

IOT Based Mileage Indication and Vehicle Monitoring System

¹V.JANARDHAN, ²Dr.M.YOHAN

¹PG Research Scholar, Product design, Mechanical Engineering, JNTUA College of Engineering,
Ananthapuramu, AndhraPradesh, India,

² Professor of Mechanical Engineering, JNTUA College of Engineering, Ananthapuramu,
Andhra Pradesh, India,

Abstract---*The discovery of automobile vehicles is the blessing to human being from engineering and science. The usage of automobile is increasing day-by-day as a transport vehicle. There have been major developments with respect to every phase of the vehicle. One of the main aspects of the vehicle that is responsible for making vehicle more famous and popular is the average of vehicle. Average is as important term used with respect to any vehicle. Average is the distance traveled by a vehicle consuming one liter of fuel. As far as economy is concerned, the common vehicle should be maximum. Average or mileage refers to the fuel efficiency of the bike. The main aim of this project is to monitor the fuel level in the tank and estimate the distance travelled by the vehicle and display the mileage in the LCD and also in the android smartphone using Wi-Fi technology.*

Keywords: PIC Microcontroller, Ultrasonic sensor, LCD, LED indicators, Wi-Fi module

I. INTRODUCTION

In this modern world, vehicle is fundamental need for everyone. Buying a bike is not a difficult thing today. But the increase price of fuel made the man difficult to manage the expenses. Thus a bike with good mileage will be a better choice. Even though bike gives good mileage, the handling decides its mileage. When the bike is overloaded its mileage and performance will be decreased. When the vehicle is overloaded, the engine needs more power to pull the vehicle. So, the fuel supply to the cylinder is increased than the normal loading case. Hence there will be a mileage drop in the vehicle thus decreasing the performance. Vehicles that are overloaded cause extreme wear and damage to roads, bridges, etc.. As the fuel cannot be renewed and it is of high cost it becomes one of major problem in wasting them. This has to be controlled. Therefore, it is necessary to monitor the mileage in the heavy vehicles. The project monitors the mileage of the heavy vehicles continuously. It keeps track of the fuel level consumed with the help of the ultrasonic sensor and estimates the distance travelled by the vehicle and calculates the mileage of the vehicle and displays on the LCD screen and also in the android smart phone connected to the Wi-Fi technology.

II. LITERATURE SURVEY

[1] **Mohammed Abdul Junaid, Mohamed Feroz Ahmed** This project aim is to calculate mileage by using portable mileage testing machine. The main controller used in the project is 8051 microcontroller. The fuel supply system consists of a bottle having calibration of required quantity with a fuel pipe to supply fuel from bottle to carburetor and there is one fuel controlling cock. For calculating rpm of the wheel, reed switch is used. Reed switch arrangement is mounted on front suspension. Magnet is fixed on the front rim in such a way that there is minimum gap left between reed switch and magnet. Here battery is used as power source. We can start the engine and drive the bike until the entire fuel is consumed. After complete consumption of fuel, the bike gets automatically stop. The LCD display interfaced to the microcontroller gives the mileage readings.

[2] A. Avinashkumar, U. Singaravelan, The main concept of this project is to monitor the mileage of the vehicles continuously and display on the LCD screen. The main blocks are used in this project are LCD display unit, micro controller unit, fuel level sensor. The fuel level detection circuit is used to detect the level of the fuel in the tank, here sensors are placed to find out the fuel level and the signal is sent to the micro controller unit for additional operations. Here sensor is placed in the fuel tank to sense the fuel level and the signal from that sensor is sent to the micro controller unit to decide the level information.

When the fuel level reaches the top of the tank and this will be indicated to the user by means of maximum tank level and the level information is indicated through LCD. Based on the fuel level, the microcontroller estimates the distance travelled by the vehicle and displays the mileage on the LCD screen.

