Automation of Fuel Measurement And Air Pressure In The Wheel based on IoT Technology

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Abstract : In today rapid development era the motor vehicles display the amount of fuel in the fuel tank by means of some indication like bars running through the empty and full indicators and also not get an alert message about the condition of wheel were air is available in the wheel or not. Everyone of us might have experienced the problem with improper estimations of the current fuel level in the tank with the existing bars representation system and accident cause due to imbalance because of less amount of air in the wheel. At the time of manufacture they provides the specification that each bar maps to the corresponding liter of fuel approximately and air pressure in the wheel .Today in this digitalized world ,if the fuel indicator in the automobiles is also made digital and this will help to get the exact amount of fuel present in the tank and amount of air in the wheel. In this paper have proposed a technique to make a Smart IoT based system to display the fuel and wheel pressure status on Android device and also get alert message in   mobile through WIFI module. Also this application can predict and calculate how much distance that vehicle can travel in the amount of fuel present right now in the fuel tank by Arduino.

IndexTerms - *WIFI, Android OS, Arduino, Fuel level sensor,Pressure sensor*

I. INTRODUCTION

Now a days most of the accidents cause due to pressure variation in wheels. If the pressure in wheels is more than fixed level it may damage the suspension, wheel alignment and balance when travelling through bad roads. Because of this reason we are unable to control vehicle in some situations and the wheel has the chance to explode. If pressure is less than fixed level can also cause accident by loss of control. And another reason is pressure difference in each wheels also create accidents and another case some people stuck in between the highway due to less amount of fuel and this cases happen because of not getting an exact value of fuel level in the tank. All this problems are arising due not checking the pressure in wheel as well as fuel in the tank before entering in to vehicle .Hence to solve these problem we are introducing our paper (Automation of Fuel Measurement and air pressure in wheel based on IoT Technology).Hence we can get an exact amount of fuel in the fuel tank and air pressure in the wheel .The Fuel level sensor is fitted to tank to detect the fuel level and also pressure sensor is used to detect the air in the wheels. It also gives the prediction about how much distance vehicle can travel in the available amount of fuel in the tank and also can get an alert message through WIFI module to the android phone.These all parameters are verified by an Android app. It helps the user to analyze all the parameters before moving in to vehicle this all information pass through an wireless system. If a family is going for a trip they can plan according by getting all the information before entering into vehicle. In this paper, We mainly focus on reducing accidents, increasing vehicle life and making a safe journey.

II. LITERATURE SURVEY

A SMART MONITORING SYSTEM IN VEHICLES

Kavitha N(2018) has mainly focused on developing a smart monitoring system of vehicle. Sometimes due to low pressure in the wheel causes accident that's why they used pressure sensor to detect the air pressure status also Carbon dioxide (CO2) gas has been proven to be one of the most significant gases that will cause global warming. How to efficiently monitor CO2 concentration in a large field such as an urban area by CO2 sensors was an interesting research topic and also they used fuel detection sensor to check the fuel level in tank and get status to our phone by wireless networks.

In that system, CO2 sensor was used to sense the carbon dioxide gas concentration emitted from the vehicle. Ultrasonic sensor was used to sense the level of fuel in the vehicle. The arduino controller was built in the vehicle and the LCD display was placed in front of the driver near the steering and each and every sensors continuously sense the values and sent to the arduino controller. The arduino controller then compares the level of fuel, wheel pressure and CO concentration level with the threshold value set in the arduino. If the sensed value was greater than the threshold value then a message was sent to the owner of the vehicle. Owner was allowed to turn up the engine. In future that systems would be highly cost effective and all that requirements would not possible to handle by the vehicles.

Modified Type Intelligent Digital Fuel Indicator System

Nitin Jade(2014) has mainly focused on to measured the exact amount of fuel level in the tank and also gave the chemical value to check the purity level of fuel and it was the first device which gave the accurate knowledge of fuel level in the tank and display it digitally and it also gave the idea of how much vehicle can run in available fuel in the tank & running capability of vehicle using loadsensor .All the sensors were situated on their particular separate place to perform their operation. In that system ECU(Electronic controlling unit) was used to control and gave power to the various sensor which was placed in the system. It collects data from sensor and then pass to ECU and then forward to CPU which perform calculation as per the programs done.

There are various sensor used in that system loadsensor was used to check the running capacity of the vehicle Speed sensors was usedFor control measurement systems this sensor provides speed and direction information. Between sensor face and a target, a target induce magnetic field was detected by rotational speed sensor. The operating temperature of the sensors was around 200C. The output voltage of the sensor was proportional to the target speed and air gap Acceleration sensors was used to measure the relative acceleration for linear and rotary drive and also analysis the behavior of drive system. Digital temperature sensors was low power consumption to detect the temperature.

Embedded System Based Digital Fuel Gauge for Automobiles

K S Balasubramani(2016) has mainly focused on system which was to measure the exact amount of fuel level in the tank. Now a days the fuel fraud case are increasing the fuel in the tank has much less than displayed value. Hence to overcome that problem that system was proposed which shows the exact amount of fuel in tank digitally on the LCD screen which was fitted on the vehicle and also send the alert message to owner about the fuel status through WIFI and calculations was done through Microcontroller.

