

# IOT Based Bike black box using Wi-Fi

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**Abstract:** Automobiles industries are creating certain new levels of the data services from the proposed system. The proposed system Bike Black Box have the similar functions as that of the black box of airplane box, Which is used to analyze all vehicular accidents and their causes due to which accident occur and provide certain security measures to prevent the loss of life and the main purpose of this proposed system is to develop a prototype of the IOT bike black box which can be installed on any kind of bikes. The system is implemented with minimum number of hardware. Using Wi-Fi module which is used to transfer the data to the user, where the user gets all information about the vehicle.

**Index Terms – Bike, Black box, Wi-Fi, Sensors, microcontroller.**

## I. INTRODUCTION

According to the planet Health Organization, Every year, many of us round the world die because of conveyance accidents which could end in loss of life .In order to handle these things, the bike recording machine system uses the primary step to resolve these issues that threaten the protection of individuals across the planet. The projected system is simply as like because the information recorders utilized in the airplanes "Black Box" technologies that play an important role within the vehicle crash investigations. The recording machine may be a system used principally in Airplanes. These styles of black boxes square measure accustomed record the flight information and maintain the records regarding the performance of the plane. Electronic storage is that the main composition of those varieties of black boxes. the most purpose of the project is to develop the example of motorcycle recording machine for diagnosing of car which might be put in into any bike. This projected system is intended with a minimum variety of circuits that contribute within the safe construction of the vehicle, so up the treatment for vehicle accident crash victims, and facilitate the user to keep up the vehicle often. Crash data recording systems square measure found in an exceedingly heap of vehicles on the road today. it's vital to stay the information that objectively track the vehicles, i.e. what goes before, throughout associated once a crash which might be taken as an input that is taken from the crash victims, spectator and therefore the police reports. There square measure principally 2 approaches. the primary approach is to sight and record the information from the vehicle and another one is employed, a way to gift that very same information recorded to the user

## II. LITERATURE SURVEY

- In paper 1 :** The proposed system for IOT Bike Black Box is developed for accidental monitoring of motorcycles by using MEMS accelerometer and GPS tracking .Such system can be used to detect the accident(linear and nonlinear) taken from accelerometer signal by the use of threshold algorithms , Vehicle positioning after crashing of vehicle(motorcycle) and speed of the motorcycle using GPS signals .When accident is detected ,short string message (speed,position of accident,emission and battery voltage)which will be sent via GSM network.Sensors(MQ7,helionic sensor,ultrasonic)which work accordingly and gives the respective output.The engine motor stops automatically is the temperature of the sensors rises beyond that threshold level .Similarly,the engine of vehicle is stopped , whenever the MQ7 gas level exceeds beyond the threshold level .The ultrasonic sensor is used to slow down the vehicles and also to detect the distance as per according to the vehicle accident and if necessary it will stop the vehicles.
- In paper 2:** The projected system is constructed on the vision of preventing road accidents. This projected system is finished with the assistance of multiple practicality hardware like measuring device, Float level sensing element, MQ-7 sensing element and SMS service for any reasonable emergency scenario. This example is employed for the longer term access of knowledge for work the aim that once the user met with Associate in Nursing accident. This method isn't solely want to access the logged knowledge, however additionally want to give the info wherever we are able to take some safety precautions of varied road accidents like drink and drive, rash driving, unknown obstacle ahead and zone identification for the speed reduction of a vehicle. The system is constructed with varied sensors which is able to avoid all causes mentioned on top of thus on avoid road accidents occurred and save their life. The system is enforced with the assistance of GPS that is employed to induce the precise info, i.e. latitude and great circle of the placement wherever the accident has taken place, however because the GPS location won't offer the precise info concerning the placement wherever the accident has taken place. So, to beat from this we tend to need the Google Map and satellite links. If the speed of the vehicle is inflated on the far side the limit, the message are going to be sent from the server system that regularly updated and penalty are going to be charged to the motive force and therefore the state of the vehicle representing the abnormal driving of the motive force
- In paper 3 :** This project contains vehicle accident detection employing a system of IOT Bike recorder that uses the MEMS measuring instrument and GPS chase . This style ANd implementation consists of many elements of an measuring instrument, GSM module, microcontroller unit, and GPS device. once the accident happens or already occurred, this wireless device starts its work and it'll send short string message to registered portable indicating the position of the vehicle with the assistance of a GPS system to the user loved one, EMS (Emergency medical service) and to the closest hospital. the tactic is straightforward and condense to put in beneath rider place. to work out reason thanks to that AN accident is caused in an exceedingly real time world that uses a threshold rule and speed of the motorbike.

