IOT BASED SMART BLACK BOX SYSTEM

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ABSTRACT

Automotive electronics plays a significant role in the automobile industry and provides luxurious features and more importantly addresses the safety and security concerns. The work presented in this paper aims at providing a cost effective solution to the design and development of an event data recorder which has been basically adopted from the aviation sector considering the need and the correlated benefits. The paper presents an integrated design of the black box with the basic features of the data recorder which could be very useful for domestic vehicles and at the same time it also hosts several additional features that could assist in mitigating the number of accidents, or at bare minimum, will serve as an analysis tool to prevent future accidents by analyzing the previous accidents. The black box also provides automatic accident notification system which helps in informing the nearest hospital and the traffic authority by providing not only the coordinates of the accident but also the exact physical address for immediate medical attention which can save numerous lives every day. The black box also hosts several other features advanced web tracking anytime and from anywhere. Thus the overall cost is highly optimized by integrating such multiple features.

Keyword: - *Smart Black Box, Sensors, GSM, Micro Controllers, IoT Module, DC Motor, Switch, SD Card Module, Arduino Mega, etc…*

1. INTRODUCTION

At the point when an accident or crime happens, data related with those accident is expected to discover the reason for the accident or the guilty party of the crime. In non-systematically strategy the examiner assembles bits of gossip or asks the spectators who go by that place at the season of accident. We are proposing another technique utilizing black box to discover how an accident happened. Discovery innovation has for some time been utilized universally in planes, serving, in addition to other things, as a gadget to recognize the reason for a noteworthy accident. This idea is currently being connected to vehicle discovery gadgets, with the goal that auto collisions can be recorded, and the driver's voice and crash pictures are saved. We add a few extra functionalities to the current normal discovery framework. The main usefulness is investigating and removing the key data of the encompassing vehicles. While driving, video adjustment strategy is used to extract the number plate of the vehicle without any vibration disturbances. Without video adjustment system the video obtained from the camera will be trembled because of vehicle movements. It can be partitioned into two classes, equipment (mechanical) and programming (PC program) methods. Equipment system is executed utilizing mechanical gadgets to diminish the vibration of the structure holding the camera. Be that as it may, this procedure can't expel all vibrations due to some fast developments in encompassing vehicles. To conquer this, we utilize programming method which balances out the video arrangement. We additionally include the acknowledgment motor which separates the tag number and shade of the going by vehicles. Also, we add the correspondence motor to get the data ask for from the server and transfer the put away data. GPS motor is likewise added to record the time and driving course data, which are utilized to coordinate the put away data with that demand. At the point when the server communicates data of some time and place, our clever Black box framework gets that demand message from the server, coordinates the time and place tag and after that send the coordinating data to the server. Our framework initially identifies the path of the street and neighbor vehicle. At that point considering the path and vehicle data we threshold the tag look locale and distinguish the area of the plate rectangle. After that we apply tag number acknowledgment calculation utilizing versatile thresholding, naming, OCR (Optical Character Recognition). Since the data accumulated could contain the private information, we apply the security calculation for the putting away and exchanging of the information from and to the server.

1.1 Existing System

- The automotive vehicles doesn't have a black box system.
- The accident data is not stored in any place.

1.2 Objective

This paper presents a According to the World Health Organization, million number of people are dying everyday due to accidents [1]. To solve the problem in many countries, where solution is being a raised with the help of vehicle Black Box. Despite of several campaigns the problem is still increasing day by day, such cases are drunk and drive, speed driving and insufficient sleep. Due to the constant work in recent times the automation must improve using IoT. This article will provide the visual data, and the cloud monitors it with the help of low power microcontroller. The article of this paper maintains two rules, first rule is to visualize data by detecting the sensors and the second is to present the data to the end users by simple method.

The automation industry mainly levels the technology in the vehicles through high range with low power. Vehicle black box up-date the data recording position tracking and the collision data al-ways when the vehicle is in the active mode. So, in this way the crash collisions of the vehicles can be easily identified which is possible to help the victims from the governments or hospitals.

