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IoT Based Horn Control and Oil Purity Monitoring System in Vehicles

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Abstract- Nowadays, we use intelligent devices in every part of our lives mainly in automobiles. Horn is one of the important parts of the vehicle but at the same time, it creates excess noise to the surroundings. To use it wisely, we have restricted the number of the horn to be pressed. The driver can only use a certain number of horns per hour. If the horn exceeds, then fine will be charged from the concerned and also the duration of the horn is limited. During the emergency time, the fine amount is relaxed. To make sure we use a camera which will closely watch the situation of the person. The cautions will be given to the driver through the help of LCD display and speaker. If the additional cost is not paid then the car will be locked automatically by blocking the engine so after paying the charge it will be released. This all details will be uploaded in both companies as well as in the government's server. One more feature is, a sensor will be used to sense the purity of the oil and will be updated in the server for the change of oil.

Keywords—Wi-fi module, LCD display, Speaker, Arduino.

I. INTRODUCTION

The main purpose of using a horn is to alert the other vehicles and pedestrians about the presence of a vehicle. Due to the increase in the vehicle the amount of noise pollution, that is generated by these vehicles have increased significantly. During traffic when there is no chance to let way people tend to press the horn for a long time, This has, in turn, caused disturbances and hence, in some areas such as in the hospital, central cities, near the school etc, honking is prohibited by law or regulation. In order to use the horns reasonably, we have restricted the number of the horn to be pressed the driver can only use a certain number of horns per hour. In case the horn exceeds, then fine will be charged from the concerned and the duration of the horn is also limited. if not paid then the car will be locked. So by this proposed work the owner will be intimated via message and audio played in the vehicle about the last date in order to alert the pay the extra horn amount on time without any inconvenience.

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The next one is due to the unawareness of the aging of oil in vehicle; it may cause huge damage in the engine or in any other parts in future which in turns comes with a big bill for the repair and by using the old oil it may create dark smoke which causes air pollution. In order to avoid this kind of inconveniences, we have used oil quality sensors which provide an indication of the condition of oils by measuring the difference in the fluid characteristics such as color, density, optical (light scattering) and electrical properties (permittivity and conductance). So the main aim is to avoid Noise and air pollution by designing and development of horn control and oil purity monitoring systems for automobiles.

II. LITERATURE REVIEW

Noise pollution affects both health and behavior. Unwanted sound can damage physiological health. Lekshmi Ajaykumar et al., has created a horn limiter project by altering the sound level as per the permissible decibel level of the zone as prescribed by the authorized body this is done by using a set of acoustic filters[1].

P. Pavithra1et al. described Monitoring and Validating the Expiry of Non-FC Vehicles Using GSM Technology. A transmission unit is used at the RTO (Regional Transport Office) and in the vehicle the reception unit is present. In the transmission unit, all the details about the vehicle are fed. By using the Lab VIEW the vehicle identification details that is the database is maintained and controlled. The vehicle can be locked and unlocked by knowing the expiration of FC validity this is done by the transmission unit which sends the information to the receiver unit in the vehicle via GSM module. By locking the fuel valve of the engine the vehicle is stopped, which is controlled by the transmission unit in the RTO [2].

G.Rupa1 et al. developed EMI Due and Alcohol Detection Based Automatic Vehicle Locking System The system is designed when it exceeds the EMI due date the vehicle is locked automatically until the borrower pays EMI using GSM technology. By using the GSM module a warning message will be sent to the lender about the due date by the EMI department. Here, the message is received by the microcontroller and the user is warned by the voice IC. In case, if he fails to pay the EMI, the module receives a command from the EMI department to lock vehicle engine [3]. C.Viji et al., proposed Smart Vehicle Authentication and Due Date Monitoring System using IoT. For monitoring, the due dates Wi-Fi system is used to send intimations. So that the person can pay the due on a date without any penalty[4]. Angel Torres Pérez et al., proposed Low-Cost Oil Quality Sensor Based on Changes in Complex Permittivity.

An effective indicator of the oil degradation process is the measurement of a lubricant's complex permittivity and it can be useful in condition-based maintenance (CBM) to select the most adequate oil replacement maintenance schedules.
The working principles of an oil quality sensor based on a marginal oscillator to monitor the losses of the dielectric at high frequencies (>1 MHz) are discussed. For use in harsh environment effective and ruggedized sensor is used, for that, an electronic design procedure is covered which results in a low cost.[5].
Mr.Aravindhan.R et al., Oil Flow Control and Monitoring System developed A monitoring system based on the ARM processor is proposed to maintain the flow of oil in an oil plant pipeline. The parameters like temperature, viscosity, colour, and pH of the oil are continuously monitored [6].

