Machine Learning Algorithm In Fuel Prediction

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Abstract- *The mileage for the two-wheeler claimed by the manufacturer relies on the mounted laboratory testing conditions. several factors like individual driving pattern, traffic condition, road condition, load, speed condition, gas level, and parcel of land can have an effect on the mileage of the vehicle to a bigger extent. we've projected a machine learning model to predict the mileage considering the higher than factors. within the side to facilitate and enhance the feature of bike like speed, mileage, and meter level of fuel by providing it with the detection of level and prohibit illicit activities employing device. it's enforced exploitation Vehicle Area Network (VAN) and embedded style. It suggests a processed technique in significant vehicles. within the projected system, the owner of the vehicle instantly receives a message once the fuel tank is opened by the operator or by a fuel listed and conjointly the peak of the fuel tank once gap and shutting the tank. The poised system uses Wireless based mostly communication for observation the vehicle's position. Initially, the method involves measurement stockpile followed by eliciting the knowledge and sends it to the server for more detection. Finally, the message is distributed together with the vehicle position and stockpile within the tank. This permits in distinguishing the extent of fuel at totally different times whenever the tank is opened.*

Keywords- Digital meter, Fleet Management, Machine learning, Multi –feature regression.

I. INTRODUCTION

Nowadays, the world is upgrading from analog to the digital segment. Likewise, most of the vehicle are upgrading to digital. So, Fuel consumption in a vehicle mainly depends on external factors such as the road condition, traffic on the road, and weather conditions. The main objective is to predict the distance to be travelled by the two-wheeler with the available fuel. A method used to model this is a linear regression. Regression means modeling the targeted value based on the independent predictors. The predictions is happened by the comparison of previous travelled distance by the concept of machine learning.

II. LITERATURE SURVEY

Existing systems

A .*Digital fuel level indicator in two-wheeler along with distance to zero indicator*

The analog fuel gauge has two main units, namely the sending unit and the gauge. Here, when the fuel tank is full, resistance values decrease current value increases and when the tank is empty, resistance values increases and the current value decreases. The rear side of the analog fuel gauge has three terminals, namely B-battery, F-float, G-ground. From these terminals, voltage values are taken from the terminals-FG and resistance value is taken from the terminal-F from zero to 11 liters. So, for a particular volt value, the corresponding liters value will be shown in digital.

B .*Study of digital fuel meter and fuel theft detection*

In recent day's world has become digitized, if we make fuel meter in the vehicle also digital it will help to know the exact amount of fuel present in the fuel tank. In our 4 Project, we have made a digital fuel meter. Here, we are indicating the amount of fuel present in the tank digitally. That value is in numerical digits (ex: 1lit, 1.5 lit, 2lit, etc). Fuel theft is also a measure problem all over the world. In our project whenever there is fuel theft, due to the noise of the burglar alarm people are aware of the fuel thefts, and also during fuel theft a text message delivered on mobile to the owner of the bike. This is a real-time occurring process. The previous vehicle system doesn't have such functionality that there is no display gear level whatever may be the condition though the bike is running or not. Doesn't allows any new person on the bike to adjust the gear level. But in our system, we can overcome the above problem by using a digital meter that shows the gear level in a steady-state or running state of the vehicle.

C .*Low Cost Intelligent Real Time Fuel Mileage Indicator for Motorbikes*

This project focuses on creating a device that can help to actively display the fuel mileage of a motorbike in real-time. It involves the making of the system to provide a mileage indicator that is reliable, easy to read, and of dependable/compatible overall design. It also involves the process of utilizing the compatible speedometer/odometer apparatus of a motorbike without interfering with its

operation, to permit installation of the mileage indicator in any existing vehicle or engine without much-existing alteration. The system will comprise a flow-meter, a control unit, and a display unit. shows the block diagram of the proposed system. A novel flow-meter of minor size is designed and is made to fit in between the fuel tank and the engine. This flow-meter will be accountable to receive the fuel from the fuel tank and provide it to the engine.

