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Mobile Application for Monitoring Inefficient and Unsafe Driving Behaviour

Onkar Pathare[1], Navit Dhande[2], Dipak Shinde[3], Roshan Patil[4]

Student, IT Department, PVPIT, Pune, India [1,2,3,4]

Abstract: Many automobile drivers are aware of the driving behaviours and habits that can lead to inefficient and unsafe driving. However, it is often the case that these same drivers unknowingly exhibit these inefficient and unsafe driving behaviours in their everyday driving activity and technical details for evaluation of Real Time Car Monitoring. Above project proposes a practical and economical way to capture / measure / evaluate inefficient, uneconomical and unsafe driving with the details about Performance, Diagnostics (Using DTC), Fuel Consumption & Autonomy and Emission from a Vehicle. The proposed solution consists of a mobile application, running on an Android Smartphone, paired with a compatible OBD-II reader.

Keywords: ERP OBD (On Board Diagnostics), DTC (Diagnostics Trouble Code).

I. INTRODUCTION

This project describes a knowledge-based framework for a driving assistance via smart phone. Vehicle information extracted through On Board Diagnostics (OBD-II) protocol, data acquired from smart phone embedded micro-devices and information retrieved from the Web are properly combined.[1] Data fusion and classification algorithms allow to identify and annotate relevant contexts and events in real time and semantic-based matchmaking is exploited to infer dysfunctional situations. On-Board Diagnostics or OBD is a computer-based system built into all 1996 and later light-duty vehicles and trucks, as required by the Clean Air Act Amendments of 1990.

OBD systems are designed to monitor the performance of some of an engine's major components including those responsible for controlling emissions.OBD impacts many audiences for different reasons. OBD is a valuable tool that assists in the service and repair of vehicles by providing a simple, quick, and effective way to pinpoint problems by retrieving vital automobile diagnostics from the OBD systems. This site will help you find information about OBD regulatory and technical issues and the availability of service information needed to diagnose and repair OBD problems. OBD plays an important role where vehicle inspection and maintenance programs are required. This site will help you find information on program implementation guidance and outreach materials to help raise awareness about OBD in your state or locality. OBD serves as an early warning system that alerts you to the potential need for vehicle repair through the "Check Engine" light on the dashboard of your vehicle[2]

This site will help you find information on the benefits of OBD and the important role OBD plays in responsible car care and learn other ways you can maintain your vehicle and reduce its emissions. OBD systems are required by EPA to be installed on light-duty vehicles and trucks, as well as heavy-duty engines.This site will help keep you informed of EPA's regulatory efforts, policies, and guidelines regarding OBD, including any issues that might impact your design and manufacturing process. Many automobile drivers are aware of the driving behaviours and habits that can lead to inefficient and unsafe driving. However, it is often the case that these same drivers unknowingly exhibit these inefficient and unsafe driving behaviours in their everyday driving activity and technical details for evaluation of Real Time Car Monitoring. Above project proposes a practical and economical way to capture / measure / evaluate inefficient, uneconomical and unsafe driving with the details about Performance, Diagnostics (Using Diagnostics Trouble Code - DTC), Fuel Consumption & Autonomy and Emission from a Vehicle.[3] The proposed solution consists of a mobile application, running on an Android Smartphone, paired with a compatible OBD-II (On-board diagnostics II) reader.

II. WORKING OF SYSTEM

1. OBD-II is the car engine diagnostic tools that follow the standard and car engine repairs / maintenance can be done without too much dependency on manufacturers. It creates communication with ECU with the help of standard inquiry (PID). PID is the command codes used by OBD-II to communicate with the ECU.

2. The OBD uses the basic purpose of introducing vehicle manufacturer's emission control system to detect problematic part of engine which causes pollution. OBD is a standardized interface to the on-board computer of a vehicle. An OBD interface allows for the readout of DTCs (Diagnostic Trouble Codes) that have been generated by the on-board computer. The OBD kit is connected to a laptop which has an indigenously developed Graphical

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User Interface (GUI), which shows the DTCs in a user friendly form.

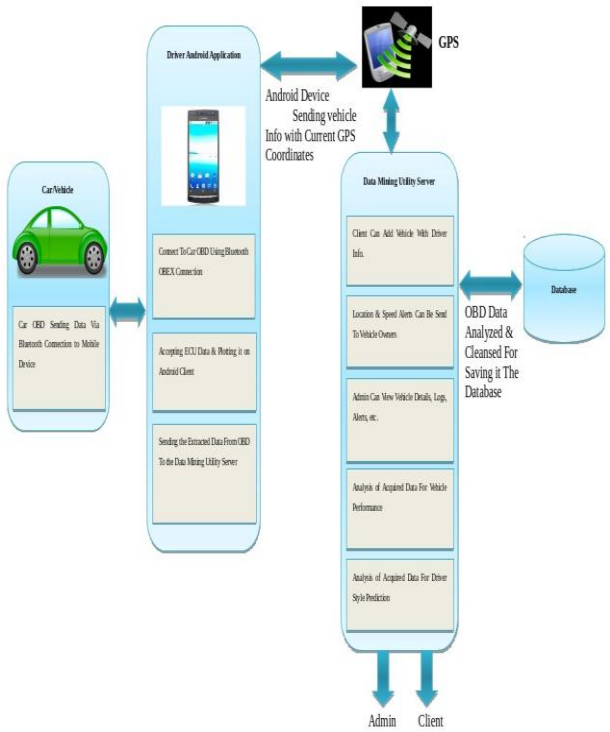
3. This paper describes the combinational use of WSN and OBD. A system that can be provide a information to the car driver in the form of signalling that can be generated when the lanes ,curves, speed is increase or descries. WSN system also shows the D-centre, D-left, D-right of car. The erratic driving diagnosis is based on intelligent systems, includes in three areas: vehicle diagnosis systems, analysis of erratic behaviours and the intelligent diagnosis based on neural networks. Regarding diagnostic systems for the vehicle, some hardware prototypes have been proposed as diagnostic systems developed for automotive applications.

III.SYSTEM DETAILS

Components of architecture

1. Car/vehicle:
OBD-II is situated in car. It is below the steering wheel. It is connected to the mobile via Bluetooth. The data of the car gets stored in OBD port. OBD sends data via Bluetooth to the accumulator device (mobile device). OBD monitors the components that make up the emission system and key engine components. It can usually detect a malfunction or deterioration of these components before the driver becomes aware of the problem. When a problem that could cause a substantial increase in air emissions is detected, the OBD system turns on a dashboard warning light to alert the driver of the need to have the vehicle checked by a repair technician.

2. Driver android app.:



The data from OBD port gets transferred on android mobile. We get information of various parameters which gets displayed on mobile device. The mobile of the driver gets alert as well as the owner gets the alerts from OBD via internet.

The parameters are: - Temp, engine load, RPM, VSS, fuel level. The extracted data gets transferred to the Data Mining server. The android device sends vehicle information with current GPS coordinates.

3. Data Mining Utility Server
In data mining server clients can add vehicle with vehicle information. Due to which location and speed alerts can be send to vehicle owners. Admin can also view the vehicle details and alerts etc. It analyses acquired data for vehicle performance. Due to which we can predict the driving style of driver. Data gets stored on database.

IV. CONCLUSION

The prototype will successfully provide a user-friendly method to make drivers aware of unsafe and inefficient driving practices. If Alert signal are immediately send to the owner, when the driver's unsafe driving are detected and also gather the information about faulty engine parts.

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