Journal for Research| Volume 02| Issue 02 | April 2016
ISSN: 2395-7549

# Mobile Application for Automobile Management System

**Anita Maria Thomas**
*Amal Jyothi College of Engineering*

**Jyothis Joseph**
*Amal Jyothi College of Engineering*

**Reshma Mathew**
*Amal Jyothi College of Engineering*

## Abstract

Nowadays vehicles are important in our day to day life. Our transportation methods mainly depend on vehicles, as per the need increases the care for the vehicle also increases, but in this busy life we fail to give much attention to the vehicle. This results in the major mechanical problems in the vehicle. Due to the busy schedule, people fail to give servicing to the car at the proper time. People forget to check the battery voltage and engine temperature. To avoid such problems our system helps the user to take good care of his vehicle by monitoring the vehicle parameters like fuel level, engine temperature and battery voltage. It also checks whether the driver is drunk or not. It gives the servicing alerts to the driver.

**Keywords: DTC, PAN**

## I. INTRODUCTION

Vehicle safety has been a major issue in today's world. People fail to give attention to their vehicles. Some people forget to service their vehicles at the right time. Servicing of vehicles is an important factor in the maintenance of vehicles. As is needless to say; a majority of accidents, which occur, are due to drunk driving. As such, there is no effective mechanism to prevent this.

Here we use an alcohol sensor (MQ3) for sensing the presence of alcohol in the driver. [1]Alcohol content in the driver's body is detected by means of an infrared breath analyzer placed at the steering wheel. The fuel level in the petrol tank is measured by means of a potentiometer. The engine temperature is measured by means of a temperature sensor (LM35). The correct fuel level in Litres is sent to the driver's Android app as the fuel filled in the petrol tank. If the battery voltage and engine temperature goes beyond a limit, a notification is sent to the driver's app.

We present in this paper a low-cost, simplified, yet versatile vehicle diagnostic system that is compatible with all vehicles. The graphical user-interface (display and command) is Android-based and utilizes the popular personal area network (PAN) communications standard Bluetooth to facilitate extraction and relaying of readings, diagnostic trouble codes (DTC), and commands[4]. We have chosen a smart phone as the computing device for the obvious growth and demand on such mobile devices, in addition to reducing the overall system cost by utilizing the built-in functionalities that is integrated in such compact devices. Also, when installed properly, such devices can be a low cost alternative to integrated navigation systems [1]. Moreover, our choice of Android as our operating system platform is consistent with current market trends and shares and user acceptance of such platform [4].

## II. SYSTEM OVERVIEW

The purpose of our Android-based user-interface vehicle diagnostic system implemented in this work is the execution of diagnoses on a remote vehicle using internationally agreed data trouble codes.

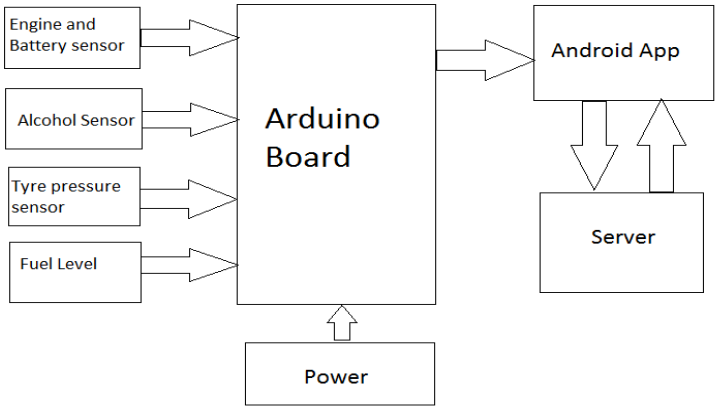


Fig. 1: Block Diagram

### *A. Bluetooth Tranceiver:*

The microcontroller is programmed to send the measurements on its UART to the Bluetooth module.

Bluetooth provides a means to connect devices such as mobile phones over a secure, globally unlicensed short-range radio frequency (2.45 GHz) and to enable the exchange of information between them. We used the HC 05 Bluetooth transceiver module[5]. The asynchronous data from/to the Arduino microcontroller is delivered to/from the HC 05 Bluetooth module on the serial port. The Bluetooth module is configured as a Slave and the mobile phone is considered to be functioning as a Master. The microcontroller sends/receives data to/from the Bluetooth module, which transmits/receives data continuously as raw binary bytes.

