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SMART VEHICLE BASED ON FLASH STORAGE DEVICE OVER IoT

Sajana Shamsudeen[*1], Riya Rajan[2] & Rangit Varghese[3]
Department of ECE, Mount Zion College of Engineering, Kerala, India

ABSTRACT
In this paper presents a method to build an IoT based automated surveillance system to capture the registration number of vehicles and to alert nearest traffic police in case of any default. Number plates are used for unique identification of vehicles. The automated surveillance system uses image processing technique to identify vehicles by their number plates. When a vehicle has stopped at a signal, the system extracts the registration number from the number plate. The system checks for any pending cases or unpaid fines or if it is a stolen car and alerts the nearest patrol party by searching the RTO database. It also detects if a person is using a fake number plate or invalid registration[1]. The extracted plate number is used to search through the RTO database to get detailed information about the vehicle near the signal. In case of any abnormality detected with the vehicle, the nearest police station is alerted. The IoT based smart signal can successfully extract the registration number from the vehicle and this compares the registration number with the database and alerts the nearest police patrol in case of a default. The system works for the standard format of the number plate.

KEYWORDS: IoT, registration number, database.

1. INTRODUCTION
Now a days vehicles are increased day by day in today's world internet of things plays an important role in many applications such as smart home, smart transportation system etc. we know that vehicle theft is the major problem faced by the people in the society. surveillance system to be capture the registration number of vehicles and to alert nearest traffic police in case of any default. Number plates are used for unique identification of vehicles[2]. The automated surveillance system uses image processing technique to identify the vehicles by their number plates. When a vehicle has stopped at a signal, the system extracts the registration number from the number plate. The system checks for any pending cases or unpaid fines or if it is a stolen car and alerts the nearest patrol party by searching the RTO database. It also detects if a person is using a fake number plate or invalid registration[3]. The extracted plate number is used to search through the RTO database to get detailed information about the vehicle near the signal. In case of any abnormality detected with the vehicle, the nearest police station is alerted.

In this paper we set up a flash storage device on a new vehicle. Store your vehicle's book and paper, pollution certificates details in a flash storage device .The notification will be send to the owner's mobile only when the paper is outdated and also send the notification to the nearest police station and traffic policers. Traffic police receive a message saying that a paper outdated vehicle is coming their way at that time, the traffic police can fine the vehicle owner. In addition to this we put the GPS monitor in the device . This can change the speed cameras on the road. Firstly we set the speed limit to the vehicle, if it exceeds this speed limit the police can impose the fine to the vehicle's owners.

We have developed an algorithm that will help the identified the outdated RCbook,pollution control expiry and speed limit. The implementation of our proposal is inexpensive and asks for very little infrastructure. We have also suggested a flash storage device which will help a vehicle's owner get areminder the outdated the vehicle's details in a few seconds. We have first discussed the detailed information to the owner's mobile phone. We have discussed all of these proposed methods in details in later sections

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2. RELATED WORKS

The existing prototype has been developed by keeping IoT as the basic idea. The system aims to optimize the and outdated RC book, pollution control validity and speed limit. The major concern was to fully automate the entire process for the services mentioned above. The system so developed is user-friendly and reliable. The architecture is built upon a TIVA C board that is the client in the entire application. By the use of IoT ,the client can interact with the server process with the help ofa common protocol securely[4]. The system comprises of two modules to facilitate activities on road. ESP8266 device is a low cost and very low powered Wi-Fi module used to connect the local data to a cloud or a local server. This chip supports TCP/IP stack functions and has the potential to ESP8266 is built on a RISC (Reduced Instruction Set The device only needs 3.3 V supply. It has 80KiB user memory and 32KiB as memory An external QSPI flash of up to 16MiB is supported. This also supports the main protocols like SPI, I2C,UART support can also enabled using some of the It also has an inbuilt 10-bit successive. These devices are also known as license plate recognition (LPR) cameras. They are normally high resolution cameras which record at 1080p and help to identify and store the number plate of motionless or moving vehicles with the help of Automatic Number Plate Recognition (ANPR) software. The cameras are designed to withstand the harsh weather conditions and get a clear image even during the night times i.e. even in low light conditions. There are two kinds of LPR cameras; they are Analogue cameras and IP cameras. As the name itself says the first one transmits data/images in analogue form so that analogue devices can receive it. The latter one transmits data/images in digital form to be transmitted over an IP network like Internet, WAN and LAN[5]. Depending on the security needs and budget both are advantageous in their own ways.