1.3 Contribution

In this Modern era, IoT Technology is improving rapidly to help the issues mostly concern the world. This paper mainly focuses on alerting the driver from the Collision situations and using Cloud Computing Services, the location can be easily traced. Our contribution is that we proposed a low power micro-controller which can be used in the hardware implementation as its main controller in the automation of this device. with the meaningful support of the Embedded systems, IoT and Cloud computing, we strongly believe that Intelligent Vehicle Black Box using IoT will be reliable, power efficient in the real time applications.

2. LITERATURE SURVEY

According to the author Vehicle health monitoring system :Vehicle health monitoring utilizes the sensor on data vehicle, mine the data & predicts the health of car. It provide an idea on when the vehicle would need maintenance. The model also can warn driver dozes off or in case of drunken driving. The purpose of this research paper is to give an overview of the existing vehicle health monitoring system. It gives the different ways in which vehicle health can be monitored. Vehicle monitoring can be distributed or on-board data mining. Computation or mining in vehicle are restricted by less memory and processor capacity, still an on board mining is more advantageous than fully distributed data mining system. This paper survey the existing model for efficient on board vehicle health monitoring system.

The information of Vehicle Remote Health Monitoring In many industries inclusive of automotive vehicle industry, predictive maintenance has become more important. It is very difficult to diagnose failure in advance in the vehicle industry because the availability is limited of sensors and some of the designing exertions. An approach is presented in this article for fault reduction of four main subsystems of vehicle, fuel system, ignition system, exhaust system, and cooling system. When vehicle is on the move the sensor collected, both in faulty condition (when any failure in specific system has occurred) and in normal condition. HARMAN Ignite Platform (2015)Vehicle health hand diagnostic dashboard: Before the advent of connected vehicles , consumers simply drove their new vehicle out of deals reacted to issue as they arose. After combining diagnostics and connectivity, managers and service providers are able to offer additional services to their customers. Ecosystem provide contextual and advanced services like early field warnings, predictive maintenance, remote diagnostics and repair, fuel management. This reduces operations costs of the vehicle, reaction time to issues, accident liability and fines and also enhances customer experience. VEDAS(1) works on the concept of ubiquitous data mining. An in device , real time mining of data on a ubiquitous computing environment in accordance to the environment requirements by considering resource constraints of the device, exploiting context the information behaving autonomously, applying special privacy preserving methods in VEDAS and mine fleet, partial on board data mining is done.

3. PROPOSED SYSTEM

- In the advanced technology each vehicle are monitored and the data are stored in memory
- The data are continuously uploaded to cloud.

