

## AUTOMATIC SPEED LIMITING SYSTEM FOR VEHICLE USING RFID AND IoT IN SMARTCITY

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### ABSTRACT

*The automatic speed limiting system is technique that controls the speed of the two-wheeler when it enters to the smartcity. Smartcity which defines to the city with certain controlling system which is set by the administrator. In this developing ornate world, the people are driving their two-wheeler at high rate of speed which sometimes leads to accident. To overcome this problem the proposed methodology used is IoT and RFID technology. The tools used are DC motor, arduino and ULN 2003. By using the RFID reader and card the speed limit is been controlled. Thus, the DC motor speed is set down to the level of RFID speed limit. Hence the current speed limit of two-wheeler is displayed on the LCD. The IoT system includes the automatic speed limiting which is been controlled by the administrator. The administrator may reduce the speed in the peak hours and may slightly increase in the usual hours as per the session. All these are done by using IoT technique. The benefits achieved by this proposed solution is that the accidents will be reduced in the important zones like hospital, market, college and cities. By utilizing this system gives the secure and safety methods for humans while driving the two-wheeler in the city.*

**Keywords:** Dc motor, IoT, LCD, RFID

### I. INTRODUCTION

The automatic speed limiting system is used to control the speed of the vehicle using RFID and IoT. Using RFID is done by fixing the RFID reader at the vehicle and RFID tag at the different zones in the smartcity. The city which has all the needs such as hospital, market, college all together is known as smartcity. If the vehicle is driven at the high before entering into the smartcity but once they enter and if the RFID reader and card matches then automatically the speed is controlled as the fixed limit is set by the controller therefore called as admin. All the details such as which zones the vehicle enters and what speed limit is fixed is been displayed in the LCD display. These are controlled with the help of arduino and RFID. The vehicle is been fitted as DC motor through which the vehicle runs. Then by implementing with IoT the fixed speed can be changed when it is with administrator side. Those speed all are controlled and displayed in the website which will be more usefully of the administrator by knowing all the speed limits in different areas in the city as in one website.

## II. LITERATURE SURVEY

In [1], the author has found the solution to the cyber attacks that has happened in the cities around the world. The author suggested a architecture to the module in order to give protection to the society, in this IoT technique has been used.

In[2], the author discussed about the traffic control system which make use video surveillance is described. In this system the traffic rules has introduced with the help of IoT. In this system the person who were not wearing the helmet will send a notification message to the administrator. The alarm ring will indicated to the person all those information on carried out with the help of IoT.

In[3], The author describes the architecture and use cases of the vehicles external control unit (BBCU - BODY & BOARD CONTROL UNIT) for the vehicle communication. The vehicle details will read with the help of RFID reader and card. The vehicle's owner details will be automatically registered in the database with the IoT module

In[4], The Internet of Things (IoT) is when the Internet is set to on it is been controlled over all cities. In cities it may include some features of like automatic ON OFF lighting system and smart garbage system.

## III. EXISTING SYSTEM

The existing system of two wheeler does not have any control of speed. The vehicle can ride any rate of speed and that may lead to accident in the important zones.

### DISADVANTAGE

- There is no proper secure to the peoples
- Rate of accidents is more in the busy area as well as rural areas.
- There is no restriction or speed limitation control

### PROPOSED SYSTEM

- The proposed system brings a solution to the disadvantages of existing system. Using RFID card and reader the speed of the vehicle is controlled and thus its speed limit is set in the keypad.
- In order to display the speed limit LCD is used and it is done with the arduino board.
- Then by using the WIFI hotspot connection the module is automatically connected to the android and through the app the administrator can reduce and increase the speed limit in peak and normal hours.

### ADVANTAGES:

- Rates of accidents will be decreased.
- Rash driving will be avoided

### WORKING PRINCIPLE:

Automatic speed control system by some devices. The devices are RFID (Radio Frequency Indicator) tag and reader is been inserted in the city and the vehicle. The DC motor is been fitted on the vehicle in order to move the vehicle. RFID connected to the arduino board. this arduino board only acts as a base in which all of the device has been connected together. To carryout all these action there requires some power supply. This power supply is been is supplied to arduino, DC motor and for also the RFID reader and tag.



**Fig 1.1 RFID Cards**

Initially the power is set to on state and then supplied to RFID reader which is been fitted in the vehicle . This RFID card reader checks whether the code of both tag and reader matches or not. RFID tag reader fitted in the city. This tag is been controlled by the keypad . At this keypad only we fixes the rate of rate of speed that a vehicle should move around the zone. The keypad is module where the administrator fixes the speed . suppose if the vehicle moves at a speed lesser than the fixed value set by the administrator then there is no need of any change.

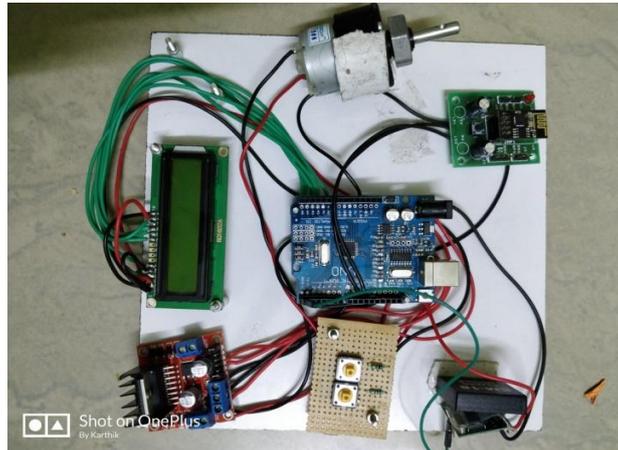
Suppose if the vehicle moves greater the speed of the set value given by administrator ,the speed limit automatically reduces to the value set by the administrator. There is a ULN 2003 chip ,this works as the control board of the system ,once speed limit set in the keypad automatically moves to the ULN 2003. This makes the project to define the set limit value given by the administrator.