The automated surveillance system uses image processing technique to identify vehicles by their number plates. When a vehicle has stopped at a signal, the system extracts the registration number from the number plate.The IoT based smart signal can be successfully extract the registration number from the vehicle and this compares the region. The system checks for any pending cases or unpaid fines or if it is a stolen car and alerts the nearest patrol party by searching the RTO database. It also detects if a person is using a fake number plate or invalid registration number, this number with the database and alerts the nearest police patrol in case of a default. The system works for the standard format of the registration number.

System overview

Automated surveillance system to capture the registration number of vehicles and to alert the nearest traffic police in case of any default. Defaults imply any pending fines, pending cases and violation of the emission norms. This surveillance also helps on efficient search of the stolen cars. This methodology can also be incorporated at toll gates to ease the vehicle movement. Based on the live traffic, a smart algorithm will change timer of the signal and move the divider based on the traffic congestion. This is a challenging task to know the outer boundary of the number plate due to the limited quality of cameras and various textures and fonts of the number plates on the cars, also the variations in light intensity at different places makes the task . we set up a flash storage device on a new vehicle. Store your vehicle's book and paper, pollution certificates details in a flash storage device .The notification will be send to the owner's mobile only when the paper is outdated and also send the notification to the nearest police station and traffic policers. Traffic police receive a message saying that a paper outdated vehicle is coming their way at that time, the traffic police can fine the vehicle owner. In addition to this we put the GPS monitor in the device . This can change the speed cameras on the road. Firstly we set the speed limit to the vehicle, if it exceeds this speed limit the police can impose the fine to the vehicle's owners.
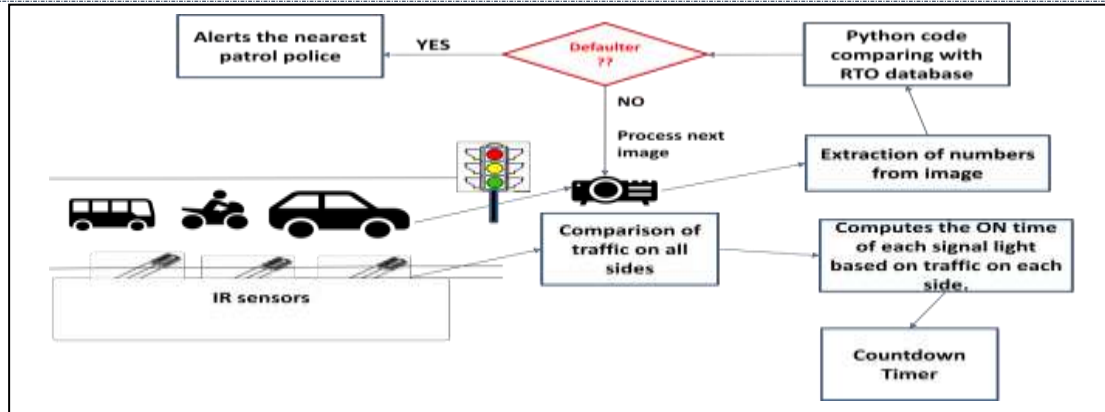
Fig1: Block diagram – At traffic signal

ARDUINO UNO

Arduino Uno is a microcontroller board which consist of 14 digital IO pins, 6 analog input pins through which it can interfaced with other expansion boards. It has 16MHz crystal oscillator, a USB connection, an ICSP header, and a reset button are present. The board can be powered though an AC-to-DC adapter or battery to get started. Arduino Uno differs all preceding boards in that it does not use the FTDI USB-to-serial driver chip. Instead, it features the Atmega8U2 programmed as a USB-to serial converter

INFRARED SENSOR

An infrared sensor is a digital sensor which is used to sense certain characteristics of its surroundings like presence of object or the distance to the object by emitting and detecting The sensitivity of the sensor can be change IR LED emits waves of range 700nm to 1mm which is in the depending on the intensity of light and we get a proportional voltage value as the output. Infrared sensors are capable of measuring the heat being emitted by an object and detecting motion.

SOFTWARE REQUIRED
MATLAB
Python
Push Bullet (SMS/web service)

3. CONCLUSION

The smart vehicle based on flash storage device over IoT can successfully extract RC Book validity, pollution control expiry date ,from the vehicle's flash storage device and this compares the registration number with the database and alerts the nearest police patrol in case of a default. The system works for avoiding the penalty.

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