification (RFID) uses electromagnetic fields to automatically identify and track tags attached to objects. The tags contain electronically-stored information. Passive tags collect energy from a nearby RFID reader's interrogating radio waves. Active tags have a local power source (such as a battery) and may operate hundreds of meters from the RFID reader.

Unlike a barcode, the tag need not be within the line of sight of the reader, so it may be embedded in the tracked object. RFID is one method for Automatic Identification and Data Capture. RFID tags are also known as "proximity" or "proxy" cards are come in three general arities passive, Semi-passive(also known as semi-active)or active. A radio frequency identification reader (RFID reader) is a device used to gather information from an RFID tag, which is used to track individual objects. Radio waves are used to transfer data from the tag to a reader. RFID is a technology similar in theory to bar codes.

However, the RFID tag does not have to be scanned directly, nor does it require line-of-sight to a reader. The RFID tag it must be within the range of an RFID reader, which ranges from 3 to 300 feet, in order to be read. RFID technology allows several items to be quickly scanned and enables fast identification of a particular product, even when it is surrounded by several other items.

IV. RESULT AND CONCLUSION

The Figure shows the hardware implementation of this design project. This project is to detect the traffic violation by using RFID reader. Here the speed of the vehicle is monitored.

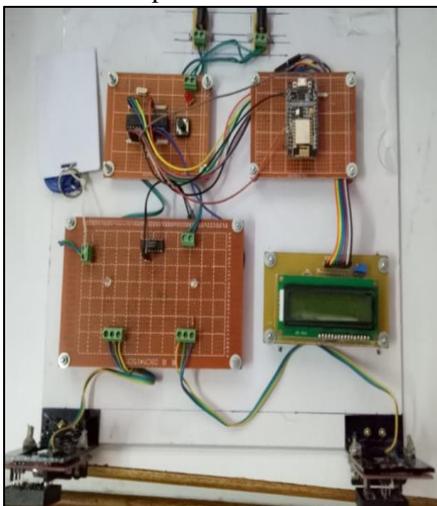


Fig. 2: Hardware Implementation



Fig. 3: Output Results

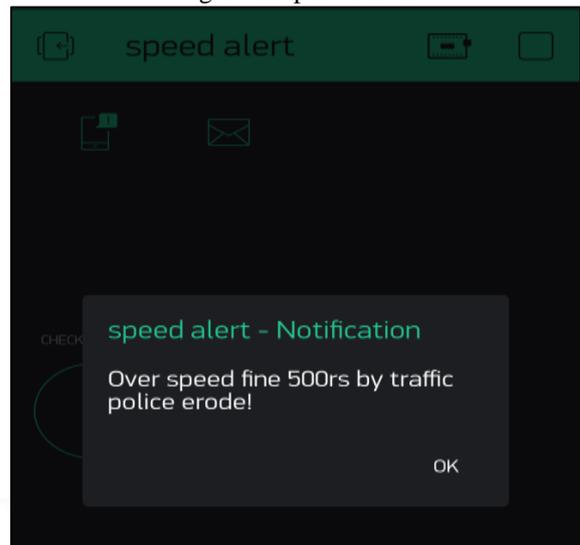


Fig. 4: Output Message

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