Smartphone Based Approach For Monitoring Inefficient And Unsafe Driving Behavior And Recognizing Drink And Drive Conditions.

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Abstract: Many automobile drivers having knowledge 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 manifest these inefficient and unsafe driving behaviours in their everyday driving activity. The proposed system proposes a practical and economical way to capture, measure, and alert drives of inefficient and unsafe driving as well as highly efficient system aimed at early detection and alert of dangerous vehicle maneuvers typically related to drunk driving. The upcoming solution consists of a mobile application, running on a modern smartphone device, paired with a compatible OBDII (On-board diagnostics II) reader.

Keywords: Smartphone, On Board Dignosis II, Sensor, Real Time Systems, Inefficient and Unsafe Driving, Drunk Drive Detection.

I. INTRODUCTION

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. Crashes caused by impairment of alertness in vehicle drivers pose a serious danger to people, not only to drivers themselves but also often to the general public. Despite the fact that drunk driving is a serious problem, its detection has been so far relying on visual observations by patrol officers. Vehicles will be equipped with sensors and communication devices that will allow them to cooperate with each other. Vehicles can exchange different type of information as per requirements on demand for specified application. A practical and economical way to capture, measure, and alert drives of inefficient and unsafe driving. Vehicle information extracted through On Board Diagnostics (OBDII) protocol, data acquired from smartphone embedded microdevices and information retrieved from the Web are properly combined. Once any evidence of drunk driving is present, the mobile phone will automatically alert the driver and administrator well before the accident actually happens.

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This proposed system introduces 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 and Autonomy and Emission from a Vehicle.With the purpose of supporting and improving data collection and distribution, a smartphone-based platform is designed that exploits low-cost dedicated hardware to interact with sensors on board and in the vehicle surroundings.

A. Literature Survey

Literature about OBD-based systems for vehicle monitoring and alert refers to remote and on-board solutions, respectively. In the former type, GPS data and vehicle OBD DTCs are sent to a Maintenance Center server via GPRS/UMTS and stored into a database, which is scanned by a diagnostics expert system that generates a rough suggestion to advise the maintenance technicians. The proposal presented here does not require experts to evaluate system outputs. Furthermore, information processing refers to a smartphone application and then it better resembles an on-board approach. Consider that, though useful for managing vehicle fleets, remote monitoring does not allow a direct driver assistance. Several on-board monitoring prototypes and reporting systems have been already proposed. Nowadays freeware and commercial software packages are available, that allow to monitor OBD-II vehicle data by using just a smartphone and off-the-shelf scan tools. Nevertheless, to the best of our knowledge, all existing on-board monitoring systems directly display the acquired low-level data. They do not analyze the information to provide more meaningful and userfriendly indications, though researchers have widely acknowledged the possibility to exploit the wealth of realtime vehicle data available through OBD in order to analyze driver behavior. Current efforts aim to use multi-source information fusion to better interpret the relationships between driving habits and vehicle performance, as well as to detect risk situations. Nevertheless, in available works analysis is performed off-line after data gathering, so they are not able to provide an automatic real-time driver support. Visual observation is an option to detect driver fatigue. Zhu et al. have used two cameras on dashboard to capture the visual cues of drivers,

such as eyelid movement, gaze movement, head movement and facial expression, in order to predict fatigue with a probabilistic model. Albu et al. have conducted the research in a relatively simpler way.

B. Proposed System

The proposed system proposes a practical and economical way to capture, measure, and alert drives of inefficient and unsafe driving as well as highly efficient system aimed at early detection and alert of dangerous vehicle maneuvers typically related to drunk driving. The proposed solution consists of a mobile application, running on a modern smartphone device, paired with a compatible OBD-II (On-board diagnostics II) reader.

C. Expected Result

- Gathering data like Performance, Diagnostics, Fuel Consumption, Autonomy and Emission from vehicles OBD-II via bluetooth device.
- Communication of OBD-II and android application via bluetooth device.
- Communication of android application with data mining utility server to calculate drivers behaviour.

II. CONCLUSION

According to our study on OBD II reader we concluded that; we can use the readings generated by OBD II device and can predict drivers driving behavior by analyzing those readings.

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