III.IMPLEMENTATION

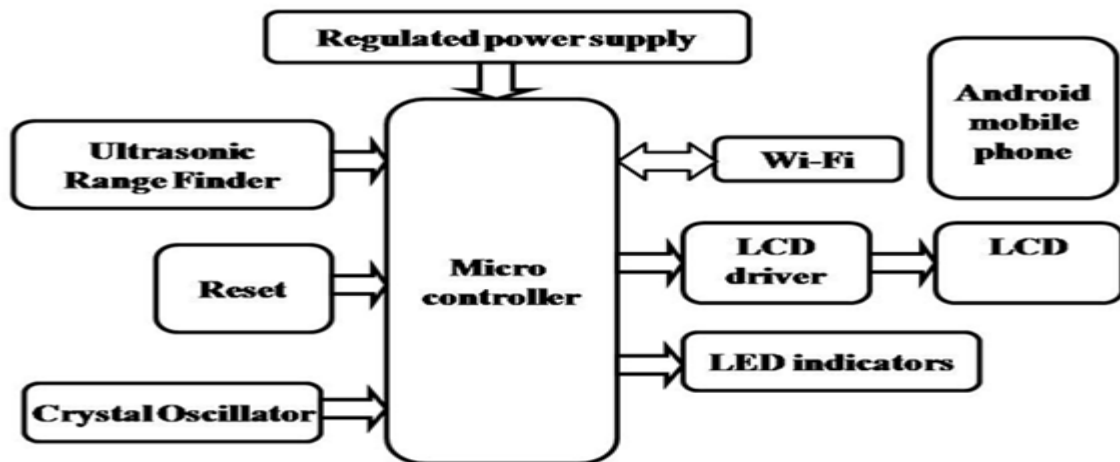


Fig 1 Block diagram of Mileage Indication by using WI-FI Module

The main controlling device of the whole system is a Microcontroller. Ultrasonic range finder and LCD are interfaced to Microcontroller. The microcontroller is programmed that it continuously receives input from ultrasonic range finder placed inside fuel tank and calculates the amount of fuel in the tank and displays it on the LCD. The Microcontroller estimates the distance the vehicle can travel with the fuel present and displays it. Also, the controller monitors the rate at which the fuel is being consumed, if the fuel consumed is more than normal rate then it alerts the driver through the LCD. We can also monitor the mileage readings in the android phone connected to the Wi-Fi module. Microcontroller is loaded with embedded C programme.

IV.RELATED WORK

The brief introduction of different modules used in this project is discussed below:

V. PRRIPHERAL INTERFACE CONTROLLER (PIC16F73)

The PIC16F73 has a place with a type of 8-bit microcontrollers of RISC engineering. Its common structure is appeared on the Accompanying guide speaking to fundamental squares. It is utilized for putting away a composed program. Meanwhile memory prepared in FLASH innovation is fit for customized and empty more than once, this makes a microcontroller reasonable for gadget advancement. EEPROM - information memory that should be spared after there is no supply. It is generally utilized for putting away imperative information that must not be lost if control supply all of a sudden stops. For example, one such information is a relegated temperature in temperature controllers. On the off chance that amid lost power supply this information will lost, we would need to make the change endless supply of supply. In this manner, our gadget loses on independence. Slam is a Data memory utilized by a program amid its task. Smash stores all between results or impermanent information amid run-time.



Fig.2 Microcontroller

VI. Liquid Crystal Display

A standout amongst the most well-known gadgets connected to a miniaturized scale controller is a LCD show. Probably the most well-known LCD's related with the numerous microcontrollers are 16x2 and 20x2 demonstrations. This implies 16 characters for every line by 2 lines and 20 characters for each line by 2 lines, distinctly. Essential 16 x 2 Characters Liquid Crystal Display

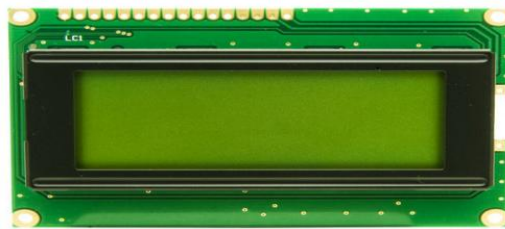


Fig. 3 Liquid Crystal Display

The liquid crystal display calls for three manage lines and what's more both 4 and 8 I/O traces for the information shipping. The patron might also pick out whether the liquid crystal display is to paintings with a 4-bit data delivery or an 8-bit statistics transport. In case a 4-bit statistics delivery is used the liquid crystal display would require an entire of seven facts lines (3 manage lines notwithstanding the 4 strains for the records transport). If an eight-bit data transport is utilized the liquid crystal display will need an aggregate of eleven statistics lines (three manipulate strains notwithstanding the eight strains for the statistics delivery).

VII. ULTRASONIC SENSOR

Ultrasonic sensors are additionally called as handsets when it transmit and get correspondence yet additional for the best part called transducers. The working standard of ultrasonic sensor is like radar or sonar which gauges characteristics of an objective through deciphering the sound from radio or sound waves individually. Ultrasonic sensors make high reappearance sound waves and examine reverberate that's gotten again through the sensor. Sensors ascertain the time hole among sending the flag and getting reverberate to find out the separation to a protest.

Frameworks generally make use of a transducer which produces sound waves in the ultrasonic range, over 18,000 Hz, by using changing over electrical energy into sound. Next to getting the resound, once more it changes over the sound waves into electrical energy which can be projected and showed. The innovation is confined by way of the states of surfaces and the thickness or consistency of the oblate. Froth, specially, can contort floor degree readings.



Fig.4 Ultrasonic Sensor

VIII. LED INDICATOR

A light emitting diode (LED) is a semiconductor mild basis. Pushers are used as marker lighting in numerous gadgets, and are logically used for lighting fixtures. Displayed as a sensible electronic segment in late 1962, early LED's created low-pressure crimson light, but cutting-edge variations are on hand over the unmistakable, vivid and infrared wavelengths, with excessive brilliance. The inward shape and components of a drove are seemed in figures. The shape of the Light Emitting Diode mild is surely unique in connection to that of the light. Unfathomably, the Light Emitting Diode has a clear and strong shape. The light-transmitting semiconductor cloth is the component that chooses the Light Emitting Diode's shading. The Light Emitting Diode relies upon the semiconductor diode.