III. EXISTING SYSTEM

The techniques that exist are, by altering the sound level as per the permissible decibel level of the zone as prescribed by the authorized body. It is just an additional system it does not change any inbuilt mechanism it will be connected to the honking system. But by using this technique the sound can be reduced but the horn will be pressed many times because the sound level will not be enough to reach the other vehicle if they have a high volume of the music so this creates noise pollution.

IV. PROPOSED SYSTEM

So to overcome the disadvantages we have proposed a technique which limits the usage of horns. This is done by restricting, that for one hour a certain number of horns can be used if exceeds the limit the owner has to pay the additional costs. In case he fails to pay, the car will be locked by blocking the engine and after paying the lock will be released. During an emergency time, the camera is manually switched ON by the user and it records the situation so considering the inability of the used the extra charges will be canceled. All details will be uploaded in both the servers so that the additional cost will be paid to the government.

V.BLOCK DIAGRAM

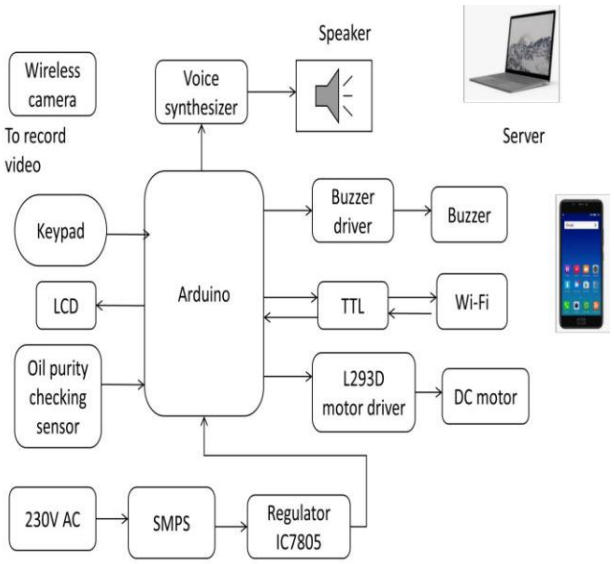

Fig.1 Block diagram

Arduino consist of 14 digital I/O interfaces (6 of which can be used as PWM output) and 6 analog inputs and its operating frequency is 16 MHz crystal oscillator. Wi-Fi (ESP-8266) 2.4 GHz, support WPA/WPA2, Support STA/AP/STA+AP operation modes and Supports Smart Link Function for both Android and IOS devices. The DC motor is connected to the Arduino through the L293D motor driver. The buzzer connected to the controller by buzzer driver and speaker through voice synthesizer. The oil purity checker sensor is connected to Arduino for intimation about the change of oil.

VI. METHODOLOGY

A.*Horn control working*

For representing the horn we have used the keypad and sound is heard from the buzzer, let us keep for one hour five horns is allowed to be press if exceeds, audio intimates, for that speaker is used and for each horn that is pressed after the limit, the charges are uploaded in the servers. To be notified that it is an emergency situation we have used a camera for recording, the camera is switched on manually by the user when needed. To represent whether the car is in on or off state dc motor is used.

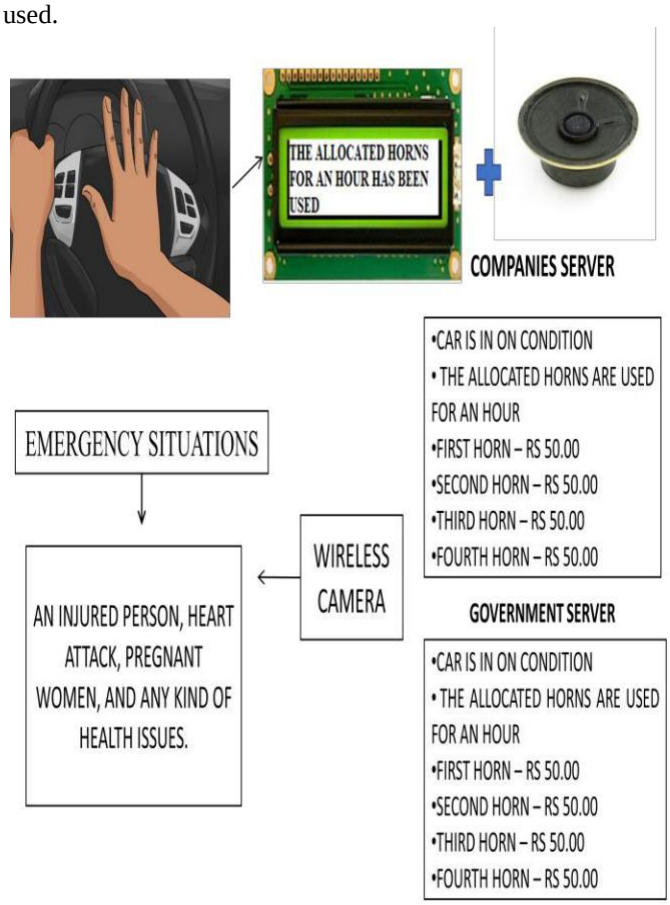

Fig.2 Horn control working

B. Horn due date monitoring system

For horn due date monitoring system the same speaker is used for audio and by using Wi-Fi module SMS is sent to the owner, the next day of the due the car is locked automatically this is represented by stopping the dc motor.
If the car is in moving state then after two hours of intimation the car slowdowns and stop.

