



Applications and analysis of Vehicle Monitoring System based on Internet of Things (IOT)

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ABSTRACT

Vehicle monitoring system is an electronic framework that screens the gaseous tension, motor temperature, fuel spillage, fuel level of vehicle continuously and cautions the driver and server by show and IOT individually. There are a few parameters in vehicle, for example, drop in tire weight, un-expected Tire blasting, surprising tire cut, more fuel utilization, sudden fall in fuel level and debasement in motor execution which brings about a few downsides. This paper shows a vehicle checking framework that decreases number of mishaps, enhance mileage, braking proficiency, tire expansion, helps in legitimate taking care of and support of vehicle. This framework is controlled by a microcontroller that is stacked with a smart installed C program. All parameters are shown on the physical interface i.e. LCD Screen and remote interface utilizing IOT.

Keywords – IOT, TPMS, LCD, vehicle, monitoring, system..

I. INTRODUCTION

Vehicle Monitoring assumes a critical part. Parameters in vehicle if not identified or observed can cause significant issues amid running of vehicle. The proposed paper gives arrangement by keeping indispensable contemplations in see.

The Tire weight observing frameworks portrayed in alluded papers make utilization of RS232 and Bluetooth which have disadvantage of constrained working reach. This paper proposes a thought of utilizing Internet Of Things which will expand the working extent.

The benefits of thought proposed by this paper are diminishment in number of mishaps, bother amid driving, to build the solidness and life of tires, fuel Mileage, motor execution, fuel level checking and to give legitimate vehicle taking care of.

Tire weight checking is partitioned into two classes:

- Direct TPM
- Indirect TPM

Coordinate TPMS is to gauge the weight and temperature of the tire straightforwardly by utilizing the tire weight/temperature sensors introduced inside the tire.

Roundabout TPM is to quantify the weight of tire by adjusting tire parameters into the weight.

This paper is centred on planning and building up an aberrant TPM which measures the tire weight by implication utilizing ultrasonic sensor.

In same way ultrasonic sensor can be utilized to quantify fuel level by aligning return time of heartbeat into fuel level. Costs of fuel are rising step by step and subsequently, fuel spillage isn't at all moderate and the fuel utilization in vehicle should be screen with the goal that the costs could be lessened. The another essential factor to be consider is that fuel is non-sustainable power source, so to spare normally accessible vitality sources is our obligation and fuel spillage observing is one of the best approach to spare this vitality sources. This paper portrays fuel spillage identification utilizing sensor.

Motor is most imperative part in vehicle since execution of vehicle is specifically decided from motor. Henceforth execution checking of motor winds up basic part in vehicle observing. Execution of motor debases if motor temperature transcends its breaking point. Aside from this motor temperature checking plans motor coolant. In this paper motor temperature is estimated utilizing temperature sensor.

To expand the working scope of module this paper recommends the to utilize Internet of Things (IOT). Web of Things (IOT) is the internetworking of physical gadgets, vehicles, structures and different things installed with hardware, programming, sensors, actuators, and system availability that empower these articles to gather and trade information broadband Internet is turned out to be all the more generally accessible, the cost of associating is diminishing, more gadgets are being made with Wi-Fi abilities and sensors incorporated with them, innovation costs are going down, and PDA infiltration is soaring. These things are making an ideal tempest for the IOT. Regularly, IOT is relied upon to over cutting edge network of gadgets, frameworks, and administrations that goes past machine-to-machine (M2M) interchanges and covers an assortment of conventions, spaces, and applications.

