

# Smart and Secured Transportation System using IoT



C.Kuppusamy, S.Pradeep, M.Praveen Raj, G.Nivedhitha

**Abstract:** Now a day's numerous of the accident occur due to the improper driving of teenagers. The major reason for the accident is the alcohol consumption and driving the vehicle without the license approval. Most frequent checking of the license is very tedious and manual process. At most in every situation, the police officers can't control the driving user without the driving license. Our proposed system is to reduce the manual effort of the police officers with Smart and secured Transportation system using IoT. The implementation system follows with the registration of the user with their finger print, 11 digit License number and the Date of Birth. The vehicle can be unlocked only after the verification of finger print scanning using R305 sensor and detection of alcohol consumption using MQ3 Sensor. Thus our proposed system will benefit for the police officers by manual checking of the improper driving user and it also avoid the accidents. In future along with this technology the more safety requirements can be additional added.

**Keywords :** Vehicle Security, Internet of Things, Authorization

## I. INTRODUCTION

IoT structures enable end users to achieve deeper automation, analysis, and integration inside a tool using sensors. IoT is the system of physical articles or "things" implanted with material science, Software projects, sensors, and network assets that permit these items to unite and change data. Web of Things permits things to be identified and controlled remotely across current network framework, creating open doors for several immediate joining between the substantial worldwide and PC principally based structures coming about in advanced execution, exactness, and financial benefit. The headway at interims the circle of transportation at last winds up in partner passing ascent at interims the fluctuate of street clients. In step with data from the Ministry of Road Transport and Highways, 10,622 individuals underneath the age of eighteen lost their lives to road crashes in India, speaking to 29 passing consistently. To disannul this condition,

the License corroborator is utilized in such the methodology that the gadget guarantees the time of escort (Driver) is more than eighteen with positive approval steps. Also the additional reason is the alcohol consumption for all teenagers. The drunk and drive concept has been increased over decade. Due to the increase of population the manual checking of the driving license user has been tedious process with the current technology. Subsequently the proposed framework is to envelop the IoT sensor used for recognizing driving permit and liquor expectation during the vehicle creation. This framework guarantees the security of all clients regarding transportation process.

## II. RELATED WORKS

### A. Driving License

- N.Ramakumar, P.Siva ., et al [1] proposed that many of them using fake license. The author proposed a solution of about ARMA based dynamic driving license verification system to find the fake license id by using fingerprint reader.
- Yu-Shuang H. , Chi-H., et al[2] proposed that the user can use the e-driver's license on RF-ID reader on the vehicle. This paper also describes that this will assist reduce and solve the rate of stolen vehicle class. By using RF-ID card, there is a regular change in the serial number. It is difficult for the user to know their RF-ID card number.
- Prema.S, Mohammed R., proposed that by using RF-ID tag reader and writer the police can identify whether the user has license. This paper also describes that a fingerprint module can be added to store the user's information in the database to avoid criminal activities.
- 4.Dhruvesh H. , Prasann B., proposed that death ratio can be avertable by obligatory use of helmets, researches depicts that wearing the helmet can prevent fatal injuries by 75%.GPS and GSM module can be included in the helmet to prevent accidents. This paper also describes in case of emergency the driver drives the vehicle without helmet.

### B. Alcohol Prediction

- Shahad A. , Musab A , et al[5] proposed that alcohol sensor had been placed in the car to prevent the road accidents.This paper also describes that Butane gas level is checked for the user before starting the car.The device needs more time to read the alcoholic level of the user.
- Dangeti A. , Mukundala S. , et al[7] proposed whether the user is wearing helmet and also detects the alcohol level by using face detection algorithm. This paper likewise depicts that by utilizing bolster vector machine,

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the client's face can be perceived effectively to recognize the client has wearing protective cap and furthermore identifies liquor level.

