

Smart and Efficient Personal Car Assistant System

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Abstract: India was the fourth largest motor vehicle/car manufacturer in the world in 2016. The growth rate of car ownership is raising big time in India. Presently, the average level of ownership stands at 13 per 1,000 populations and this is expected to increase exponentially. Car owners and Car users sometimes face problems related to their vehicles like remembering the renewal date of PUC, Routine check-ups, maintenance and accordingly periodical expenditure of the vehicle related things. Also trapping in a car or overheating of car causes suffocation kind of problems, where immediate communication is very much needed. So there is a need of a system that will support car users in maintaining vehicle related issues in easy way.

This project work, proposed a system that helps car user to manage car related things. An android application is developed to provide the features like reminders for PUC renewal, Routine check-ups and maintenance, which will reduce the efforts of the car users. It provides necessary help to the car user by giving information whenever required. User can explore new cities around him/her very easily. Misplaced objects in the car are detected through the system. Based on traveling pattern future destinations are predicted.

Thus, the project work resulted into development of a system which assists the car user by providing the necessary support.

Keywords: Firebase, Google API, Apriori algorithm, Voice Recognition, Geolocation.

1. INTRODUCTION

Car owners and Car users face problem while using their vehicles like they forget the renewal date of PUC and Routine check-up[6], Suffocation in car is a major issue causes due to person trapped in car or overheating of car. User has to check Tyre pressure manually. User cannot predict the probable future movements of a person. Calculating monthly expenditure has to be done manually. There is a need of a system which can assist user by providing notification for PUC renewal, Suffocation in car and Routine check-up of car. System can also display monthly expenses of car. The System basically consists of an Android Application and communicates within itself with the help of GSM[1] and Bluetooth technology. The main aim of project to provide common platform as android application to user. There are many Luxurious cars and Sports cars which provide features like Performance Management, etc. But, these are only available with premium vehicles. A common middle-class man cannot afford to spend a lot of money on Super Cars just for these features. This system makes these features affordable for every car. The system provides periodic analytical reports of car's performance. Thus, user can plan the budget for a given amount time. User will be able to explore services around him and also will be provided with the feature of playing music according to his mood.

2. LITERATURE SURVEY

Intelligent vehicle security and SOS messaging system with embedded GSM module[1].

The paper describes GSM and RF technology-based safety, security and convenience features that can be installed in a car. The safety feature addresses deadly situations of children getting locked in the car, security feature addresses car theft and the convenience feature provides better user experience while parking and getting the car out from the garage. A prototype with all these three features was developed and tested.

Once this module is installed in the car, it gets activated through central locking system when the car ignition is OFF. In unfortunate situations of children getting locked in the car or someone attempts to break into the car, SMS would be sent to owner's mobile using GSM technology. RF modules are installed in the car and on the garage walls/doors which would assist driver while parking the car and also automatically raise the garage door when requested.

Mapping of GPS logs with global transportation [2]

Geographical Information System(GIS) constitutes of Global Positioning System (GPS). It is used for efficient mapping of the traffic trajectories in the actual world. It uses GPS logs of roadways which is useful in the routing applications used in Smart Maps. The historical GPS logs, it is a collection of numerous GPS points are provided to and the landmark graph. Based on the graph, the routing techniques, entropy-based clustering techniques are used to build and also to assess the system to find routing patterns in urban areas. Finally, the road patterns are parted based on the real-world GPS trajectories and an optimal route is evaluated based on the graph and live extra information. This pattern is used for predicting the real time traffic of the future time. This system proposes to provide the travelling time, distance a central point of the available number of trajectories between every source destination in order of predicting an optimal route.

Smart Object Finder by using Android and Bluetooth Low Energy [3].

The objective of this project is to assist people who lose their objects often and also they can avoid the object being stolen. Normally people

get frustrated when something like keys, wallets, pen drives, laptop, etc. gets misplaced. An object finder has the ability of locating an object within 150 meters range. In this project android version 4.4 kitkat with Bluetooth having 4.0 version is used. Nearly around 190 countries across the world' mobiles are powered by android. This project relates in general to various systems and devices which enables people to easily locate and find lost or misplaced items in any environment like households or offices, and particularly to a system which utilizes wireless receiver (Bluetooth tag) with wireless transmitter (Android app) which can be attached to various objects or items desired to be located with system's help. The object could be anything such as bicycle, luggage, car or it could also be a person. Eclipse IDE was used by them to write code. Then the .apk file is installed in Smart Phone. The BLE113 Bluetooth module which is developed by Bluegiga technologies is used in the system. There are two possible modes of project one is when the user wants to find the object which has the attached tag by using app then he/she has to execute the app. Connect to the Bluetooth and then transfer data to tag which results in beeping of the tag loudly. When the sound is heard we can reach towards the direction of the object. By using this we can easily find out our misplaced object. The another mode is when already we activate the tag by the app and whenever the Smartphone goes out of range then app will show message that you are not with your object and beep loudly. Only working of the first mode is explained in this paper. Smart object finder is available at a low cost and is efficient. Android being open source everyone can use this app. Bluetooth module and a buzzer is included in the tag. CR2032 AAA size battery is required for supplying power to the tag.

