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Driver's Efficiency and Rating Application

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ABSTRACT: In India, there is a road accident happening in every 2 seconds and a person is dying in a minute because of road accidents. Out of all such accidents, 95% Of it is out of driver's carelessness Good driving is all about maintaining a speed limit of 50kmph in cities, Applying breaks without jerks, avoiding sharp turnings, positioning of the vehicle on the road when cornering as well as being in the correct gear and at the right speed. DEAR application is an offline app that keeps a track of all these factors of a driver and records a driver's efficiency. It then sends an impulse signal to the main server where the database of each driver will be recorded in a cloud server. It also allows the user to complaint about the driver or any feedbacks about the driver just by connecting it to the device It then marks the driver's efficiency. All you need is just a Smartphone and a DEAR application.

I. INTRODUCTION

Conventional speed governors are designed only to limit the maximum speed attainable by a vehicle. In our paper we have focused on obtaining and deriving the efficiency of the driver using sensors present at our mobile phones. Nowadays speed governor is a common term of which almost everyone is familiar with. Speed governor is just a device that alerts the driver and decreases the speed of the vehicle when the vehicle speed exceeds the reference value entered in the speed governor. This thought i.e. whether this speed governor which merely controls the speed of a vehicle is worth in a fast moving society of ours ended up in an alternative for speed governor that can take decisions according to varying environmental and driver behavior. Active safety systems are gradually becoming practical with advance in environment sensing and vehicle control technologies. On the other hand analyses of driver mistakes retrieved to as human errors, in road accidents has shown that driver continues to make mistakes in the cognition of their external world and judging the safe or not safe. A total 60% of all rear and almost 30% of head-on collision could have been avoided if the driver reacted mere a half a second early. So in this paper we are focusing on driver aids which combine both environment senses and driver monitoring system. We are sure that the DEAR application that we have proposed would bring in dramatic changes in the field of driving as well as in the current Indian traffic system if implemented



fig 1

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II. EXISTING SYSTEM

Currently, the schools and college busses and other transportations are dependable upon the speed governors the speed governor governs the speed of the vehicle and will not allow the vehicle to cross a certain speed there is no system for the passengers to complain about the driver or about the vehicle condition. Analysis of external sensors data for vehicle performance is a large area of study. Some work has been done in the form of theoretical research and development in a practical design. The main ideas of our work focus on mapping anomalies of a road's surface and classifying different driving behaviors. There has been some work in the field of road analysis, specifically road anomaly detection. Is a system researched and developed by Microsoft that detects traffic honking, bumps, and vehicle braking using external sensors. For detection, it uses multiple external sensors such as a microphone, GPS, accelerometer, and Global System for Mobile communications radio for traffic localization. Is another system that monitors road conditions using GPS and an external accelerometer, the system was deployed for testing in taxis using a convenient method to identify fatigued surfaces of a road

IV. PROPOSED SYSTEM

a) Functionality

Our work reveals roads to be more complex than the identification resolutions presented resulting in a wider array of classifications to reveal a particular road's overall integrity. We identify not only potholes but also bumps and rough, uneven, and smooth roads using multiple axes of the accelerometer. We also utilized a single measuring device rather than expensive external sensors placed in numerous places around the vehicle, which ultimately increases infrastructure costs. Our device, which is a mobile Smartphone, contains GPS, microphones, and an accelerometer offering flexibility in methodology and user implementation. Encouraging results in identifying numerous road anomalies and sudden driving maneuvers allow for our system to evaluate an entire road's condition and help advice drivers on unsafe characteristics, respectively, both of which are distinguishable factors that can determine safety on the road.

b) Phone Orientation and Location:

The orientation of the phone is a variable that may be constantly changing with the movement of the vehicle, and so might be arbitrarily placed inside the vehicle when the driver enters. The phone's orientation for each experiment remained the same, with the y-axis pointing toward the front of the vehicle and the screen (z-axis) facing the roof. A holster that was provided with the phone was used along with Velcro to secure the phone to the vehicle's surface. To obtain appropriate data, the phone was tested in multiple locations for each experiment before a final decision was declared.



fig 2

c) Road Anomaly Detection:

Poor road conditions can lead to re-pavement methods that can cause an increase in both traffic congestion and travel time. A distressed road can also increase the chance of an accident. By expanding on work presented, we extended road anomaly detection using a mobile phone's accelerometer. The embedded accelerometer is capable of detecting subtle or extreme vibrations experienced inside the vehicle. For example, vibrations experienced as jerks can be caused by potholes or a rugged/damaged road from a rough road. Speed bumps and potholes are two nuisances that plague drivers

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on the road every day. Using a Smartphone, we look for these road characteristics using a combination of the x-axis and z-axis of the accelerometer. When a vehicle experiences a bump, it ascends onto the bump, resulting in a quick rise or spike in the value of the z-axis. This also results in a subsequent increase in the x-axis, depending on the bump formation. At high speeds, the spike in the value of the z-axis is very prominent. However, for low speeds, this rise is not as obvious but still leaves an apparent impact. To detect bumps at low speeds, we compensate with the x-axis and a dynamic threshold based on speed. If the difference between two consecutive acceleration values of the z-axis exceeds the threshold, as well as an x-axis threshold, a bump can be assumed. Differentiating a pothole from a bump can be a difficult task using only a z-axis threshold, but both are distinguishable using this method.