The audio plays only when the car is in on condition for that the on and off state of the dc motor will be updated in the server. For this, Arduino controller is used

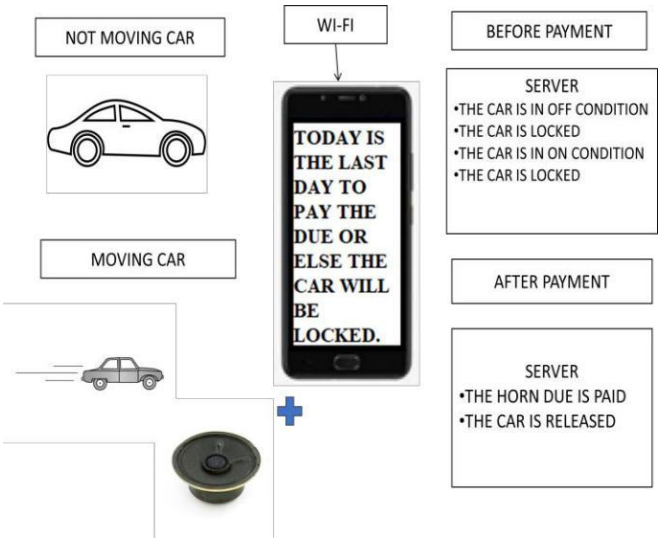

Fig. 3 Horn due date monitoring system

C. Oil purity checker

For checking whether the oil is pure or there is a need to change the oil in the engine we have used colour sensor and IR sensor. IR sensor passes data through the oil if it travels fast then the oil is pure. If the data travels slowly then the oil should be changed. By using the colour sensor the aging of the oil is also checked.

VII. RESULTS AND DISCUSSIONS

The output obtained from the Horn control and oil purity monitoring system is discussed below.

A. Servers

Here two servers are used. The user ID with Manisha is company server and the user ID with Jayantheka is government server.

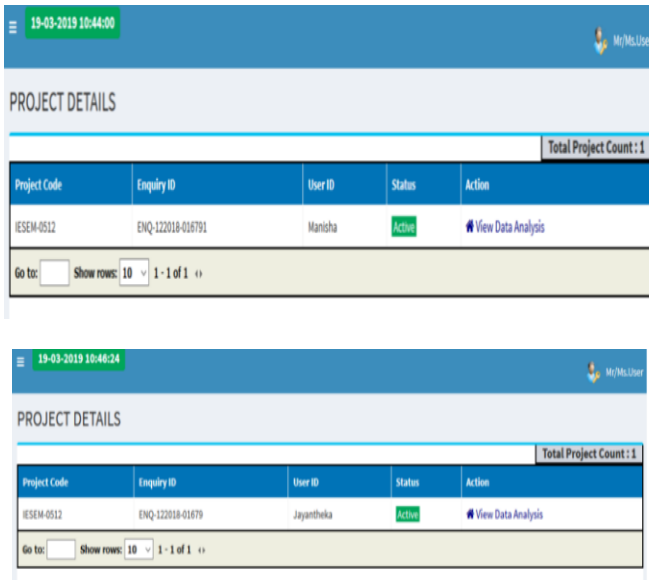

Fig.4 Server

B. Horn control

Now when the start button is pressed, then motor gets ON and in the server, the status is updated as "ENGINE ON" and the 45rpm DC motor starts. Then the first horn is pressed and this will be uploaded on the LCD display.

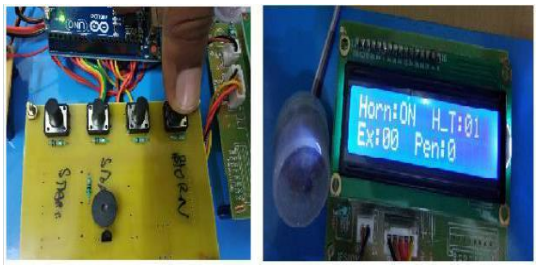

Fig. 5 Output when Horn limit not exceeded

C. Horn limit exceeded

The horn limit is set and it is updated in the server. If the number of horns reaches that limit, then through WIFI module, the controller will be intimated and analog signals will be sent to a voice synthesizer to alert the drivers about their horn usage. If the horn limit is exceeded, penalty charges will be updated in the server through the WIFI module.