AN measuring instrument isn't solely employed in the automotive alarm application, however additionally to note Rash driving or Dangerous driving. As per the vehicle movements, it will be used as a crash information recorder with relation to before, throughout and when the crash. There are unit numerous signals occurring from AN measuring instrument, thanks to that it may end up in severe accident will be known. Secondly, several of the vehicles that consists of a middle lockup system like door lockup system face and face several issues thanks to the automated door lockup system. throughout such scenario, it becomes too tough to open the lock of the door. Thus, this can gift the acceptable resolution by the utilization of wireless or GSM technology.

- **In paper 4 :** This paper presents a way to scale back the amount of accidents that area unit increasing on routine. thanks to increase in new technologies and also the development of population, as results the usage of vehicles that area unit increasing quickly at constant time, therefore the prevalence of accidents also are multiplied that result because the importance of human life is neglected and that we cannot stop the accident however the lifetime of the human may be saved from accident by creating such arrangements i.e. machine ought to reach to hospital in time, wherever this theme is named as INTELLIGENT facility (ITS) is developed and also the main objective of this theme is to scale back the delay that chiefly caused by the traffic and supply the economical flow of emergency vehicles i.e. ambulance. The main idea of this theme is to form the signal inexperienced within the path of machine in route of accident occurred to hospital mechanically with the assistance of this remote module. Therefore, that result that machine will reach to hospital in time and might save the lifetime of person and sends the accident location right away to the most server that finds the closest machine in this location and sends that accident location to emergency vehicle i.e. ambulance. The management unit (server) monitors the machine and supply them the convenient routes to machine at constant time and controls the traffic signals in step with the machine location and therefore reaching the injured person with machine to hospital safely.

### III. PROPOSED SYSTEM

In the above proposed system, it is used for analyzing the information security of the authorized user. There are various other hardware parts which include the sensors and the black box which can be installed into any vehicle, which mainly collects the records and status of hardware and send those data to microcontroller. This information is sent to the application with the help of Wi-Fi. We use the ESP8266 Wi-Fi module.

#### A) Sensors

##### *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, the 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 resistance in the emitter to produce a voltage. It will detect the petrol level of the bike.

##### *MQ7 Sensors*

The Analog Gas Sensor (MQ7) module is used in detecting the gas leakage, i.e. carbon monoxide, which is continuously emitting from the system. Which detects the Carbon monoxide when the temperature is low? The MQ7 sensor uses the material which is of silicon dioxide which have low conductivity in air. This sensor checks the carbon monoxide of the bike.

##### *Wi-Fi (esp8266) Module*

We use the esp8266 module of the Wi-Fi. Using this Wi-Fi we send the all information to the Android application. Esp8266 is the most castles modules of the Wi-Fi.

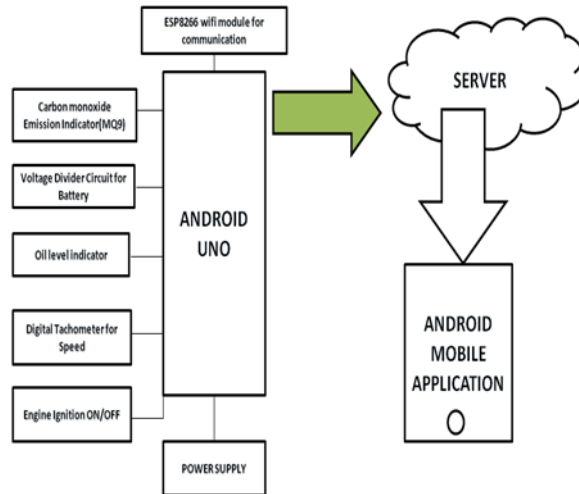
##### *Microcontroller*

We use the Arduino microcontroller. Using this, all data of hardware is passed to this controller. The controller can convert the analog to digital. This data using Wi-Fi send to android application.

##### *Android application*

We make an android application in that users register the application. Registration is successful, then logged in the application. After that this information is saved in the database. Then user wishes they can be view the battery level, the speed of the bike, carbon monoxide, the petrol level of the vehicle. User get the all real-time information on the vehicle.