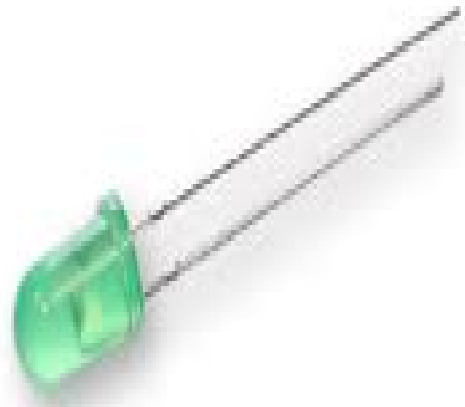


Fig.5 LED Indicator

IX. Wi-Fi MODULE (esp8266):

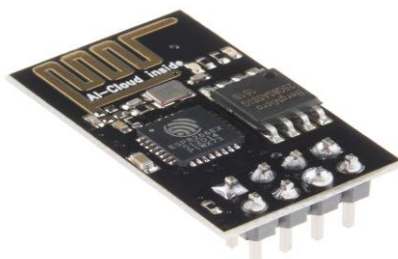


Fig.6 WI-FI Module

The **ESP8285** is an ESP8266 with 1 MiB of built-in flash, allowing for single-chip devices capable of connecting to Wi-Fi Processor: L106 32-bit RISC microprocessor core based on the Ten silica X tensa Diamond Standard 106Micro running at 80 MHz External QSPI flash: up to 16 MiB is supported (512 KiB to 4 MiB typically included), IEEE 802.11 b/g/n Wi-Fi Integrated TR switch, balun, LNA, power amplifier and matching network WEP or WPA/WPA2 authentication, or open networks 16 GPIO pins Both the CPU and flash clock speeds can be doubled by over clocking on some devices. CPU can be run at 160 MHz and flash can be sped up from 40 MHz to 80 MHz Success varies chip to chip.

X. CONCLUSION

The existing model presents an Integrating feature of all the hardware components which has been used and developed in it with PIC16F73. The Presence of each and every module has been reasoned out and placed very carefully. Hence contributing to the best working unit for “IOT BASED MILEAGE INDICATION AND VEHICLE MONITORING SYSTEM” has been designed perfectly. Thus, the project has been successfully designed and tested.

XI. ACKNOWLEDGEMENT

We would like to thank all the authors of different research papers referred during writing this paper. It was very knowledge gaining and helpful for the further research to be done in future.

XII. REFERENCES

[1] Amit Ashokrao Gulalkari, Vijay G. Gore, Aniket P. Pathre, Manoj J. Watane“Design and Fabrication of Portable Average (Mileage) Testing Machine for Two-Wheeler Vehicles”in International Research Journal of Engineering and Technology (IRJET).Volume: 02 Issue: 08 | Nov-2015

<https://irjet.net/archives/V2/i8/IRJET-V2I8150.pdf>

[2] A. Avinashkumar, U. Singaravelan, T.V. Premkumar, K. Gnanaprakash“Digital fuel level indicator in two-wheeler along with distance to zero indicator”in IOSR Journal of Mechanical and Civil EngineeringVolume 11, Issue 2 Ver. III (Mar- Apr. 2014), PP 80-84

<http://www.iosrjournals.org/iosr-jmce/papers/vol11-issue2/Version-3/I011238084.pdf>

[3] Vinoth.A, Prabu.L, Raganath.K“A Design and Fabrication of Overload Detection System in an Automobiles”in International Research Journal of Engineering and Technology (IRJET).Volume: 03 Issue: 11 | Nov -2016.

<https://www.irjet.net/archives/V3/i11/IRJET-V3I11207.pdf>

[4] Selvamurugan T“DESIGN AND IMPLEMENTATION OF VEHICLE TRACKING AND MONITORING SYTEM USING GPS AND ARM PROCESSOR”in International Journal of Innovative Research in Advanced Engineering (IJIRAE),Volume 1 Issue 10 (November 2014)

<http://www.ijirae.com/volumes/vol1/issue10/36.NVEC10097.pdf>

[5] Mohammed Abdul Junaid , Mohamed Feroz Ahmed , Mohd Fahad Baig , Mohammed Ul Haq , Syed Fahad.“DESIGN FOR FUEL THEFT PREVENTION IN AUTOMOBILES”in International Journal of Scientific & Engineering Research,Volume 8, Issue 3, March-2017

<https://www.ijser.org/researchpaper/DESIGN-FOR-FUEL-THEFT-PREVENTION-IN-AUTOMOBILES.pdf>