- M.Malathi, R.Sujitha, et al[3] suggested that almost 70% of street mishaps happened because of alcoholic and drive. It can be reduced by placing the alcoholic sensor in the car steering and also wearing seatbelt is more important to avoid road accidents.
- Hironori w., Masuyoshi Y., et al[4] proposed that capable of distinctively detecting the saturated water vapour and the metabolites from human breath while accurately measuring the alcohol level of a driver breathing into the detector. It tends to be estimated by utilizing PPM. This paper also describes that by using only ppm, we cannot detect the alcohol level of the driver.
- Alessandro A. , Michele E. , et al[6] , recommended that is to decide the attainability of planning a driver intoxication recognition framework dependent on the dynamic investigation of a subject's papillary light reflex(PLR).This paper also describes that the general increment of the response time of the observed subjects in terms of delay, pole frequency and settling time, together with a general increment in the sensitivity of light.

### III. PROPOSED SYSTEM

User should enter their license number and enroll their fingerprint ID. After that process you can unlock your vehicle as your phone. It reduces the work of traffic police officers. They don't need to check all the drivers' license, if you don't have a license you can't drive a vehicle.

#### A. DRIVING LICENSE

User can enter their Fingerprint or License number for their registration. After successful registration the admin can authenticate the user's License number to check for the validity and vehicle class. One month prior date of expiry, the message has been sent to the user. After successful verification the user can unlock the vehicle.

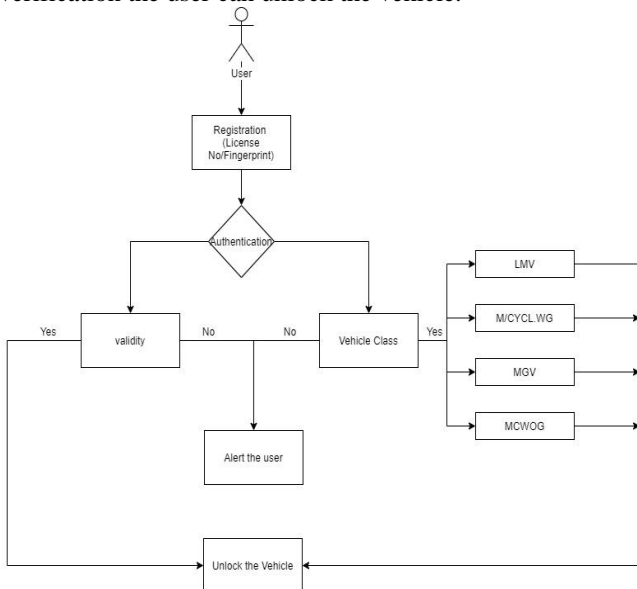


Fig. 1. Flowchart for Driving License

User License's expiry date is shown in the below diagram.

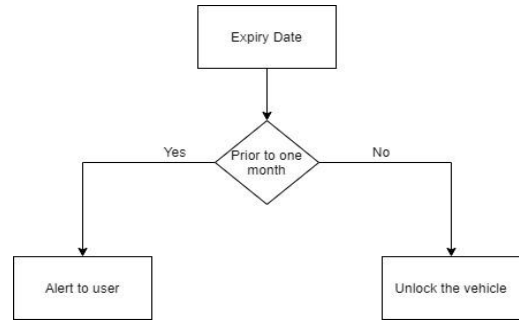


Fig. 2. Flowchart for Driving License (Expiry date)

#### B. ALCOHOL PREDICTION

This module can be used to check the alcohol detection/level of the user by using MQ3 sensor. If the driver is drunk ,the alcohol detector placed along with fingerprint will check the level of the alcohol, if the level of the alcohol is 0.03% (or 30 µl alcohol in 100 ml blood level) the driver is allow to login , else the vehicle get turn off automatically.

