

Digital Gasoline Indicator which shows accurate fuel/Gasoline in the tank

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Abstract: This project acts as an attempt to conquer the running out of the fuel in the vehicles fuel tanks. Digital Gasoline Indicator is invented to detect the fuel level in the vehicle tank as the input and the percentage of the tank from its full capacity will be displayed on the LCD screen. This ultimately should be simple to the user to estimate the fuel that they require to have for their journey. The fuel level detection circuit is used to detect the level of the fuel in the tank. Here sensors are placed at the certain place to find out the fuel level and the signal is sent to the specific mobile. The user can check refill fuel quantity is it correct or not. Avoid fuel theft using this application. Also, this type of product will save the fuel from being exhausted and in another way consume the cost of the user itself. As for now, it may seem useless but.

This product is somehow will benefit the user in the future as the value of the fuel is unstable and that will affect the amount that we used every day as it will not be the same as before.

Key Word: Digital Gasoline Indicator, Fuel Status, Fuel Consumption, Collection Reports, ID 3 (Iterative Dichotomiser 3) Algorithm.

1.INTRODUCTION

Internet of Things is an advanced automation and analytics system which exploits networking, sensing, big data technology to deliver complete systems for a product or service. These systems allow greater transparency, control, and performance when applied to any industry or system. IoT systems have applications across industries through their unique flexibility and ability to be suitable for any environment. IoT essentially makes virtually anything smart, meaning it enhances every aspect of life with the power of data collection, artificial intelligence algorithms, and networks. IoT loses its distinction without sensors. The idea of our project is to make fuel detection system which gives the fuel level in tank and Mileage of the vehicles can also be determined. So, it is helpful to calculate total expenses, an average of speed, km/month. Sensors are placed at the certain place to find out the fuel level and the signal is sent to the specific mobile. The user can also check refill fuel quantity is it correct or not. We are already aware that motor vehicles display the amount of fuel in the fuel tank by means of some indication through the E (empty) and F(full) indicators. The manufacturer provides the specification that each bar maps to

the corresponding liters of fuel approximately. To the contrary, every one of us might have experienced the problem with improper estimations of the current fuel level in the tank with the existing bars representation system. Today in this digitalized world, if the fuel indicator in the automobiles is also made digital it will help to know the exact amount of fuel available in the tank.

2.RELATED WORK

[1] For improving measuring the accuracy of the liquid level using the ultrasonic method in dynamically changed level case, an attractive ultrasonic method, named the liquid-level detection based on the multiple-input-multiple-output ultrasonic transducer array, is proposed. The method employs the multi-transducer array to achieve the reduction of system complexity and cost and then applies the synthetic aperture technology to realize rapid samples of liquid level.

[2] A fiber optic liquid level sensor based on the strain sensing by a fiber Bragg grating (FBG) is proposed. The FBG packaged on a thin cantilever beam so that the elongation and contraction of the FBG indicate a liquid level change. The strain response of FBG has been carried out and the shift in the Bragg wavelength shows a very good linearity during rising and fall of liquid level. The liquid level monitoring systems accomplish good reversibility and repeatability.

[3] In this paper, In this paper we have proposed a technique to measure the amount of liquid available in the tank also give the knowledge about their chemical composition as well as purity level of fuel and it is the first device which can give the accurate knowledge about of how much the vehicle can run. This device digitally displays the level of liquid inside the tank, fuel composition and running capability of the vehicle by using load sensors.

3.PROPOSED SYSTEM

One of the main objectives is to Provides Vehicle Fuel Theft Detection System to protect the vehicle fuel from the fuel theft. It also used to get the accuracy of the fuel level for the user to estimate the fuel that they need to have for their journey. System Gives the quantity of the fuel in the fuel tank in the form of numeric digits more accurately.

