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Vehicle Monitoring Application for Transportation Company

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Abstract: *In a technology filled world getting the details and storing those details is not a big challenging task. But summarizing those details to get more useful information is adding intelligence to that task. In Transportation companies keeping track of all the vehicles and monitoring them could be effectively done by technology. Our proposed system will get all the details of the vehicle and store them in the database and at the end of the day a summarized report will be mailed highlighting the key information. Also, if any crucial messages like cab breakdown will be immediately informed via text message as well as through email.*

Keywords: *Vehicle Tracking, GSM, GPRS, Google Maps*

I. INTRODUCTION

In today's fast moving world the number of people booking Cabs online for transportation is rapidly increasing. Because of this, numerous transportation companies are gaining importance. Ola and Uber are one of the leading online transportation network companies that people prefer. For any transportation company it is very important to keep track of their vehicles information. The information should not only restrict to the vehicle number, driver of the vehicle or location of the vehicle. It is also very important to store the vehicles speed at a particular time, Fuel in tank (%), Main battery voltage, etc. This information may be used to track the behaviour of a particular vehicle and also for maintenance purpose.

Suppose a cab runs at a particular speed on a day and if there is some problem with the vehicle and requires urgent servicing then that could be predicted using the trend or differences in the stored data about the vehicle. Suppose a cab consumes about 10% of its fuel at a particular day for a particular period of time, and if the same cab takes more fuel than required on some other day for the same time period then there must be some problem which might need some action to be taken.

The proposed vehicle tracking application will combine with the GSM and GPS module and would track the location of the vehicle with the help of the online software or any mobile or Tablet device. Vehicles location will be collected through GPS and this information along with other essential data that are collected from the vehicle with the help of different sensors are then sent to the main central server. A GPRS enable SIM card or a software application which uses Google's online service can be used to connect to the Tracking device and communicate the information received from it to the central database. User can then login to the application and can see the real time vehicle information.

II. TECHNOLOGY AND HARDWARE USED

A. GSM

GSM tracks the location of the device using cell identification techniques. This technique tends to identify the cells of the wireless networks which the device would be using at that instant of time. The location of the device is the location of the base station. The efficiency and accuracy of this technique is that it depends upon the coverage area of the cell. Its accuracy can be increased by adding Time advance and by increasing the strength of the signal. This technology is only used if mobile user is 550m or more away from base station [2].

B. GPS (Global Positioning System)

The Global Positioning System (GPS) is a satellite radio navigation system developed by the Department of Defense (DoD) owned by the United States Government (USG) and operated by the United States Air Force (USAF) [3]. This system is made up of at least 24 satellites.

These GPS satellites circles in a precise orbit around the earth transmitting unique signal which allows the GPS enabled devices to compute the precise location of the satellite. GPS user will then use this information of get the exact location of the devices.

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C. Google Maps API

Google provides technology which is a web mapping service application that is called as Google Maps. It supports numerous map-based services. Google Maps can be easily embedded in our own websites or application using Google Maps JavaScript API. New version of this API is specifically designed to be more powerful, efficient, faster and widely used in mobile devices as well desktop applications.

D. Sensors

A sensor takes the force or load acting on it as the input and converts it into electronic signals. The signal generated can be frequency change, voltage change or current change.

III. ARCHITECTURE

The proposed system will have a central point which can be a GPRS enabled SIM card or Tablet device or application software which has Google Map services. This central point will connect with the vehicle and gets its details. Every vehicle will have a GPS tracking device which is fitted into the dashboard. This will be used to capture the location information directly from the satellite by getting the vehicles latitude and longitude. Other details will be taken from different sensors fitted into the vehicle at a predefined regular interval of time.

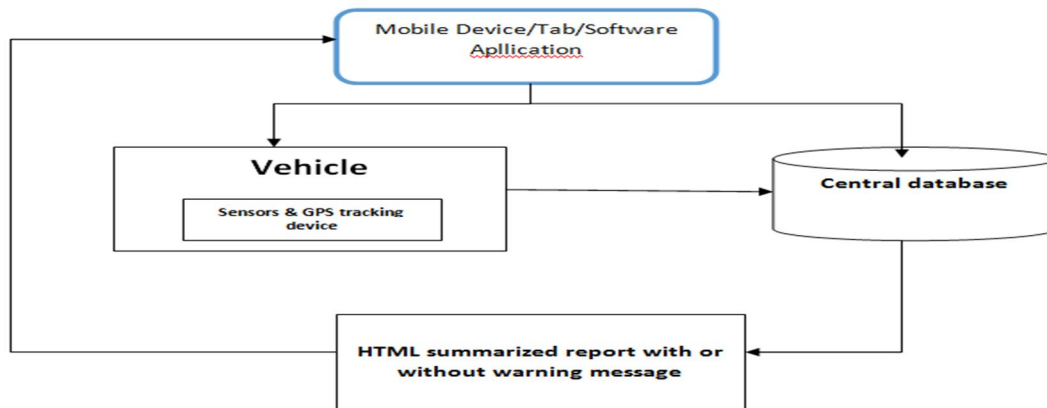


Figure 1:- Architecture of the Vehicle Tracking System

As shown in the above figure, the application will first connect with the vehicle and locate it. Then it retrieves other essential information from the sensors and stores them into the database. At the end of the day a summarized html report will be automatically mailed to the user.