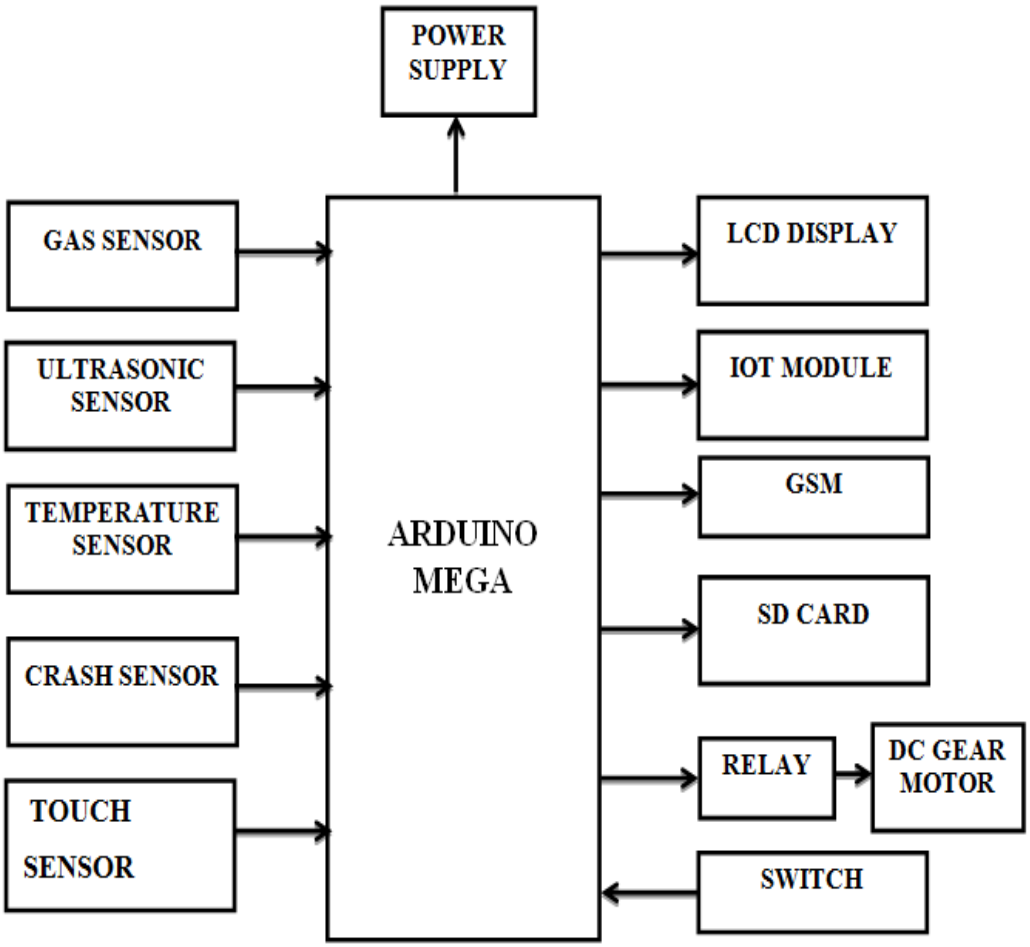

Fig.No. 1 Block Diagram For Proposed System

3.1 Advantages of Proposed System

- less time consumed
- trouble free to use
- high accuracy

4. RESULT & DISCUSSION

In the Future scope the power can be almost decreased with the GPS and GSM modules which can easily integrated with the hardware along with a rechargeable battery and can serve the device in a longer period.

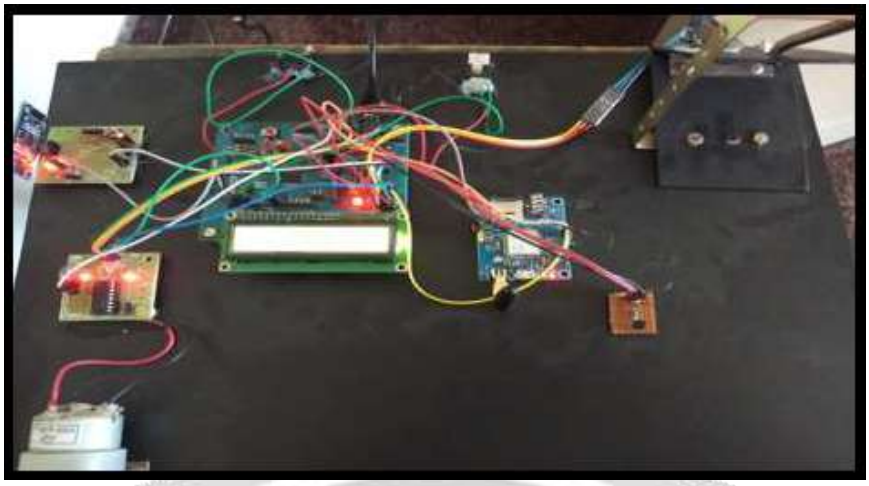

Fig.No. 2: Snapshot of Hardware Prototype

5. CONCLUSIONS

With this increasing graph of using smart phones and wireless communication, it is become easy to use this technologies for real time solutions. Despite of the limited resources, these technologies are being used along with machine learning approaches to solve big problems in automotive industry. Our first contribution to this paper is data generation and feature selection. Sensor data of many car manufactures has been used. We have selected those sensors which can cause a system to break down. And the second contribution is to built a user friendly vehicle fault prediction, vehicle remote health monitoring system.

6. REFERENCES

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