Vehicle Theft Authentication and Accident Detection Using GPS-GSM Technology

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Abstract
Now a day, many cases are noticed in the police station about the vehicle theft and road accidents. The main problem is there is no security system for the vehicles. This paper provides a security to the vehicle through the embedded system. This system is purely based on microcontroller. This paper enables that when the vehicle key is turned on, the microcontroller automatically send a message to the vehicle owner mobile or to the mobile which is registered on vehicle buying. If the person may know about it, he will send a message to the mobile number which is present at the GSM module interfaced with the microcontroller. When the GSM module gets a message it activates the GPS module an send an message to the owner where the vehicle present now. By using this system we easily find where the vehicle to be placed after theft. And if any accident is done the microcontroller will send a message to the emerging services as well as relatives to that particular person where the accident is done.

Key Words: Microcontroller, GSM module, SMS, GPS module, Vibration Sensor.

1 Introduction
In this generation every human being need a small or large vehicle for the home needs. Most of the people want bike for their daily services. Due to this reason import and export of vehicles is day to day increased. So here we want discuss about two things. First one is vehicles robbery. Vehicles robbery is also increased day to day. So many people with suffer about this. For everything the person need a security, which is small or bigger security. Some of robbers use duplicate keys they will start the vehicle and took the vehicle. But the owner of the vehicle don’t know about their vehicle, because of key is with her/himself.
The second one is vehicle accidents. Today we observe that per one hour nearly 10 accidents are noticed. In these accidents especially road accidents are very more. This is because of rash driving. Some accidents are noticed that done in city, but some are out of city. If the accident will be done at outside of the city, there is no chance to take an action/remedy to that person, because of no one is known about the accident. So here we loss may one life and more. By considering these conditions we develop a system, which provide a security as well as intimating to the persons who are relative to that person and at the same time the microcontroller will send a message automatically to the emerging services nothing but police station, ambulance and so on.

This system is very important for the vehicles providing an security when the vehicle is theft and when the accident can occur. This embedded system is placed in the vehicle at unknown places i.e., under the seats, at light head domes. The designed system is available any time, whoever wants this system in their vehicle, that means any person want to fixed the system in their vehicle, the mechanic will place the system. The function and methodology of this system is given below.

2 Methodology
In this embedded system we have two types of methodologies. The first one is during the vehicle theft. In this condition when the vehicle key is turned on, the power supply will activate the all functional units in the vehicle. When this system is placed in the vehicle it is also one of the part or function unit of the vehicle. When the power supply activate this system the microcontroller will activate the all interfaces, and at the same time the controller will send a message to the owner of the vehicle. For this purpose there is one GSM module is interfaced with the controller.

![Figure 1: Block Diagram for our System](image-url)
The GSM module having an SIM card which is any network, this SIM number is stored in the controller programming when the vehicle registration is done. The vehicle starting is known by the owner there is no problem. If the owner finds that vehicle starting without him/her permission, he sends a message to the GSM module. When the controller will identify that message through the module, the controller activates the GPS module and sends a message to the owner about the vehicle is present now.

The second one is during the accident. If any accident occurs the controller sends a message to the relatives and emerging services. The controller will identify the accident through vibration sensor. This sensor will generate a signal to the controller when the vibration is high. The controller automatically activates GPS and GSM modules when the vibration sensor generates a signal. The GPS module is used for identify the position of the vehicle where the vehicle presents. The GSM module is used for communication purpose. By using these modules controller sends a message the relatives and emerging services. These numbers are given when the program is dumped into the microcontroller.

In the block diagram low battery indicator indicates the battery level in the vehicle. If the level is low the LED indicator will glow. Oil level sensor is used to indicate the oil level. These two sensors are interfaced through ADC circuit, which is a analog to digital converter. This is used for convert the analog signal into digital signal and passes to the microcontroller. Because of the microcontroller will understand only the digital signal. The LED indicator indicates the level of any parameter decreases. These parameter values are displayed by using LCD display.

3 Conclusion and Future scope

This paper enables the system which helps to the vehicle owners during the time of their vehicle theft, and when the vehicle accident occur this system saves the life of the person in critical positions. This system is very easy to design and simple to cost. And if anybody want to change the program is easy. The future scope of this system is by using the advanced technology, newly developed microcontrollers ultimately we increase the system performance.

4 References


5 Biographies

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