**IV. SYSTEM ARCHITECTURE**



**Fig.1 Block diagram of B3**

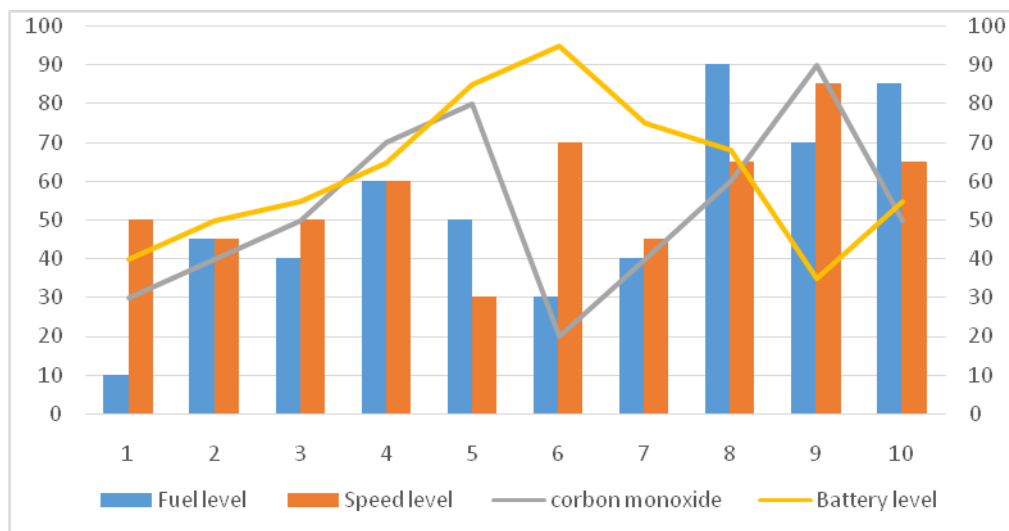
In system architecture we use the same hardware as follows:

1. The microcontroller is used for getting all values from the hardware.
2. The power supply used in this system is the electrical power supply which supplies several other types of energy to an output is called as Power Supply Unit (PSU).
3. Wi-Fi, we use the ESP 8266 Wi-Fi module to send the information from hardware to android application.
4. A sensor is used for getting all the value of each sensor.

**V. DATASET**

Sr.No	Fuel level	Speed level	carbon monoxide	Battery level
1	10	50	30	40
2	45	45	40	50
3	40	50	50	55
4	60	60	70	65
5	50	30	80	85
6	30	70	20	95
7	40	45	40	75
8	90	65	60	68
9	70	85	90	35

**VI. GRAPH**



**VII. CONCLUSION AND FUTURE SCOPE**

All the hardware components used in the integrated system for BIKE BLACK BOX FOR VEHICLES have been developed. Presence of every module has been reasoned out and placed carefully, thus contributing to the good working of the unit. The objectives of the project, i.e., Speed, Total Distance Travelled, Number of halts taken by the vehicle throughout the journey, latitudes, and longitudes and Maximum Speed of the Vehicle has been accomplished and tested in real time. It provides routine checkup for monitoring the current status of the bike. It detects the emission of Carbon Monoxide. Provides alert for the discharge of the battery.

In the future, it will be used in different type of cars and also used for security purpose.

**VIII. RESULTS**

**Table 1: -User Data**

S.no	ID	NAME	EMAIL	MOBILE	PASSWORD
1	1	yogini	<a href="mailto:yo@gmail.com">yo@gmail.com</a>	1234567890	3ca21be87be028d34cf0585f7e4b2407
2	2	devansh	<a href="mailto:devansh.005gupta@gmail.com">devansh.005gupta@gmail.com</a>	8318656853	3da21be87be028d34cf0585f7e5b2407

**Table 2: -statistical parameter's value**

S.no	ID	FUEL LEVEL	CARBON MONOXIDE	SPEED	BATTERY LEVEL	USER ID
1	67	101	902	60	101	1
2	68	106	896	60	106	1
3	69	110	894	60	110	1
4	70	108	894	60	109	1
5	71	113	895	0	0	1
6	72	106	116	60	0	1

Figure 3: Sign Up page for user registration.