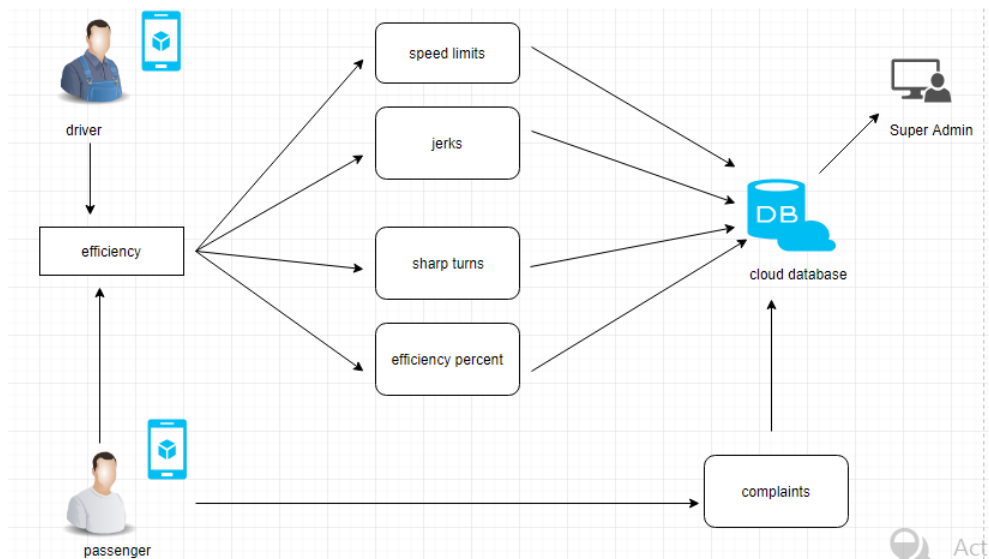


Fig 3 (architecture diagram)

d) Sending data Alert SMS:

In this module, based on the variation of directions an alert messages is sent to the Owner with a data say car number or any etc. The traditional method is used for the message delivery and the process description functionality

e) Passenger tracking system

Data from the environmental sensors are fed in to a risk calculating circuit. Using some complex algorithms and previously stored data, it analyses the situation and gives a risk value as output. The action taken by the system mainly depends on the risk value.

This risk value and the feedback from the driver monitoring systems are fed in to an integrator to decide the extent of aid to be provided. The driver support system includes driver warning systems and driver aid systems. It provides both warning and operational support.

V. DATABASE MANAGEMENT SYSTEM

Nested tables can be stored in a database column, but associative arrays cannot. Nested tables can simplify SQL operations where you would normally join a single-column table with a larger table. Associative arrays are appropriate for relatively small lookup tables where the collection can be constructed in memory each time a procedure is called or a package is initialized. They are good for collecting information whose volume is unknown beforehand, because there is no fixed limit on their size. Their index values are more flexible, because associative array subscripts can be negative, can be consequential, and can use string values instead of numbers.

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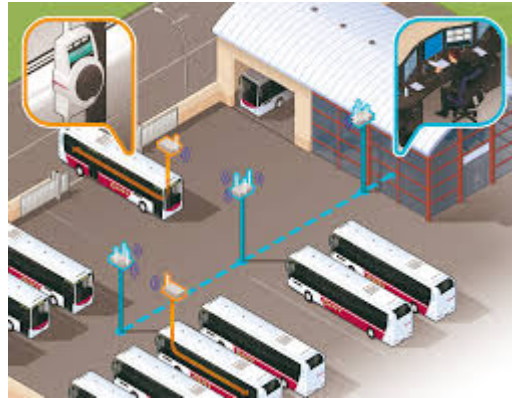


Fig 4

PL/SQL automatically converts between host arrays and associative arrays that use numeric key values. The most efficient way to pass collections to and from the database server is to set up data values in

VI. CONCLUSION

Speed is not only the prior cause for the accidents occurring in our country but it is the human errors which causes much of a concern. More than 80% of the accidents are caused by the carelessness of the driver. So as a conclusion to our study, implementation of DEAR APP is a worth alternative for the speed governor and will bring in drastic changes in the field of driving as well as the in the Indian roads.

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