That system was to focus on the digitally display the exact amount of fuel and also cross check the quantity of fuel in tank and various sensors was also add in system to gives the various info to the driver like temperature sensor was used to detect the temperature and WIFI module was used to gave the alert message to the owner through SIM network and microcontroller was main part was to perform the various calculation and passing the results to devices. They used keypad to enter the fuel cost and value and passed to microcontroller for calculations and fuel level sensor was used to analysis the fuel level in the tank.

Petrol Detection Meter Using IoT

N. Murali Krwashna(2018) has mainly focused on to detect how much petrol has been falling into your petrol tank by showing you the exact point reading through LCD .Here they are implemented an IOT fuel monitoring and tracking system. Hence as soon as agent starts filling petrol in your vehicle, the flow sensor was activated. That flow sensor will be active till flow ends. Once flow ends it will calculate the amount of fuel filled and send information on your android device. Flow sensor was used to check the fuel filling in tank as it passes the flow ends than the calculation will start for exact amount of fuel. Microcontroller was used to check or calculating the mileage for the existing amount of fuel and also it will displayed the alert message for low fuel.RPS(Regulate Power Supply)was used to give the power supply to microcontroller. All the information about fuel can be stored in memory storage for future use through Wi-Fi module and that can see on android device anytime.

III. PROPOSED SYSTEM

This paper describes the method to facilitate an enhanced Automation of Fuel Measurement And Air Pressure In The Wheel

based ,using Android application for displaying the status of fuel level in the tank and air pressure in the wheel.Fuel level sensor is used to detect the fuel level inside the tank and pass the value to the Arduino and Arduino will calculate the value and send to the WIFI module and from wifi module it will display on android phone and also Arduino will help to predict the mileage means how much km vehicle can run with in a present amount of fuel level in the tank.Pressure sensor is used to detect the amount of air pressure in the wheel and send to the Arduino and then it will display on phone in psi unit. Hence we combined both fuel level sensor and pressure sensor.
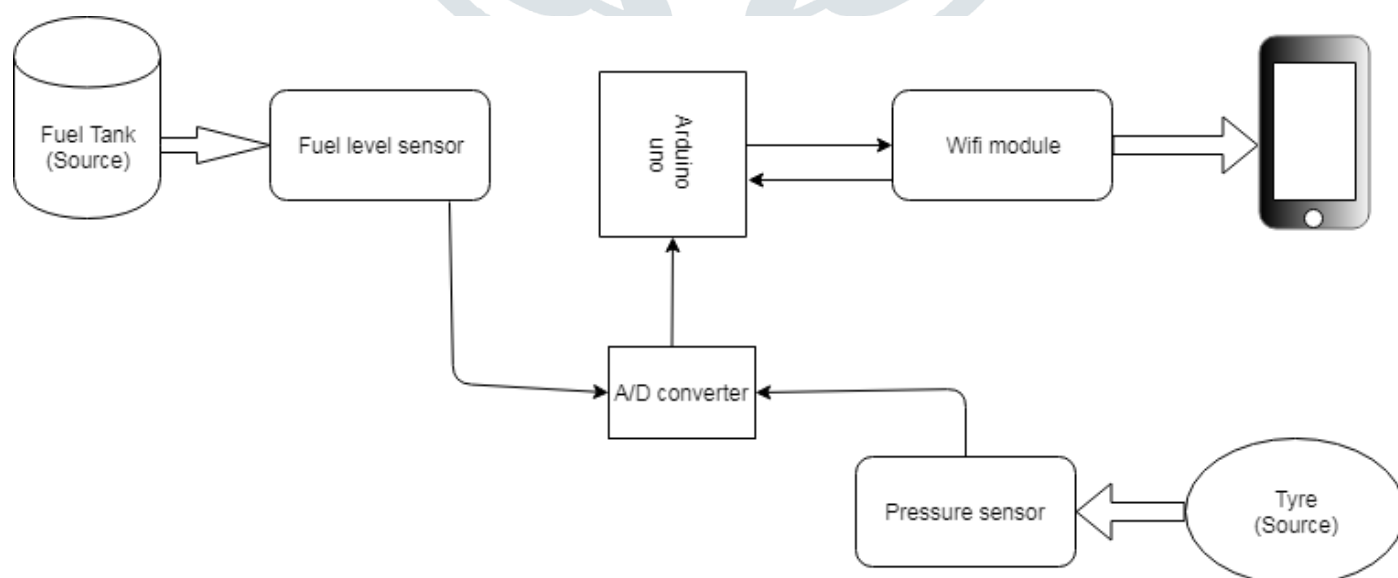
IV. CONCLUSION

Thus we have arrived at the concept of Automation of Fuel Measurement And Air Pressure In the Wheel, based on IoT Technology. It will sure the approx percentage of fuel in the thank and also check and the air in the wheel and also gives the prediction of a mileage as per that it will give the alert message and status will be shown on android device.

V. ACKNOWLEDGMENT

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