### *B. Arduino Microcontroller:*

Arduino is common term for a software company, project, and user community that designs and manufactures computer open-source hardware, open-source software, and microcontroller-based kits for building digital devices and interactive objects that can sense and control physical devices[3]. An Arduino board historically consists of an Atmel 8-, 16- or 32-bit AVR microcontroller with complementary components that facilitate programming and incorporation into other circuits. An Arduino's microcontroller is also pre-programmed with a boot loader that simplifies uploading of programs to the on-chip flash memory, compared with other devices that typically need an external programmer. This makes using an Arduino more straightforward by allowing the use of an ordinary computer as the programmer. Currently, optiboot bootloader is the default bootloader installed on Arduino UNO.

In our project, Arduino microcontroller is used to take the sensor values from the different sensors in this project like Temperature sensor, Alcohol sensor and the potentiometer. The values obtained are ADC values which needs to be converted into the proper units which is done by the Arduino microcontroller. After conversion, these values are sent to the Android application via Bluetooth.

### *C. Android Application:*

The platform used for viewing the application is the Android platform. This application is installed in the driver's smart phone. The connection between the Arduino board and the Android app is established via Bluetooth. Once the connection is established, the driver can login to the application by entering the username and password[2]. After login, the driver can view the values from the sensors in the main interface as shown in the figure. If the battery voltage and the engine temperature goes beyond a threshold value, an alert is sent to the driver's phone.

The service calendar can be viewed in the driver's app. If the driver is a new member of the service centre, he can view the next service date on the calendar in his app, or if he is an old member, he can view the next and previous service date. The service date is set by the service centre and this is received through the webpage. The battery voltage is measured in Volts, engine temperature is measured in Celsius and the fuel level is measured in litres. The alcohol level is also shown.

### *D. Server (Webpage):*

The webpage is designed using Hyper Text Markup Language (HTML) and PHP. The webpage is managed by the service centre. The admin can login to the website. He can register new vehicles by entering the registration number of the vehicle, type of the vehicle and the driver's details. He can delete the users also. The admin can view the vehicle parameters in the webpage of a particular vehicle. The admin can set the service date of the vehicle according to a particular frequency.


Fig. 2: Webpage

Based on the values of the vehicle parameters, a graph is plotted to show the variations in the values. If there is a great variation in the vehicle values, necessary actions can be taken to resolve the issue.

## III. CONCLUSION

We implemented a system which is composed of a combination of a low-cost hardware unit and a user-friendly Android-based mobile application software utilized to create an on-board vehicle diagnostic system. The mobile application software will interact with the hardware interface unit wirelessly via Bluetooth to acquire desired vehicle parameters. These readings will be displayed locally to the user then can be sent to a remote maintenance server as HTTP packets via a cellular internet connection. The packets received will be tabulated in the server, then made use of by the service centre which holds the server.

## IV. FUTURE SCOPE

Modifications and new features can be added to this project. A call facility and SMS facility can be provided to the service centre to call the driver when there is a huge variation in the vehicle parameters. The driver can be notified immediately by the service centre. More sensors can be added.

## REFERENCES

[1] T.Shyam Ramanath Drunken Driving and Rash Driving Prevention System Electronics and Instrumentation Engineering Department Sri Sai Ram Engineering College Chennai, India
[2] S. Carter, Nissan Releases Andriod App for Leaf Vehicle, http://nissanleaf.net/ , August 4 2011.
[3] J. Barkenbus, "Eco-driving: An overlooked climate change initiative,"Energy Policy, Volume 38, Issue 2, February 2010, Pages 762-769.
[4] M. Johanson, and L. Karlsson, "Improving vehicle diagnostics through wireless data collection and statistical analysis," IEEE Vehiclular Technology Conference (VTC-Fall 2007), pp. 2184-2188, September 2007.
[5] L. Ferhatovic, A. Lipjankic, A. Handzic, and N. Nosovic, "System for remote diagnostic of vehicle defects," in Proc. 17th Telecommunications Forum (TELFOR), pp. 1323-1326, November 2009.