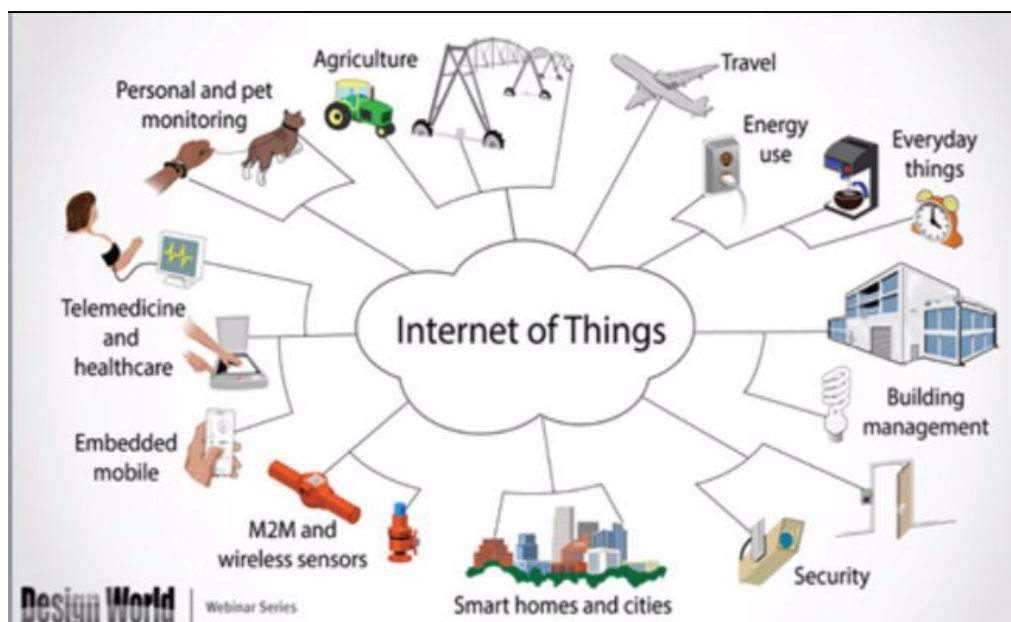


Fig1. Application of IOT

II. LITERATURE REVIEW

In this area we examine about various techniques for observing and control. Identified with vehicle observing, numerous methodologies have been proposed.

In [1], Nouman has plan TPMS framework easy to understand and vehicle well disposed. The framework was executed utilizing the accessible equipment talked about

above. Vehicle testing gave dependable and stable reaction. Contrasted with TPMS frameworks accessible in advertise, this framework has its own particular favorable circumstances. The transmitting unit's size can be lessened if a weight transducer is utilized rather than OMRON sensor which essentially is a broadly useful sensor. Application Specific Integrated Circuit (ASIC) for the transmitting unit will enormously lessen estimate. Decrease in size won't influence working of framework. What's more, to build conceivable no. of frameworks, the bundle size can likewise be expanded. These changes can be made if this method is to be propelled as an item.

In [2], The savvy TPMS in light of vehicular systems administration innovation was produced in the paper, which is a full tire life-cycle following administration framework and gives another answer for the tire upkeep. The framework transmits the observing information to the cloud server by means of the versatile Internet, and uncovers the tire weight and temperature fluctuating example, at that point criticisms to the clients.

In [4], The microcontroller MSP430F149 is utilized as CPU and alongside that GPS, Fuel level sensor and RS232 is utilized for following vehicle, fuel level and correspondence separately.

In [5], The proposed configuration has unit mounted on stem valve of tire and stays outside the tire it can gauge extensive variety of the weight. The framework has utilized on board RF recipient alongside LCD and keypad for UI.

The [6], paper introduces a continuous activity observing framework to take care of the issue of constant movement controlling and checking. The proposed framework gives another method for activity control by the better usage of assets. The movement organization division can utilize this constant activity checking data to distinguish the unsafe circumstances out and about and accordingly respond by forcing prompt activities. All in all IoT will assume an imperative part in rush hour gridlock checking by enhancing the proficiency of activity wellbeing and voyaging costs.

The [7] article exhibits a sort of plan of direct TPMS, presents the guideline of the framework. The correspondence can enormously enhanced through painstakingly picking the RF module. The transmission module has the low power property. The remote flag transmission is tackled by embracing FSK, Manchester

coding and CRC checkout. The testing comes about demonstrate that the framework addresses the issues of the genuine application well. Looks into demonstrate TPMS has a splendid prospect.

The[8], paper has created and executed a novel movement framework that is fit for checking and overseeing urban activity. This framework is tried with different conditions and is turned out to be adaptable. The extra vehicle spotting highlight makes this framework not quite the same as the other usage. The joining of IoT into the framework makes this as a mix of standard and propelled innovations. Vehicle proprietors can track their vehicle from anyplace on the planet. The framework created in this paper ends up being dependable and financially savvy.

In[9], The principle errand of our examination is attempting through the investigation of driver's driving conduct and in organizing with the data gave from the pre-cautioning framework to decelerate the vehicle speed preceding the occurrence of mischance and if mishap happens to diminish the harm to the slightest level.