Fig. 6 Output when Horn limit exceeded

When there is an emergency situation the camera is manually switched ON by the user to record the happenings and after this video clip can be given to relax the fine charges.

D. Due date monitoring

After updating the penalty charges for each horn pressed, the government will fix a certain date for paying the penalty charges. If the person fails to pay the charges before the due, then on the day of due date the vehicle is locked based on the engine status updated in the server. If it's in "OFF CONDITION", then via message the driver is intimated and he can't take the vehicle till he pays. If it is in "ON CONDITION" then through voice the driver is intimated and the motor is locked.

E. Oil purity checking

Here the IR sensor is placed near the oil, if the oil is pure then no further changes are done. In the server, the oil status will be updated as normal.

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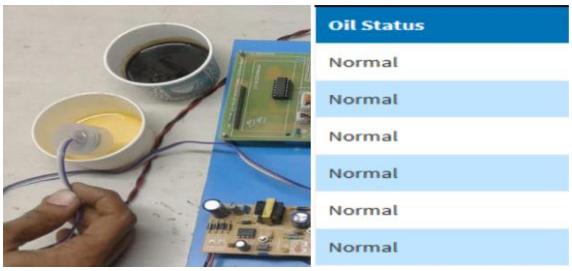

Fig.7 Oil status

Here the IR sensor is placed near the oil, if the oil is impure then oil status will be uploaded as abnormal in the server and change of engine oil will be intimated to the user via message which is sent by using a Wi-Fi module and if the engine is in ON condition then the LCD will display that the oil is abnormal.

VIII.FUTURE ENHANCEMENT

The purity of the oil can also be detected by using the viscosity sensor. In addition, now we can only capture the video so in future both audio and video can be captured in order to record the ambulance sound.

IX.CONCLUSION

Thus by introducing this method, noise pollution and air pollution can be decreased and a peaceful environment can be maintained. This also reduce the health problems like high blood pressure, stress related illness, hearing loss, asthma, bronchitis etc. In addition by continuously monitoring the oil purity in engine future problems in the vehicle can be avoided.

REFERENCES

1. Lekshmi Ajaykumar, Rose Merlin Jose and Sarath Nair, "A Study on Vehicular Horn Noise Limiter," International Journal of Innovative Research in Computer and Communication Engineering, Vol. 4, Issue 4, April 2016.
2. P. Pavithra, P. RamPriya and V. MohanaPriya, "Monitoring And validating the expiry of non-fc vehicles using GSM Technology," International Journal of Advanced technology in engineering and science. Vol. 4, Issue no 6, June 2016.
3. S. K. Poornesh and T.V. Harsha, "Automatic vehicle accident detection and messaging system using GPS and GSM GSM modems," International Journal of Scientific & Engineering Research, vol. 4, pp. 1937–1940, 2013.
4. G.Rupa, K.Sangeetha, A.Sowmiya and J.Shri saranya, "EMI Due And Alcohol Detection Based Automatic Vehicle Locking System," International Research Journal of Engineering and Technology (IRJET) Volume: 05 Issue: 02, Feb-2018.
5. C.Viji, R.Gokul, N.Hari Krishnan and BP.Kathiresan, "Smart Vehicle Authentication and Due Date Monitoring System using IoT," Asian Journal of Applied Science and Technology (AJAST) Volume 1, Issue 2, Pages 265-267, March 2017.
6. Angel Torres Pérez and Mark Hadfield, "Low-Cost Oil Quality Sensor Based on Changes in Complex Permittivity," Sensors 2011, 11, 10675-10690; doi:10.3390/s111110675.
7. A. Agoston, C.Otsch and B.Jakoby," Viscosity sensors for engine oil condition monitoring-Application and interpretation of results," sensor and actuators A 121(2005) 327-332.
8. K.Vinoth Kumar, R.Siva Sankar, and M.Raghul," Reduction Of Engine Contamination And Improvements In Engine Efficiency," IOSR Journal of VLSI and Signal Processing (IOSR-JVSP).
9. Mr.Aravindhan.R and Dr.Jayanthi.S,"Oil Flow Control And Monitoring System," IJETST- Vol.03 Issue 05 Pages 656-6 6May 2016 ISSN 2348-9480.
10. G. Naveen Balaji,, N.V. Hari Suriya, S. Anand Vikash, S. Arun Kumar and R.Arun,"Gasoline Purity Meter Using Peripheral Interface Controller for Automobile Applications," International Journal of Engineering and Technical Research (IJETR) Volume-7,Issue-10, October 2017.

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