

# MYCARHEALTH

|                                                                      |                                                                      |                                                                      |                                                                      |                                                                      |
|----------------------------------------------------------------------|----------------------------------------------------------------------|----------------------------------------------------------------------|----------------------------------------------------------------------|----------------------------------------------------------------------|
| Prof. Perna Patil                                                    | Atharva Shirude                                                      | Shubham Shah                                                         | Prateek Kuber                                                        | Ved Kale                                                             |
| Department of Computer Engg<br>MIT Polytechnic,<br>Pune, Maharashtra | Department of Computer Engg<br>MIT Polytechnic,<br>Pune, Maharashtra | Department of Computer Engg<br>MIT Polytechnic,<br>Pune, Maharashtra | Department of Computer Engg<br>MIT Polytechnic,<br>Pune, Maharashtra | Department of Computer Engg<br>MIT Polytechnic,<br>Pune, Maharashtra |

**Abstract**— This project is about creating an interface for the diagnostics system of the car. We are making an Android application in order to review our car's diagnostics i.e. the problems with the car. In short, accessing the data from the car's in built computer or On-Board Diagnostics (OBD) and making it available to the user. We are targeting the Indian market as this facility in India is not readily available. There are special devices available abroad which we can connect to the OBD port available in all the cars and retrieve the data of our car's health. There will be a GPS tracking function in the device which will track the location of the car. In India these devices are available maybe only in the service centres and are imported. This application will help users in India to gain access to this at home and can use for their benefits. It will also help with improving the statuses of vehicles in India.

## I. INTRODUCTION

Cars are machines and hence can become faulty or can have some problems. Some problems are less complex while some problems are difficult to handle by self. Hence we take our car to the garage for repairing. In the garages or the service centres, the mechanics uses a product to find out the faulty or defected part of the car. All the errors are displayed in the form of Error Codes also known as Diagnostic Trouble Codes (DTC). These are unique codes coming from the car's in-built processor. In the error code, the first DTC character can be P, C, B or U. P stands for Power train (Engine, Gearbox), C stands for Chassis, B stands for Body and U stands for User Network (Wiring Bus).

All cars have an in built ECU, short form of Electronic Control Unit. An Electronic Control unit is an embedded system in an automotive electronics that controls one or more of the electrical systems or sub-systems in a vehicle

Types of ECU include Electronic Control Unit, Engine Control Module (ECM), Powertrain Control Module (PCM), Transmission Control Module (TCM), Brake Control Module (BCM or EBCM), Central Control Module (CCM), Central Timing Module (CTM), General Electronic Module (GEM), Body Control Module (BCM), Suspension Control Module (SCM), control unit, or control module. Taken together, these systems are sometimes referred to as the car's computer.

The data from this ECU can accessed through an OBD (On Board Diagnostics) port using an OBD scanner or similar software and hardware products. Our application displays all the important information such as the Engine RPM, Speed of the vehicle, last trip details such as how much distance did the car travelled, temperature, etc. It also shows if any part or the system of the vehicle is faulty or not working properly.

In USA and Europe, almost everyone uses this product. In India, we can find this product only in garages and service centres. Common people do not have this as this product is very costly and difficult to use as the User Interface is very complicated. Our application is easy to use and have a user-friendly Interface.

