BIKE BLACK BOX

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Abstract- The main concept of our project is to develop a black box for bike. This is not exactly same as in airplane, because it does not record any events. It's just storing some parameters of bike; previous system was developed for only cars. The proposed system is to develop a prototype of bike black box. This system can be installed in any moderate bike. The system can be implemented with minimum hardware. Bluetooth technology is used for communicating between hardware and software. Accelerometer is used in this project to detect a speed. MQ9 sensor is used to detect the carbon-monoxide level of bike. Float sensor is used for measure the fuel level of bike. And all this sensor is connected to controller that is Arduino-UNO.

Keywords- Bike, Black box, Arduino UNO, Sensors, MQ9, Accelerometer.

I. INTRODUCTION

A. Overview

The main purpose of the proposed system is to develop a prototype for vehicle diagnosis that can be installed into any moderate vehicle. Vehicles today are much more intelligent than they were years back. All diagnosis will be based on the state of sensors that are placed at various places throughout the vehicle primarily around the engine bay. The diagnostic and sensor data helps the mechanics to identify the source of problems that arise in the engine management system. This system is committed mainly to two approaches. The first one is how to detect and record data from the vehicle. The second is how to present the recorded data to the user.

B. System Behavior

In our project, we have created a prototype of Black Box for moderate vehicles. For Maintaining the bike and show the results like speed level, carbon-monoxide level, oil level, fuel level, etc. on mobile phone via Bluetooth.

C. Problem Statement

Develop a prototype for vehicle diagnosis that can be installed into moderate bikes. This prototype can be designed with minimum number of circuits. This can con tribute to construct safer vehicles and help the user to maintain the bike regularly.

II. LITERATURE SURVEY

Wireless Black Box Report for Tracking of Accidental Monitoring in Vehicles [1],

The framework wireless black box utilizing MEMS accelerometer and GPS following has been created for bike incidental checking. The framework can identify the kind of accident (straight and nonlinear fall) from accelerometer signal utilizing threshold algorithm, posture after crashing of motorcycle and GPS ground speed. After accident is identified, short alarm massage information (alert back rub and position of accident) will be sent through GSM organize. Sensors (CO, Temperature and ultrasonic) work appropriately and gives the separate yield. If the temperature increases than the limit level the engine stops consequently. So also at whatever point the CO gas level surpasses as far as possible then the engine of the vehicle is ceased. The ultrasonic sensor detects the obstacle and slowdowns the vehicle as indicated by the separation between the vehicles and if fundamental it stops the vehicle.

Development of Wireless Black Box Using MEMS Technology for Accident Prevention [2],

The proposed framework successfully displays itself the vision of preventing accidents. The paper is presuming that an execution of a framework designed with various functionality, for example, Ultrasonic sensor, Accelerometer, Zone detection system, Eye Blink Sensor, Location estimation and SMS service for emergency situation. This framework is structured as model discovery work for logging the status of accelerometer which is utilized in future for examination purpose when met with a mishap. This designed framework isn't use for logging of information yet in addition utilized for counteractive action of different mishap causes, for example, sleepiness, rash driving, obscure of obstacle ahead and zone recognizable proof for speed decrease. The various sensor implemented in the system will avoid all the causes mentioned above so as to avoid accident occur and save the life of the human. With the help of GPS, we will be able to get the information about latitude and the longitude of the location where accident has taken place but we won't be able to find the exact location name. For that we require Google map and also satellite links. If a speed of a vehicle is increased, the message will be sent to the server system. It gets updated and penalty will be charged to the driver. The state of the

vehicle should be indicated in case of abnormal driving. For example, the particular health state of the driver should be displayed.

Design and Implementation of GSM and GPS Based Vehicle Accident Detection System [3],

In this Project, wireless black box utilizing MEMS accelerometer and GPS following framework is created for incidental observing. The technique comprises of agreeable parts of an accelerometer, GPS gadget, microcontroller unit and GSM module. In the occurrence of accident, this wireless device will send mobile phone short massage indicating the position of vehicle by GPS system to family member, emergency medical service (EMS) and nearest hospital. The limit calculation and the speed of bike are utilized to decide fall or mishap continuously. The technique is conservative and simple to introduce under rider put. An accelerometer can be utilized in a vehicle caution application. Risky driving can be seen with an accelerometer. It tends to be utilized as accident recorder of the vehicle movements previously, amid and after an accident. Among signs from an accelerometer, an extreme accident can be identifying. In second application on a uncertain circumstance a large number of vehicle that has center locking framework, Such as entryway looking framework confront numerous issue because of programmed looking framework. At that circumstance there is no real way to open the lock. Our venture will show a reasonable answer for this circumstance. This can be finished by utilizing remote or GSM Technology.