Also, the GUI of the system is very simple and appealing at the same time. So, a child as small as a 5-6 year old and also an elderly person can easily use the app.

RELATED WORK

The existing systems provide different functionalities but separately.
 Here are some existing systems.

1.iGasUp



Fig.1.iGasUp

Use: It displays 10 nearest cheapest gas stations with prices derived from the same pricing service that supplies the AAA and satellite companies [4].

2. My Max Speed 2.0



Fig.2. My Max Speed 2.0

Use: There are two uses which are:
 To monitor a teenager's driving habits.
 To provide an accurate record with which to argue against speeding tickets.

3. Trapster



Fig.3. Trapster

Use: Gives warning about speed traps.

5. TripAlyzer



Fig.5. TripAlyzer

Use: If you've got a favourite route and drive it often, the TripAlyzer can coach you to get the best fuel efficiency and therefore the cheapest route.

6. AccuFuel



Fig.6. AccuFuel

Use: To check how much you spend on gas and gives you instant feedback while driving [5].

7. Speedometer Speed Box



Fig.7. Speedometer Speed Box

Use: To check the accuracy of the speedometer. As we see, the systems are separate and also most of applications are provided to ios only. Therefore, the user has to install the applications separately which will result in wastage of memory and also a common person cannot be benefitted with the applications that can be installed only on Ios as it is not affordable.

3. PROPOSED SYSTEM.

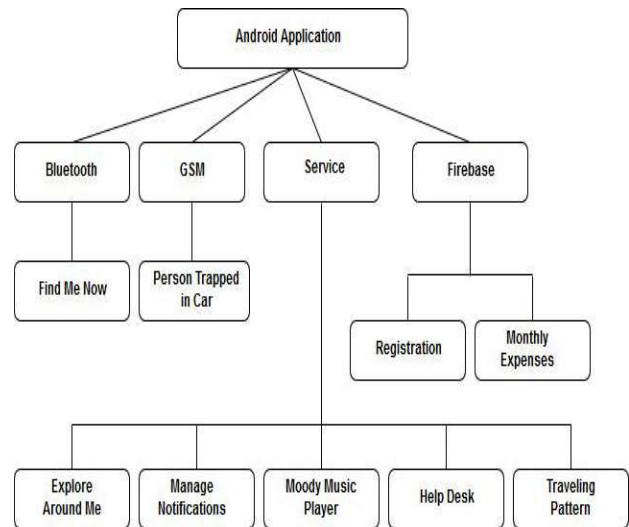


Fig. 7. Proposed system architecture

The System basically consists of an Android Application which provides features like:

Manage Notifications: User will be able to set notifications for PUC renewal, Tyre air pressure, Petrol and Servicing. System will notify user on particular date and time [6].

Monthly Expenses: On daily basis user will enter expenses don'te on car and at the end of month, system will calculate and display overall monthly expenses and analysis. Based on these results, system will suggest father budget management [7].

Moody Music Player: To make the journey of user enjoyable. System will play music according to the user mood. User commands are taken through voice [8].

Help Desk: A help desk is a platform which is intended to provide someone with support and information related to a Car related services.

Explore Around Me: Whenever user wants to explore places around him, he can get quick look at nearby Petrol Pumps, Restaurants, Malls, Hospitals etc. User can get more information about a place with explore as a guide [4].

Find Me Now: Basically, it is an object detection system. User can locate misplaced object inside car on a button click and object will start indicating its location by Buzzer and glowing LED [3].

Traveling Pattern: System will analyse data of visiting places and predict future destination of user on particular day [9].

Person Trapped in Car: Whenever person trapped inside car then CO2 data is given to system, When CO2 level crosses the threshold value then alert message and emergency call is sent to defined contacts [10].

Firestore real time cloud-based database is provided for storage purpose. The system communicates within itself with the help of GSM and Bluetooth technology.



Fig. 8. Application Menu of the system.

4. SCOPE

With the help of sensors system will be acquainted with more features like Tyre air pressure detection and Fuel level detection, input will be taken from the sensors and accordingly action will be taken.

The system can be further developed to identify stressed driver situations.

Using Arduino, GSR, PPG and other hardware component stress level is detected. If the stress is detected by system alert message is sent to defined contacts.

Performance of car can be enhanced by analysing the driving pattern.

5. CONCLUSION

India is a developing nation and it consists of maximum middle-class people. There are many Luxurious cars and Sports cars which provide features like Performance Management, Assistance in emergency cases, Notification for

PUC renewal and Car servicing, etc. But, these features are only available with premium vehicles. A common middle-class man cannot afford to spend a huge amount of money on Super Cars just for these features.

Our System not only makes these features affordable for every car but also provides some additional features like notifications for travelling to different places depending on previous destinations of the car user. The system provides periodic analytical reports for car's performance. Thus, user can plan the budget for a given amount time. Also, system helps to keep the mood of car user happy.

Hence, the project work is resulted into a system which assists the car user by providing the necessary support. The system works efficiently and effectively to avoid unexpected circumstances.

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