This patent[10], The creation includes two noteworthy angles: sharing the recipient work with another vehicle activity to manage on introductory cost and in addition upon control prerequisites; and appointing a distinguishing proof code to every transmitter, building up a record of the tire position of every transmitter and refreshing the record when tires are turned, so weight information can be identified with a particular tire position.

III. SYSTEM OF ARCHITECTURE

Design specifications are as mentioned in the following table

Table1: Design specification

Sr.No.	Measured parameters	Sensor	Range
1.	Tire Pressure	Ultrasonic Sensor	2cm to 2m
2.	Fuel Level	Ultrasonic Sensor	2cm to 2m
3.	Fuel Leakage	MQ5	200 to 1000ppm
4.	Engine Temperature	LM35	-55 to 150°C

A. Block Diagram

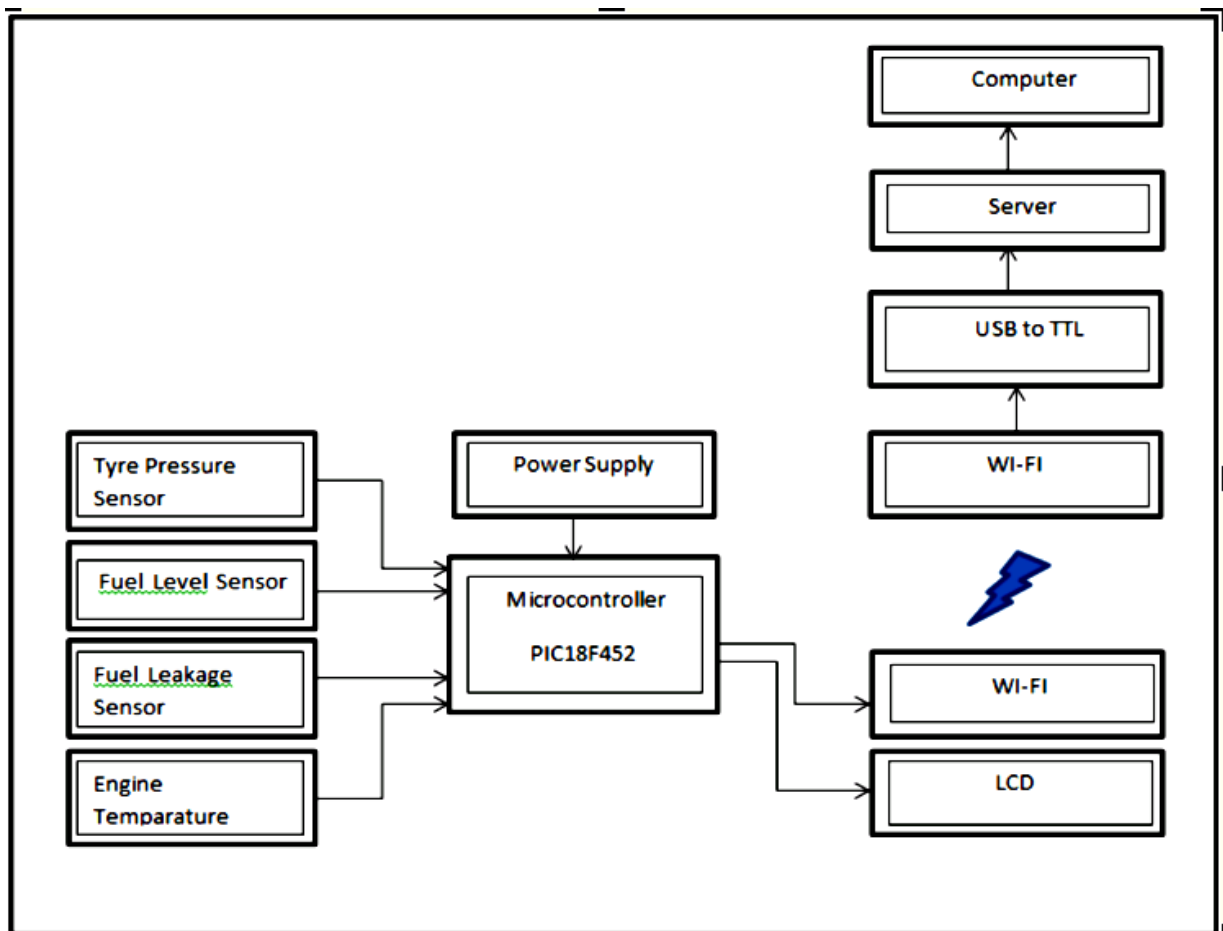


Fig 2. Block Diagram

• Microcontroller

Microcontroller is a little PC on a solitary coordinated circuit having different capacities and memory. Microcontroller are intended for little or devoted application. We are utilizing PIC18f452 controller. PIC 18F is 8 bit controller. It is having different highlights like Analog to Digital converter ,Timers , Two CCP show, Programmable Brown out Reset [10].

• Ultrasonic Sensor

The transmitter discharges a 8 blasts of a directional 40KHz ultrasonic wave when activated and begins a clock. Ultrasonic heartbeats travel outward until the point when they experience a protest, The question makes the wave be reflected back towards the unit. The ultrasonic collector would recognize the reflected wave and stop the stop clock. What's more, as indicated by the clock, fuel level or weight can be adjusted.

