

# An Approach towards an Efficient System for Vehicle Monitoring and Tracking

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**Abstract:** A class vehicle monitoring and monitoring system based on Embedded Linux Board and android application was produced and implemented for monitoring the school vehicle in the location A to location B at real-time. The recommended system would place inside the vehicle whose position is decided on the web page and supervised at real-time. Inside the recommended system, there's comparison involving the current vehicle path and already specified path to the file system of raspberry pi. Inside the recommended system the already specified path inside the raspberry pi's file system acquired from vehicle owner's android wise phone using android application. The recommended system also needed proper care of the traveller's safety through the use of LPG Gas leakage sensor MQ6 and temperature sensor DS18B20. The recommended system makes use of recent technology that based on Embedded Linux board namely Raspberry Pi and Smartphone android application. The recommended system produces Gps navigation navigation/GPRS/GSM SIM900A Module including all the three things namely Gps navigation GPRS GSM. The Gps navigation current location in the vehicle GPRS transmits the monitoring information for the server as well as the GSM can be used as delivering alert message to vehicle's owner mobile.

**Keywords:** Vehicle monitoring, Tracking system, Raspberry Pi, Sensors, Embedded system, Smartphone android application

## 1. Introduction

There's demand for real-time monitoring and monitoring the car also storing and upgrading its database of certain situations. Human there's help somewhat difficult in offering the database of supervised vehicle. To have the ability to reduce man power and saving of money, here the device provides easy monitoring solution using Embedded Linux Board [1]. Inside the recommended system, the device offers a fully automated monitoring and monitoring in the vehicle which helpful for limo bus, their entrepreneurs, and children's safety also it provides the accurate arrival time period of the car at particular location or stop. And for that reason using precision with time, children can harder in studying, sleeping, or relaxing rather than watch for postponed bus. Cutting back time waiting for a bus improves comfortable and efficient time management planning in the student too. For monitoring the car using Gps navigation and its database, MySQL database method is use which advanced feature of Raspberry-Pi. Inside the database base monitoring and upgrading mechanism, the GSM/GPRS module may be used which transmit the up-to-date vehicle database for the server and user connect with the database using site in Smartphone. That shows the particular time vehicle location inside the Smartphone. The recommended system get monitoring information in the vehicle like vehicle number (Unique ID), location, speed, Date, Some time to store to the database of Raspberry pi [2]. The device offers students safety mechanism using temperature sensor and gas leakage sensor. Hence inside the situation of raising our prime temperature inside the vehicle due to some reason or leakage in the LPG gas inside the vehicle, the alert message get send for the driver additionally to vehicle owner.

## 2. Methodology

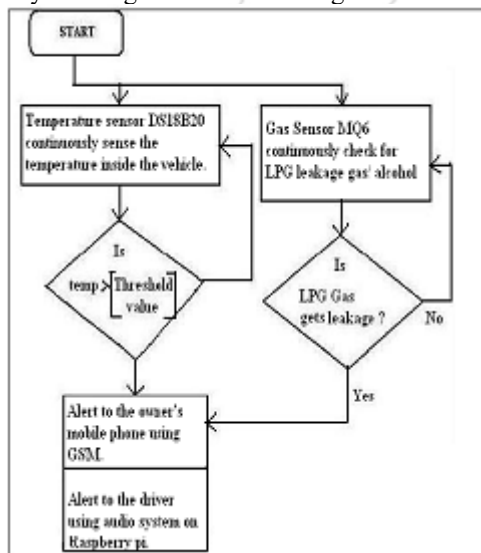
In last decade, we take serious notice from the motorists fatigue driving and vehicle robbery activity which then causes social real-time problem like accidents plus much more hazards conditions. We daily see or look at this particular activities which are raising the problem within our safety and security in public and private industries clients will have a way to continuously monitor a moving vehicle when needed while using the Smartphone and find out the believed distance and here i am in the automobile to achieve confirmed destination. Continuously monitoring and monitoring the school vehicle at real-time atmosphere using site in Smartphone so when the car choose wrong path then system supply the conscious of the owner's Smartphone as well as on raspberry pi's seem system. Offer safety atmosphere for the children using gas sensor and temperature sensor by messaging alert. Storing and upgrading the particular time database in the vehicle like its Speed, Time, Location, and Date that are useful just in case of vehicle robbery recognition. To reduce man power and saving of money, here the device provides easy monitoring solution using Embedded Linux Board [3]. The recommended system would get controlled using Raspberry pi which placed inside the vehicle. The Gps navigation navigation/GPRS/GSM SIM900A module get speak with raspberry pi using USB interface. Recommended system provides student's safety using DS18B20 temperature sensor and gas leakage sensor MQ6. These sensors get interface with raspberry pi. Once the temperature inside the vehicle crosses the specific value or LPG gas get leakage inside the vehicle your alert message will shipped towards the vehicle's owner. Likewise safety mechanism provided by system. Longitudes and latitudes from the present path brought on by Gps navigation enter comparison while using stored longitudes and latitudes inside the particular extendable inside the database of raspberry pi. The longitudes and latitudes from the present path brought on by