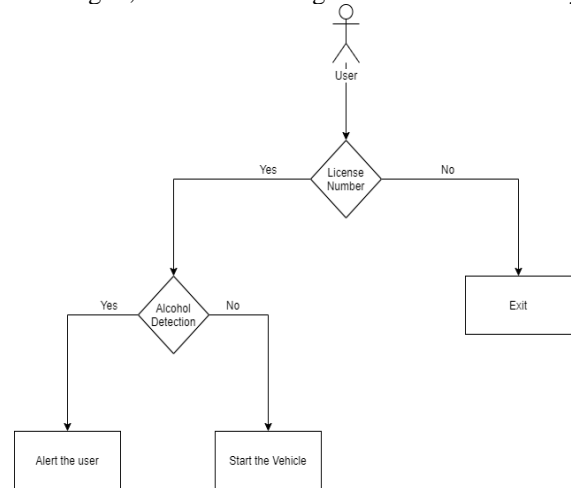


Fig. 3. Flowchart for Alcohol Prediction

### IV. MODULES

#### A. ENROLL (Mapping the License number with fingerprint database)

It is the process of enrolling the finger print and the Driving license number with the data base. In this step the admin are responsible for the registration of data. On the start of the process it will ask to type the license number. Then the license number will be stored in the data base and it starts to capture the finger print by using the finger print sensor (R305).After this process it will again asks the finger print of the license holder for the accuracy of the finger prints. Then the driving license number and the finger print are merged and it is stored in the data base. At last the buzzer will sounds to indicate the successful registration of the driving license and the finger print of the license holder.

▪ LICENSE NUMBER

License number should contain year of issued and seven digit number for verification process. The license number should be properly entered by the admin for verification. If the license number is invalid the process get rejected and come out from the process.

▪ MOBILE NUMBER

After completing the fingerprint process, OTP is sent to admin mobile number for verification, only if his license is not expired. The admin should provide proper ten digit number for verification process.

**B. LOGIN**

It is the process of matching the finger print of the driver and the storage. In this process the finger print is asked to the driver at first, the driver need to scan their finger prints. Then the finger print data will be matched with the local data base. When the finger print is matched and exists then the buzzer will sounds to indicate the successful matching of the finger print in the data base. At last the vehicle will start after all this process. The driving license validation will be expired when the ignition of the vehicle is off. The driver needs to re-login after the start key is on.

**C. DELETE**

This delete option is used to remove the finger print and the driving license number in the database. As per the government rules the driver is no eligible for driving license after his three accidents So there is the need for deleting the driving license and finger prints in the data base. So that this process is developed to delete the driver by deleting the driving license number and the finger print of the driver. In this process first it will asks for the license number. Then it will search the license number in the data base. And it will delete the license number and the finger print that was merged with the license number. Expiry date is updated to the admin as a notification before one month and the driver can renew their license on or before the date of expire. After the prospering deletion of the number and also the finger prints of the drive the buzzer can sounds to point the successful deletion of the license from the information base. Delete choice Is to get rid of the registered finger print id and number that are hold on in information for Security, as a result of they will be hacked by somebody. Consistent with our Perspective, Security is divisor in IOT and once more we are able to Login and begin to possess Happy Journey.

**V. CIRCUIT DIAGRAM**

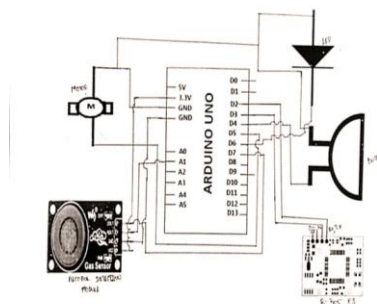
**A. MQ 3 ALCOHOL DETECTION SENSOR**

This module is formed mistreatment Alcohol Gas sensing element MQ3. It's a coffee value semiconductor sensing element which may notice the presence of alcohol gases at concentrations from zero.05 mg/L to ten mg/L. It's conduction will increase because the concentration of alcohol gases increases. It's high affectability to liquor and incorporates a shrewd protection from aggravations on account of smoke, fume and gas. This module provides each digital and analog output. MQ3 liquor detecting component module is frequently basically interfaced with Microcontrollers, Arduino Boards, Raspberry Pi and so on.