Herecomes about the DC motor which is fixed in to the vehicle . This motor obeys the condition of the ULN 2003 chip and make the vehicle to control the speed . Thus this system makes the vehicle to move with particular speed which is instructed for different zones in the city.

Similarly the vehicle which enters to the smartcity all the details will be stored in the database and are done through the IoT. By doing so we can came across to know who is the owner of the vehicle by noticing their number automatic speed control system by some devices. The devices are RFID (Radio Frequency Indicator) tag and reader is been inserted in the city and the vehicle. The DC motor is been fitted on the vehicle in order to move the vehicle . RFID connected to the arduino board .this arduino board only acts as a base in which all of the device has been connected together. To carryout all these action there requires some power supply. This power supply is been is supplied to arduino, DC motor and for also the RFID reader and tag.

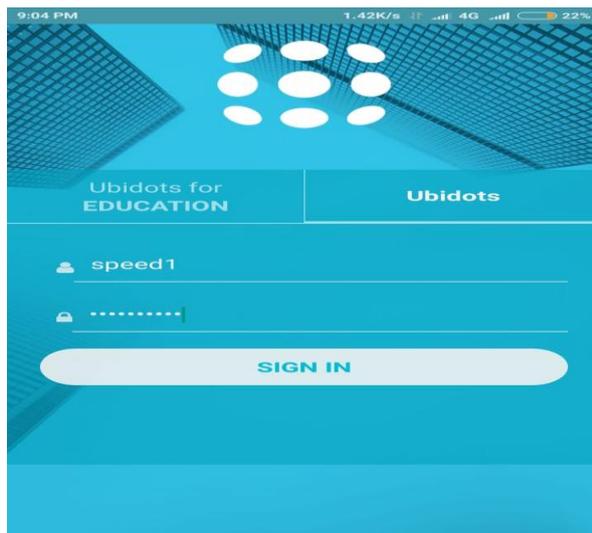
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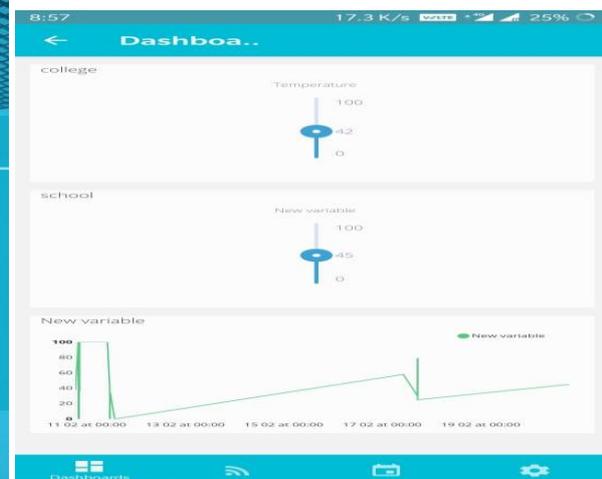


**FIG 1.2 Complete module**

Here comes about the DC motor which is fixed in to the vehicle . This motor obeys the condition of the ULN 2003 chip and make the vehicle to control the speed . Thus this system makes the vehicle to move with particular speed which is instructed for different zones in the city. Then by adding the IoT to the machine the administrator can change the vehicle speed limit in the website . The administrator who is well known as controller of the system will carry our the overall process in the system . All the speed limiting system will be displayed in the app which can viewed for controlling purpose .By doing so at peak time administrator reduces the speed limit and then in the usual time the controller may increase the time as per the sections.



**Fig 1.3 Login page in app**



**Fig 1.4 speed controlling through app**

The application is been carried out through the UBIDOTS app and it is been connected through the hotspot and WIFI connector in the module setup. By doing so the administrator who is having the controller of the app can

login to their respective account and they control the overall system of the module which makes human work more easier to control the system. . Therefore the proposed system is useful for our action to carry out.

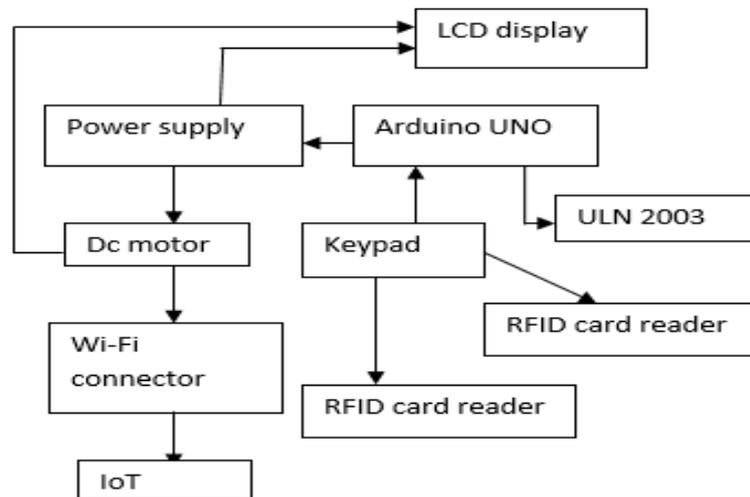


FIG.1.5 Block diagram

## CONCLUSION

Thus the automatic speed limiting system controls the speed limit in DC motor which is been carried out by the RFID sensors with the help of IoT. By controlling this speed limit many accidents can be avoided in the important zones like school, market, hospital and city. Thus this system makes a secure and safety way for humans while driving their two wheeler.

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