IV. METHODOLOGY

The working of the system is quiet simple and straight forward. The central point will first locate the vehicle and then retrieves the information from the sensors. This retrieving of the information can be controlled accordingly. If the vehicle is in motion then data can be fetched after every 10 minutes otherwise the data can be fetched after every 15 minutes and stored in the database.

These are the following information that can be stored in the database:

- A. Vehicle number
- B. Time, Date and Location
- C. Speed of the vehicle
- D. Fuel in tank (%)
- E. Main battery voltage

After the retrieval of this information it will be stored in the database along with timestamp. These values are maintained in the database for comparing the current data with the historical data so that a comparative report can be generated. Suppose a cab takes 15 minutes to reach a destination normally but if it takes more than 30 minutes (excluding the time for traffic) then there must be some problem with the vehicle it may need proper maintenance check. The sensors in the vehicle will also give the temperature information and AC ON or OFF status using which the condition of the AC can also be monitored.

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At the end of the day a detailed HTML report will be generated and mailed to the top management indicating a summarized report. Generation of various reports can be possible. Some of them are:-

A. Performance Report

It will give the day wise report containing the vehicle number and the total kilometre travelled, fuel usage, and average speed of the vehicle.

B. Consumption of fuel in graphical format

C. Pre-historic Report

This report will contain the comparative study of the data across 3 months and if any major change is encountered then is highlighted in the mail.

D. Stoppage Report

Along with all these monitoring report, if any emergency situation happens like vehicle break down, fuel leakage, tyre puncture, engine problems, accidents, road quarrels which comes under emergency cases will be immediately mailed as well as texted to the authorised person.

V. ADVANTAGES

There are many advantages of this application. Some of them are listed below:

- A. It is very useful for providing security to the driver as well as the vehicle.
- B. The main advantage of this is vehicles performance monitoring. Various reports are generated using which business related decisions can be made by the top management.
- C. Vehicle is always secured using this application. Suppose the vehicle is stolen then using the last signal received from it police can easily track it down.
- D. It will have an adverse effect on the insurance cost, because using this application loss-risk is reduced.
- E. Using the emergency alert message and email triggering the top management can get real time alert on any emergency situation like engine breakdown, accidents, etc.
- F. Real time monitoring and performance testing are two key coverage areas that this application focuses on.

VI. CONCLUSION

Many new advanced features can be implemented in this application like real time vehicle monitoring using electronic map. The proposed application provides security along with financial benefits to the management. Storage of daily records in the central database helps to maintain the data and analysis can be done over it to derive any strategy to improve the performance issues.

REFERENCES

- [1] MihirGarude, NirmalHaldikar," Real Time Position Tracking System Using Google Maps", International Journal of Scientific and Research Publications, Volume 4, Issue 9, September 2014.
- [2] S. Bhatia, S. Hila," A New Approach for Location based Tracking",IJCSI International Journal of Computer Science Issues, Vol. 10, Issue 3, No 1, May 2013
- [3] Global Positioning System Standard Positioning Service Performance Standard, Department of Defence – USA, 4th Edition (2008)
- [4] Abhijeet Tekawade, Ahemad Tutake, Ravindra Shinde , Pranay Dhole, Mr Sumit Hirve," Mobile Tracking Application for LocatingFriends using LBS", International Journal of Innovative Research in Computer and Communication Engineering , Vol. 1, Issue 2, April 2013
- [5] Varun Pande, Wafa Elmannai, Khaled Elleithy "Mobile and Wi-Fi Geo location Using Google Latitude",
- [6] http://en.wikipedia.org/wiki/Global_Positioning_System.
- [7] <https://www.sitepoint.com/working-with-geolocation-and-google-maps-api>
- [8] Amol Dhumal, Amol Naikoji, Yutika Patwa, Manali Shilimkar, Prof. M. K. Nighot, Survey Paper on Vehicle Tracking System using GPS and Android, International Journal of Advanced Research in Computer Engineering & Technology (IJARCET), Volume 3 Issue 11, November 2014



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