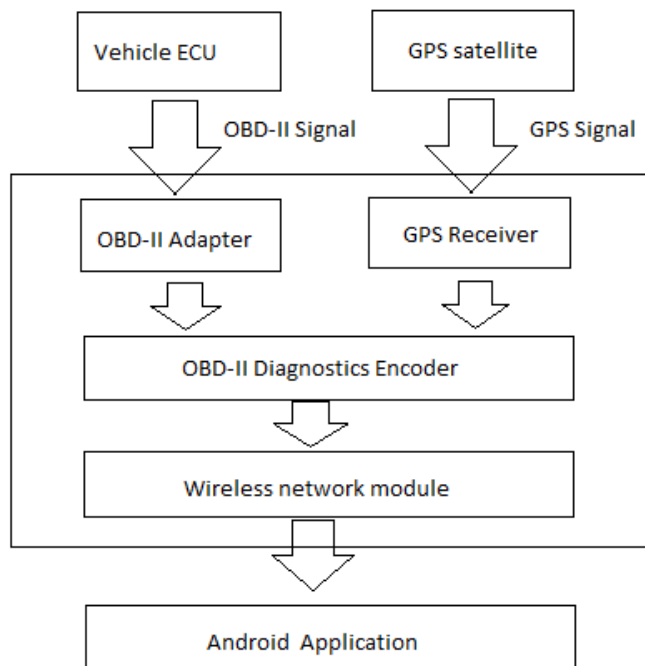
## II. LITERATURE SURVEY

On-board diagnostics (OBD) is an automotive term referring to a vehicle's self-diagnostic and reporting capability. OBD systems give the vehicle owner or repair technician access to the status of the various vehicle subsystems. The amount of diagnostic information available via OBD has varied widely since its introduction in the early 1980s versions of on-board vehicle computers. Early versions of OBD would simply illuminate a malfunction indicator light or "idiot light" if a problem was detected but would not provide any information as to the nature of the problem. Modern OBD implementations use a standardized digital communications port to provide real-time data in addition to a standardized series of diagnostic trouble codes, or DTCs, which allow one to rapidly identify and remedy malfunctions within the vehicle.

Currently there are many devices which can retrieve data from the OBD port, situated mostly under the dashboard of our car. These devices are really difficult to find as well as very costly to buy one. In India, you won't get such devices very easily. One can find it at a repair garage.

If your car's internal systems are malfunctioning, you won't be able to know which one. For the common people, it would be very difficult to find the error unless any signals can be seen. To know the fault, one must take their vehicle to the repair garage. They come to know the faults with the help of the device which is connected to your car's OBD port. As we are unable to know whether the problem really existed, the garage can charge you extra by repairing the problem that never existed.

### III. SYSTEM ARCHITECTURE



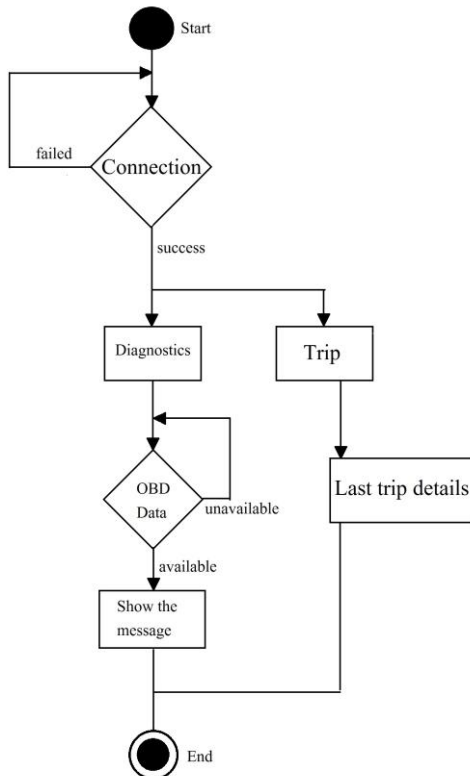
Our project consists of two parts, Hardware and the Software part. The hardware includes an ELM237 module. OBD has mainly five protocols for communicating with the car's ECU. Those protocols are:

- SAE J1850 PWM
- SAE J1850 VPW
- ISO 9141-2
- ISO 14230 KWP2000
- ISO 15765 CAN

The ELM237 uses these protocols for communicating with the ECU. It also comes with an in-built Bluetooth module. All the data from the ECU is sent to the android application with the help of Bluetooth. There is also a GPS receiver which is responsible for finding the location of the car as well as trip details.

In the Android app, after the login, you have to connect to the Bluetooth. Once the connection has been established, the application will start displaying all the data on starting the engine. If any fault occurs, it will display the error on the application.

#### IV. FLOW CHART



#### V. ADVANTAGES

- User friendly interface.
- User will be able to view the performance and other errors or problem without going to the mechanic.
- User would be able to solve simple and easy problem on its own as he/she will be able to see where the problem lies.
- Easy to attach it to your car

#### VI. DISADVANTAGES

- For some data, you may require sufficient knowledge about all the necessary functions of the car and its parts.
- Every time you need to connect to your phone to the device, hence it may take a bit of time.

#### VII. CONCLUSION

- On the basis of research, this product will be useful, when you want to know how your car is performing.
- This product is combination of ELM237 and our Android application.
- All the data will be logged.
- You will be able to know the last trip details of your car.
- You will be able to analyze how your car is performing.

## REFERENCES

- <https://www.ieee.org/content/dam/ieee-org/ieee/web/org/conferences/Conference-template-A4.doc>
- <https://www.ieee.org/conferences/publishing/templates.html>
- [https://en.wikipedia.org/wiki/On-board\\_diagnostics](https://en.wikipedia.org/wiki/On-board_diagnostics)
- <https://en.wikipedia.org/wiki/ELM327>
- <https://developer.android.com/docs/>
- <https://github.com/>