• Temperature Sensor

The LM35 arrangement are exactness coordinated circuit temperature gadgets with a yield voltage straightly relative to the Centigrade temperature. The LM35 gadget has leeway over straight temperature sensors adjusted in Kelvin, as the client isn't required to subtract an extensive steady voltage from the yield to acquire advantageous Centigrade scaling.

• Fuel Leakage Sensor

The Grove-Gas Sensor (MQ5) module is valuable for gas spillage location. It is reasonable because of its high affectability and quick reaction time, estimations can be taken at the earliest opportunity. The affectability of the sensor can be balanced by utilizing the potentiometer [11].

B. Software Description :

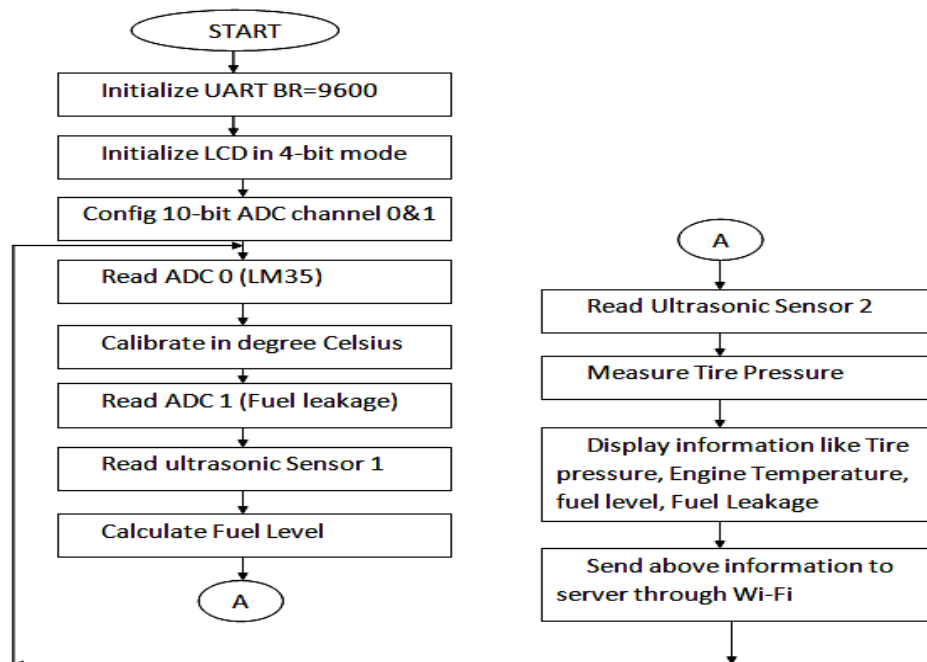


Fig3. Flow Chart

V. CONCLUSION

Vehicles are one of the most valuable assets of a person, hence their security becomes one of the top priorities. Using this proposed system, we will be able to monitor the suspicious movement of vehicles which may result in the detection of the vehicle theft. We will also be able to know if the vehicle has been towed and where to go to pick it up in case it has been towed.

The designed system is implemented successfully to monitor various vehicle parameters by using suitable sensors and the parameters are displayed to user using LCD as interfacing device. The parameters displayed are also transmitted to computer using IOT providing advanced connectivity from machine to man.

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