Recently innovative and population advancement, the utilization of vehicles are quickly expanding and in the meantime the event accident is likewise expanded. Consequently, the estimation of human life is ignored. Nobody can prevent the accident, yet can spare their life by speeding up the emergency vehicle to the healing facility in time. Another clear plan called Intelligent Transportation System (ITS) is presented. The target of this plan is to minimize the postponement caused by traffic clog and to give the smooth stream of crisis vehicles. The idea of this plan is to green the traffic motion in the way of emergency vehicle naturally with the assistance of RF module. With the goal that the emergency vehicle can achieve the spot in time and human life can be spared and the mishap area is distinguished sends the accident area promptly to the fundamental server. The primary server finds the closest rescue vehicle to the mishap zone and sends the correct mishap area to the crisis vehicle. The control unit screens the rescue vehicle and gives the briefest way to the emergency vehicle in the meantime it controls the traffic light as indicated by the emergency vehicle area and consequently touching base at the healing facility securely.

III. PROPOSED SYSTEM

In Proposed system we are analyzing the information security of authorized user. The hardware part consists on the sensors and the black box installed into the vehicle. This part mainly collects the status of the sensors and saves it to the microcontroller's EEPROM.

A. Sensors

1. Float sensors

It is an application of the current amplification by a transistor. When the level is high enough to conduct the current between the base and the positive power supply, current is generated between the base and the emitter. And in a meanwhile, an electric current is produced in a certain amplification factor between the collector and the emitter, and applied to the resistant in the emitter to produce a voltage.

2. MQ9 Sensors

Analog Gas Sensor (MQ9) module is useful for gas leakage detecting, it used the sensitive material SnO2, which with lower conductivity in clean air. Detection method of cycle is high and low temperature, and detect CO when low temperature.

3. Vibration sensor

Vibration sensor features an adjustable potentiometer, a vibration sensor, and a LM393 comparator chip to give a digital output based on the amount of vibration. The potentiometer can be adjusted to increase and decrease the sensitivity to the desired amount. The module outputs are high (VCC) when it is triggered and a low (GND) when it isn't. Additionally, there is an on board LED that turns on when the module is triggered

IV. SYSTEM REQUIREMENT

Hardware requirement:

1. Personal computer for developing the android application.
2. Various sensors like float sensor, MQ9 sensor, battery voltage sensor for majoring bike parameters.
3. Arduino Uno used for controlling all sensors
4. Bluetooth module is used for communicating between android application and Arduino board.

Software requirement:

1. Android studio.
2. Arduino IDE.
3. Java.

V. ALGORITHM

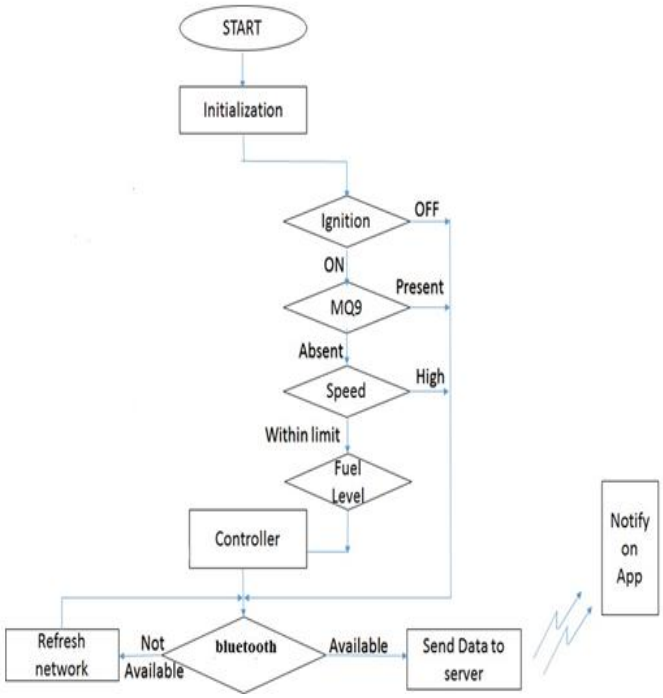


Fig.1: Algorithms Flow

Decision making Algorithm Steps:

1. Identify the decision-maker(s)
2. Identify the issue of issues: Utility depends on the context and purpose of the decision
3. Identify the alternatives: This step would identify the outcomes of possible actions, a data gathering process.
4. Identify the criteria: It is important to limit the dimensions of value. This can be accomplished by restating and combining criteria, or by omitting less important criteria.
5. Assign values for each criterion: For decisions made by one person, this step is fairly
Straightforward.
6. Determine the weight of each of the criteria: The most important dimension would be assigned an importance of 100. The next-most-important dimension is assigned a number reflecting the ratio of relative importance to the most important dimension.
7. Calculate a weighted average of the values assigned to each alternative. This step allows normalization of the relative importance into weights summing to 1.
8. Make a provisional decision.
9. Perform sensitivity analysis.