This alcohol sensing element is appropriate for sleuthing alcohol concentration on your breath, rather like your common device. It's a high sensitivity and quick latency. Sensing element provides associate analog resistive output supported alcohol concentration. An easy interface might be a 0-3.3V ADC.

**B. R305 FINGERPRINT MODULE**

This is partner optical biometric unique finger impression sensor (R305) module with TTL UART interface for direct associations with a microcontroller UART. The client will store the unique mark information inside the module and may make it in 1:1 or 1: N mode for trademark the individual. This module will legitimately interface with any three.3V or 5V miniaturized scale controllers; anyway partner satisfactory level converter/sequential connector is required for interfacing with the interface of a convenient PC.

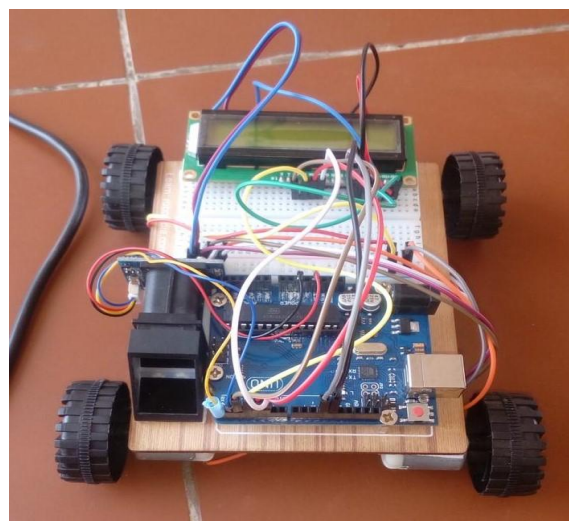


**Fig. 4. Circuit Diagram for driving license and alcohol prediction**

**VI. RESULT AND ANALYSIS**

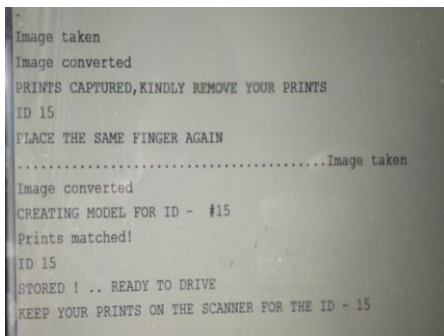
The various design modules of the license checker and alcohol Detection System Using R305 fingerprint module and MQ3 alcohol detection sensor module Technology are outlined. The critical analysis and the various results recorded in the database for the secured method of driving, reduction of accidents and minimize the use of RTO officers.

**A. DRIVING LICENSE**



**Fig. 5. Implementation diagram for Driving License**

The following diagram represents the result of smart and secured way of transportation.



**Fig. 6. Result for Driving License**

## B. ALCOHOL PREDICTION

This module was designed to predict and prevent the drunken driving of the driver's/users.

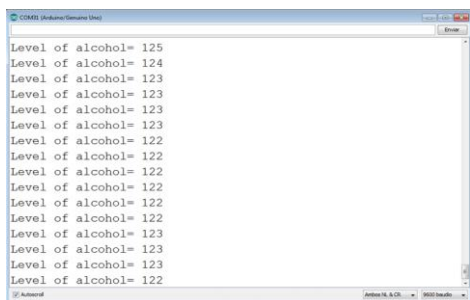


**Fig. 7. Implementation diagram for Alcohol Prediction**

The following table represents the Alcohol Level of the Driver/User.

Alcohol Level	Driver's State
100 -125 lbs	Normal State
126-150 lbs	Drunken State
>150	High

The following diagram represents the result for drunk and drive prediction.



**Fig. 8. Result for Alcohol Prediction**

## VII. CONCLUSION

Consequently our proposed framework will profit for the cops by manual checking of the inappropriate driving client and it in like manner avoid the incidents. Therefore the proposed framework is to envelop the IoT sensor used for identifying driving permit and liquor expectation during the

vehicle creation. This framework guarantees the security of all clients as far as transportation process.

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