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Gps navigation could possibly get shipped towards the server using GPRS which supports to follow the vehicle's current location on the web page using Smartphone. For monitoring the car, the recommended system provides login facility on site for vehicle's owner, students in addition to their parents. When longitudes and latitudes not complement the stored one then wrong path recognition alert message could possibly get shipped to vehicle's owner mobile. SIM900A Module that will get connects while using Raspberry pi offers the real-time monitoring information in the vehicle for instance longitude, latitude, speed, time period of the car. That information acquired from USB interface get stored to the database and extra transmits for the server. The device gives monitoring provision on site for registered user just the following: Primary Login: In this particular provision, the registered students can track the school vehicle inside their Smartphone using Primary Login on site. Hence only individual's students who get registered to the system get access to this login. Secondary Login: In this particular provision, the student's parents can track the school vehicle inside their Smartphone using Secondary Login on the web page. Hence only registered student's parents get access to this login [4]. Super Login: In this particular provision, the vehicle's owner can track the car within the Smartphone using Super Login on the web page. Hence only owner get access to this login.

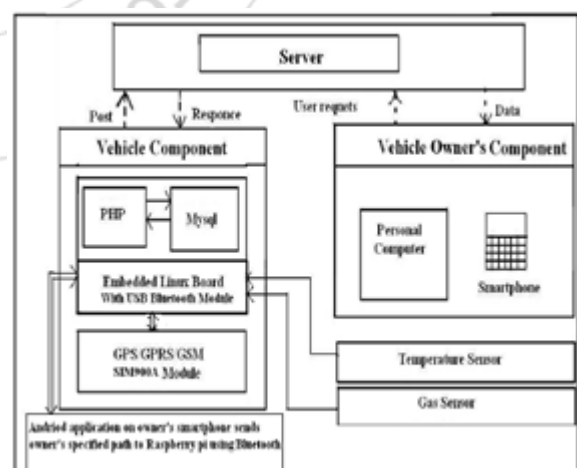


**Figure:** Proposed system flowchart

### 3. An Overview of Proposed System

The recommended system get monitoring information in the vehicle like vehicle number (Unique ID), location, speed, Date, Some time to store to the database of Raspberry pi. The device offers students safety mechanism using temperature sensor and gas leakage sensor. Hence inside the situation of raising our prime temperature inside the vehicle due to some reason or leakage in the LPG gas inside the vehicle, the alert message get send for the driver additionally to vehicle owner. The recommended system provides more safety and secure solution using android application for wrong path alert. The car owner's Smartphone getting an android application that provides the information regarding selection of particular path in one spot to another through which the car made to travel. And for that reason driver drives the car in route that made a decision by android

utilization of owner's Smartphone only [5]. Inside the recommended system, the device offers a fully automated monitoring and monitoring in the vehicle which helpful for limo bus, their entrepreneurs, and children's safety also it provides the accurate arrival time period of the car at particular location or stop. Initially vehicle's owner trace the made a decision path One spot to another on android application that gives longitude and latitude of this specific path. Then android application saves that longitudes and latitudes of monitored path in the particular extendable to ensure that owner can send that file for the raspberry pi database using Bluetooth or USB port. And then the recommended system can process further with this data. Now using file system programming, the current longitudes and latitudes brought on by Gps navigation of Gps navigation navigation/GPRS/GSM SIM900A module get compares while using longitudes and latitudes brought on by android application. Hence when the comparison gives less tolerance you have to realize that driver drives the car on course i.e. one spot to another else should there be large among longitudes and latitudes then system transmits alert message round the vehicle owner's mobile the automobile is about the incorrect path using GSM. The recommended system takes proper care of the children's safety through the use of LPG Gas leakage sensor and temperature sensor. Our prime temperature sensor DS18B20 which relies on a wire protocol supplies a digital output hence might be get directly interface while using Raspberry Pi. The edge price of our prime temperature occur the program. When threshold temperature value can get mix by output price of our prime temperature sensor due to some reason then alert message is going to be shipped towards the automobile owner's Smartphone. That output current might be controlled through the use of current restricting resistors which support the Raspberry pi's GPIO from damage [6]. Likewise both sensors output travelled into Raspberry pi would get match facing threshold values so when limit crosses your alert message will be provided to vehicle entrepreneurs mobile using GSM of SIM900A module.



**Fig:** An overview of system design

### 4. Conclusion

The recommended system plays a crucial role instantly monitoring and monitoring of vehicle by upgrading vehicle real-time facts about the server side after certain interval of

your energy to have the ability to supervised vehicle continuously. Recommended system also gives alert message on student parents mobile to make sure that parents also find out about their children's safety. The recommended system hence utilized Smartphone technology by offering safety and secures visiting the traveller using wrong path alert mechanism selecting a path from location one spot to another happens from vehicle owner's android application which supplies more safety and safeguards visiting the traveller. Therefore, the motive force drives the car only round the vehicle owner's specified path. Once the driver drives the car round the wrong path your alert message will probably be submitted the recommended system for the vehicle's owner mobile in addition to audio system alert driven using Raspberry pi's audio jack. Once the vehicle's speed surpasses the needed price of the speed, then the warning message will probably be sent from system for the owner mobile.

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