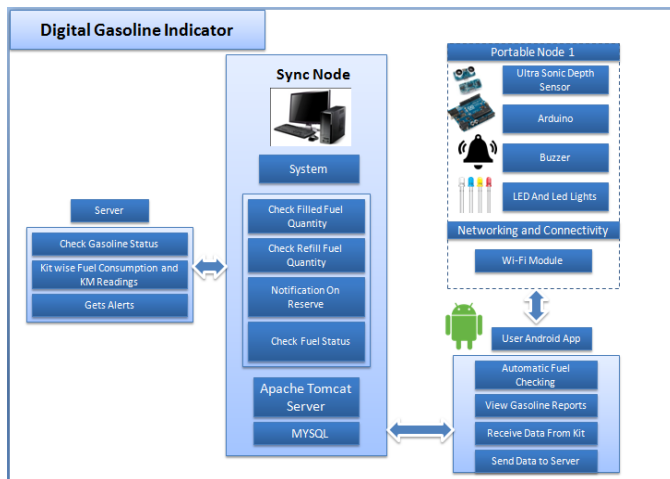


Fig.1 Architecture diagram Digital Gasoline Indicator which shows accurate fuel/Gasoline in the tank

The reserve tank is a secondary fuel tank (in many cars/bikes it contains around 15percent of the capacity of the primary tank) these are more commonly found on bikes. The fuel level detection circuit is used to detect the level of the fuel in the tank. Here sensors are placed at the certain place to find out the fuel level and the signal is sent to the specific mobile. The user can check refill fuel quantity is it correct or not. Avoid fuel theft using this application. In case a Tank Empty Or any Status regarding Tank, authorities must be informed instantaneously. This would be achieved by sending a notification to concerned authorities for further action. The data generated by the sensors on nodes must be sent to the mobile at regular intervals. Report the exact amount of fuel in the tank. Authorities can see history Kit wise Fuel consumption and Km readings. This Feature would help generate reports for authorities and users to check if refill fuel is correct or not. The quantity of fuel should be reported in a digital readout and should be in the unit of either liter and in kms at average/current consumption. You can calculate total expenses, an average of speed, km/month using this report. System Helps in getting an accuracy of the fuel level and Make Vehicle Fuel Theft Detection System.

4. PROPOSED METHOD

Algorithm Used:

1. ID 3 ((Iterative Dichotomiser 3) Algorithm

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ID3 builds a decision tree from a fixed set of examples. The resulting tree is used to classify future samples. The leaf nodes of the decision tree contain the class name whereas a non-leaf node is a decision node. The decision node is an attribute test with each branch (to another decision tree) being a possible value of the attribute. ID3 uses information gain to help it decide which attribute goes into a decision node.

Algorithm :

- 1) Establish Classification Attribute (in Table R)
- 2) Compute Classification Entropy.
- 3) For each attribute in R, calculate Information Gain using classification attribute.
- 4) Select Attribute with the highest gain to be the next Node in the tree (starting from the Root node).
- 5) Remove Node Attribute, creating reduced table RS.
- 6) Repeat steps 3-5 until all attributes have been used, or the same classification value remains for all rows in the reduced table.

Entropy:

$$H(X) = - \sum_{i=1}^n p(x_i) \log_b p(x_i)$$

Information gain:

For Set S, Attribute A

Where S is split into subsets based on values of A

$$C_S^A = \text{Subset A of S}$$

$$I_E = \text{Entropy}, p(C_S^A) = \frac{\text{size}(C_S^A)}{\text{size}(S)}$$

$$I_G(S, A) = I_E(S) - \sum_{i=1}^n (p(C_S^{A_i}) * I_E(C_S^{A_i}))$$

5. CONCLUSION AND FUTURE SCOPE

The Digital fuel indicator design like that described above will most likely be more accurate, more reliable, and cheaper than other analog meters, and will allow for added features that benefit both the customer.

In the near future, the different vehicle company manufacturers will implement this kind of fuel system which also provides security for the vehicle owners. Not only will the measurement be more accurate, but, the consumers also will not be cheated for their hard earned money.

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