VI. TECHNOLOGY USED

IOT

The internet of things, or IoT, is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction The Internet of Things, or "IoT" for short, is about extending the power of the internet beyond computers and smartphones to a whole range of other things, processes and environments. Those "connected" things are used to gather information, send information back, or both. IoT allows

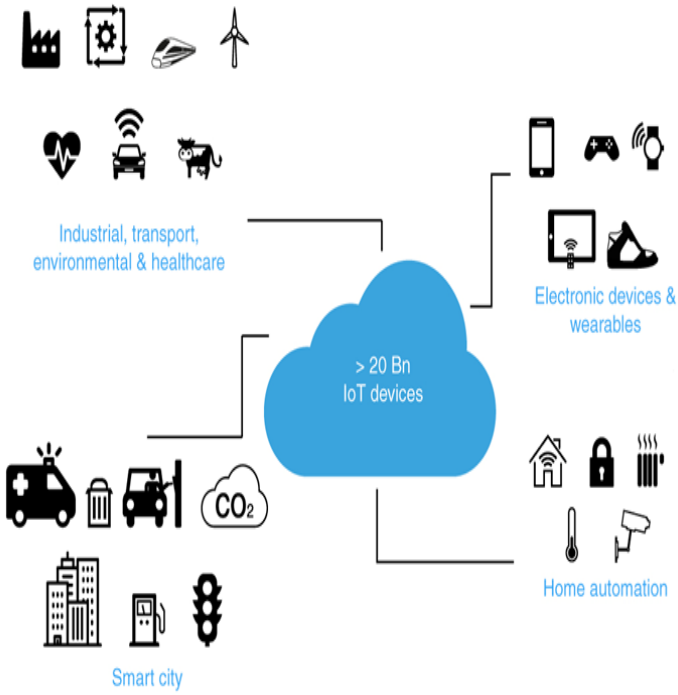


Fig.2: IOT System Architecture

Businesses and people to be more connected to the world around them and to do more meaningful, higher-level work.
I work for an Internet of Things (IoT) software company, and "what is IoT?" is a question I'm asked all the time. Generally, overly technical answers to that question only produce more confusion and questions. In part to be able to have conversations about what I do for a living with family, friends and strangers, I've worked hard to boil the Internet of Things down to the simplest explanation possible that still does justice to the concept.

ANDROID

Android is a mobile operating system developed by Google. It is based on a modified version of the Linux kernel and other open source software, and is designed primarily for touchscreen mobile devices such as smartphones and tablets. In addition, Google has further developed Android TV for televisions, Android Auto for cars, and Wear OS for wrist watches, each with a specialized user

interface. Variants of Android are also used on game consoles, digital cameras, PCs and other electronics.

Fig.3: Android Design

VII. SYSTEM ARCHITECTURE

We required to identify the state of bike by considering the parameters like fuel level, oil level, battery level, carbon-monoxide level. Using this information user can maintain their bike easily and regularly.

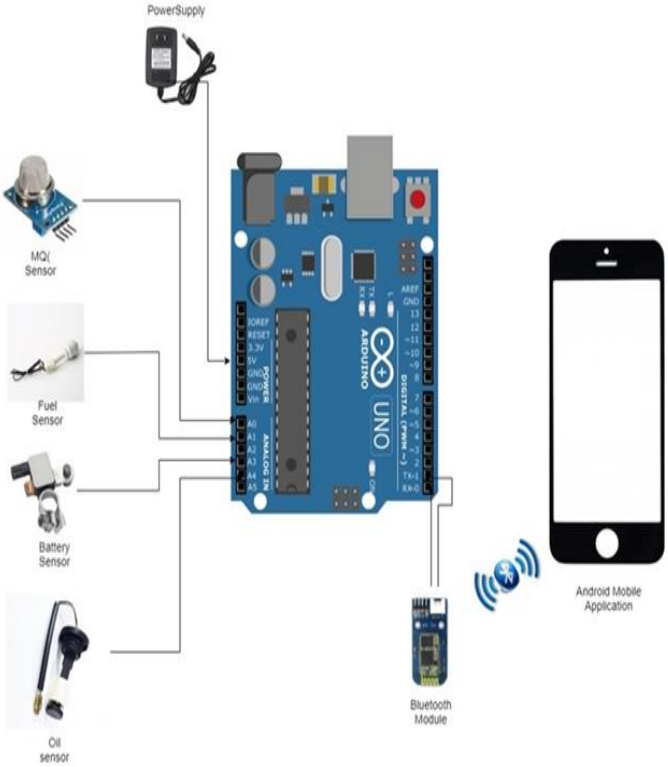
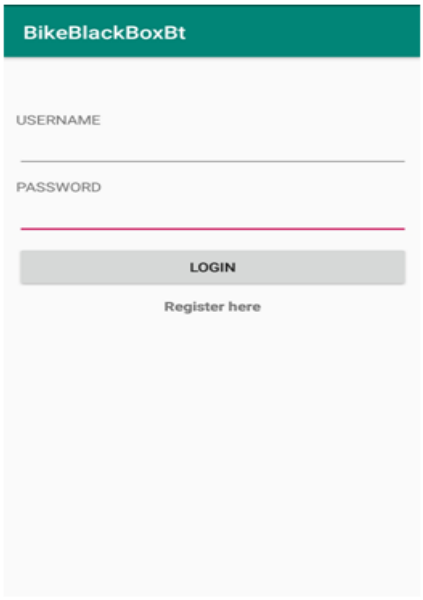