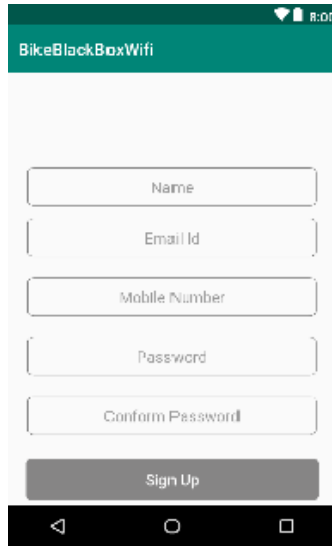


Figure 4: Login Page For Accessing parameter's value

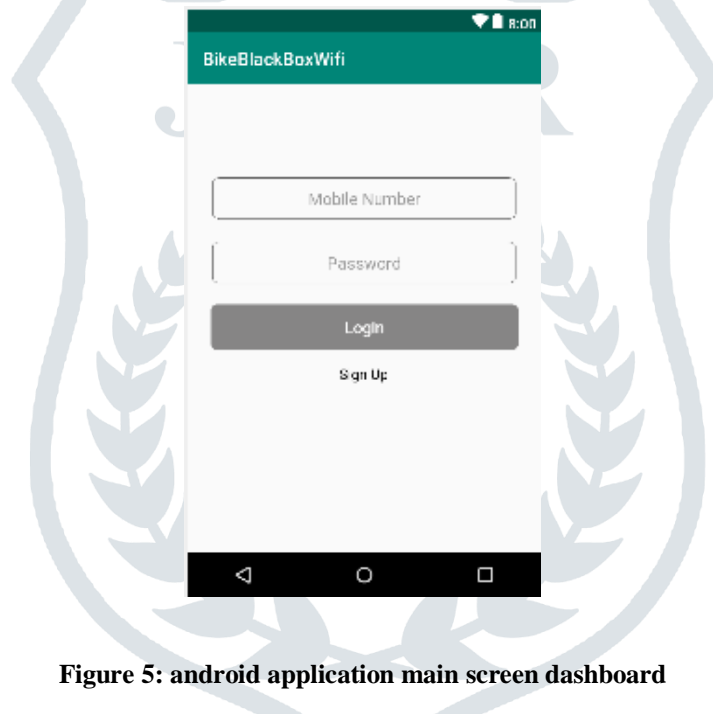


Figure 5: android application main screen dashboard

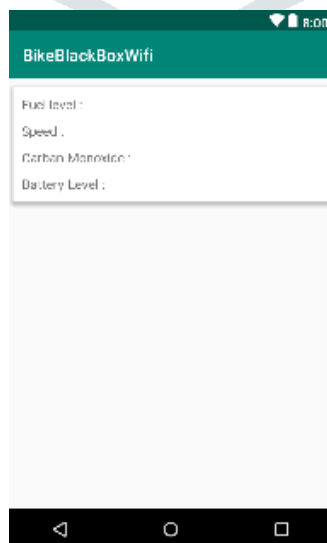
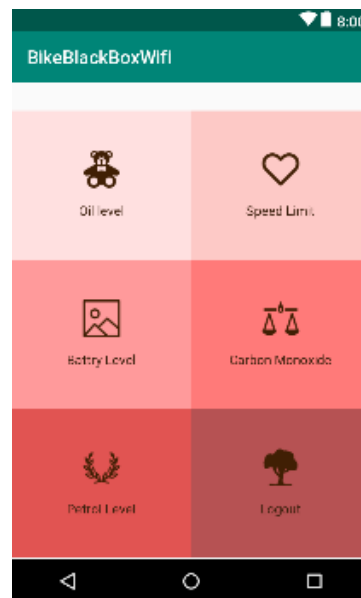


Figure 6: Dashboard Activity



## IX. ACKNOWLEDGMENT

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## REFERENCES

- [1] Wireless Black Box Using MEMs Accelerometer and GPS Tracking for Accidental Monitoring of Vehicles Abinaya.V, Dhanasekar.A, Hari prasaath.R, Kavitha.R, Dinesh kumar.M.
- [2] Development of Wireless Black Box Using MEMS Technology for Accident Prevention, International Journal of Innovative Research in Computer and Communication Engineering JUNE 2015.
- [3] Design and Implementation of GSM and GPS Based Vehicle Accident Detection System, International Journal of Technology and Science, Sep 2014
- [4] GPS and GSM Based Accident Monitoring System, International Journal of Scientific Research and Management Studies (IJSRMS) Volume 2 Issue 12.
- [5] Assistance to Driver and Monitoring the Accidents on Road by using Three Axis Accelerometer and GPS, International Journal of Electronic Communication and Computer Engineering APRIL 2014.
- [6] Can Communication Based accident Emergency Supervisory System, International Journal of Advanced Research in Electrical, Electronics, and Instrumentation Engineering APRIL 2013
- [7] Wireless Black Box Report for Tracking of Accidental Monitoring In Vehicles, International journal of professional engineering studies, DEC 2013