D .*Design of Smart Kiosk for an Integrated Vehicle Monitoring System*

At present most of the vehicles are having analog fuel meters. These meters indicate only three states of fuel levels that are full, half, and empty. So we cannot judge the actual amount of fuel present in the fuel tank. We often hear fuel stealing in news but we ignore them, according to a recent report for every liter of fuel 50ml gets reduced this is because of the false reading displayed in the petrol bunks, digital fuel meters are implemented in vehicles, but they do not show the exact fuel levels which are present in the tank that is they show the amount of fuel in terms of bars and not in discrete values i.e. (1ltr, 1.5ltr). Hence, we won't get a proper idea about the fuel level present in our fuel tank, so we have considered this problem for our project and develop an efficient system to measure the amount of fuel digitally that is in terms of discrete values.

E .*Regression-Based Multi-Model Prediction of Data Reuse Signature*

Three factors strongly affect the prediction accuracy: the number of training inputs, the precision of data collection, and the complexity of patterns. The number of training inputs needs to be at least two, although using more inputs may allow more precise 11 recognition of common patterns. The precision of data collection had been determined by the number of groups. Since each group is represented by its average reuse distance, the more groups the analysis uses, the more precise the reuse distance information. However, using more groups leads to slower pattern recognition and prediction since space and time costs are proportional to the number of groups. The third factor is the complexity of patterns in each group.

F .*Multi-Dimensional Regression Analysis of Time-Series Data Streams*

With years of research and development of data warehouse and OLAP technology a large number of data warehouses and data cubes have been successfully constructed and deployed in applications and data cube has become an essential component in most data warehouse systems and some extended relational database systems and has been playing an increasingly important role in data analysis and intelligent decision support. The success of OLAP technology naturally leads to its possible extension from the analysis of static, pre-integrated, historical data to that of current, dynamically changing data, including time-series data, scientific and engineering data, and data produced in other dynamic environments, such as power supply, network trace, stock exchange, telecommunication data.

III. PROPOSED SYSTEM

The proposed system is to determine the amount of fuel that has been stolen and also to determine whether the vehicle has been accessed by any unauthorized person using the technologies like GSM, Float level sensor and Wireless device with GPS Sensor. The float level sensor is used to calculate the height of the tank up to which the fuel is available. Based on height it is possible to calculate the amount of fuel. The GSM provides the periodic information about the fuel level. A password is provided to access the fuel tank lever and this is authenticated only by the driver and the owner. If the fuel level mismatched an alert is sent to owner through a SMS including the location using GPS and GSM.

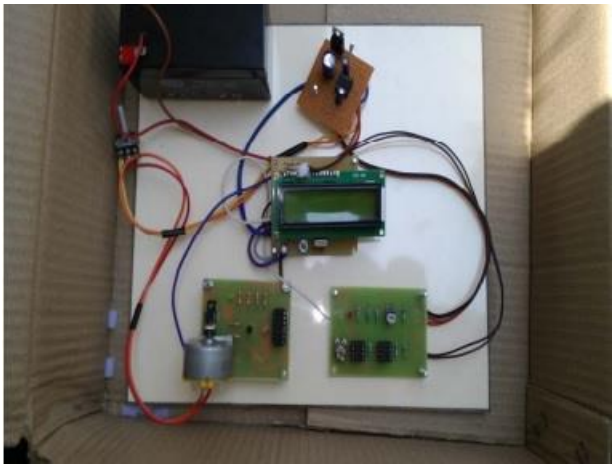

Fig.1 prototype Model

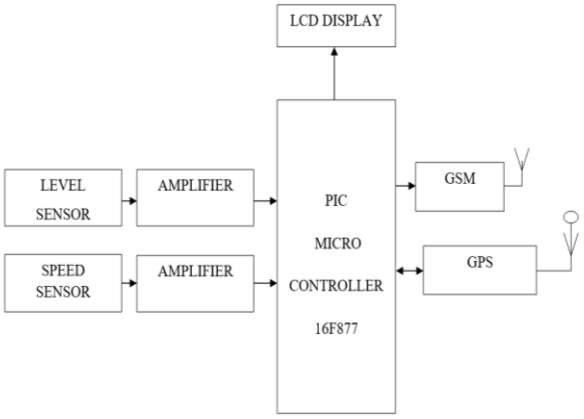

Fig.2 Proposed Block Diagram

Hardware Requirements

This system circuit consists of PIC microcontroller, LCD Display, Level Sensor, Speed sensor, Solar, GSM, GPS, Amplifier.