Fig.4: system architecture

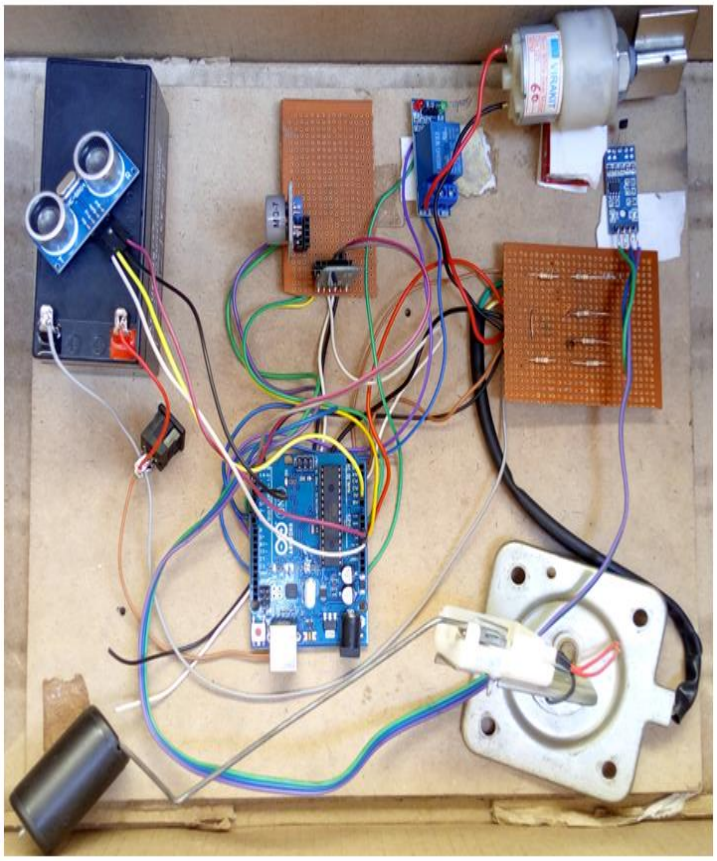
We connect various sensors like float sensor, oil sensor, battery level sensor, MQ9 sensor to micro-controller that is Arduino-UNO. And this Arduino-UNO is connecting via Bluetooth with android mobile. All this sensor is install onto the diff erent places on the bike and they all are connected through wire with micro-controller (Arduino-UNO). Bluetooth module also connected with micro-controller. Micro-controller fetches the data from this various sensor and compare the sensors fetches values from threshold values and calculating the result. And finally this result is transfer to the paired Bluetooth device. But this paired Bluetooth device must have a recommended android application for see the results.

VIII. SCREENSHOT



1.Login page

2. Bluetooth Paired Devices



IX. CONCLUSION

The available techniques for monitoring bike attributes are perfect in themselves. But to improve the accuracy, more eff orts need to be taken. In the proposed system, we have used the Sensors, Aurdino UNO, Android app and Bluetooth Network. The system will provide a low cost, secure, accessible, remotely monitoring current status of the bike on the user's android mobile phone via Bluetooth. The use of a mobile, sensors, wireless connectivity provides exciting possibilities. However as far as the industrial applications are concerned this can be viewed as a low cost, customized Bike Black Box system. The System is capable of detecting emission level of carbon monoxide. It can detect the battery level, petrol level, oil level, speed level and wireless ignition is possible. By using this information from Android application, User can maintain his bike regularly. Hence we can conclude that the required goals and objectives of the system have been achieved, by working system.

X. REFERRENCE

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