PIC Microcontroller (16F877)

The PIC16f877A is one of the most used microcontrollers in the industry. This controller is very convenient to use and program. It has a total number of 40 pins and a CMOS FLASH-based 8-bit. The Pin diagram for the (PIC16f877A) is shown in Fig. 3. PIC16f877A Microcontroller finds its applications in a huge number of devices. For example, it is used in remote sensors, home automation, security and safety devices, and in many industrial instruments.

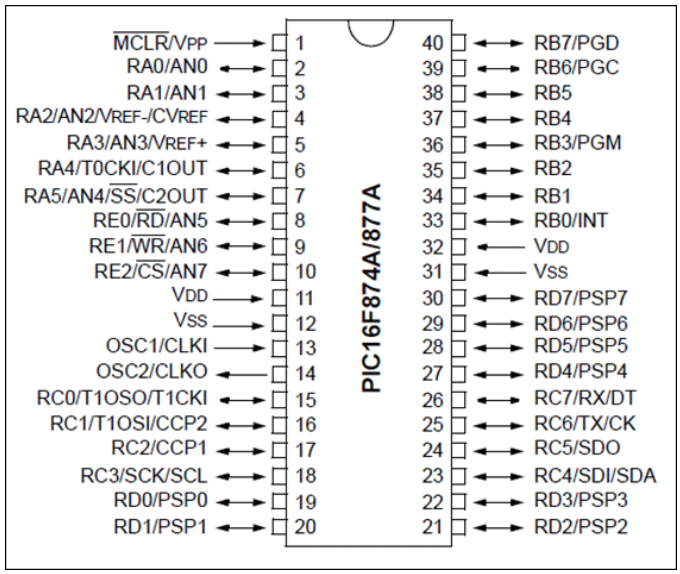

Fig.3 Pin diagram of PIC Microcontrolle

Level Sensor

Level sensor is placed in the fuel tank of the vehicle to measure the fuel in the tank, here we placed a more then one level sensor for accurate calculation of the fuel availability. This level sensor senses the fuel and transfer it to the microcontroller and also, we can check the collected data which is transferred by the GSM to the user mobile. This level sensor is commonly called float sensor.

GSM and GPS

Here GSM is used to exchange the collected data from the microcontroller to the user mobile, it transfers the information like the fuel availability in the vehicle and also transfers the current location of the vehicle. The location can be tracked by using the GPS available in it.

Speed Sensor

With the help of Wind Mills, this smart light also makes use of the energy from nearby passing vehicles. A wind propeller is fixed on the top of the street light post which rotates by the wind and generated electricity is stored in a battery.

IV. RESULT

Due to the rapid increase of fuel cost, it affects the people who are earning income depends on the vehicles. By using this device gives a solution to these types of problems. This system is a very handful to prevent fuel theft and cheating by Drivers or unknown Burglars. With the help of GSM and GPS exact location is shared to the android application. With this all feature make this system more efficient and compatible.

V. CONCLUSION

In this project we have done a digital fuel meter, which can accurately calculate the level of the fuel in the vehicle tank. When compare to the existing system it is more accurate. To prevent the cheating or theft of fuel from the driver this system has authorized protection which can monitor and send the details to the owner like how much of the fuel consumed for travel, when the tank is filled, when the tank reach empty. And it can also calculate how much distance can that vehicle travel by use of the remaining fuel and exact location of the vehicle also be monitored. By Using the user-friendly android application which is connected to the controller the above all details can be monitor by owner whenever they want.

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