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Model of Anti Theft Locking for Stolen Vehicles

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Abstract - The car industry is booming, as a result with more new vehicles on countries road every year car thieves have even greater choice in terms of vehicles they target. The existing systems used for anti theft control are very expensive. The proposed system presents not only vehicle tracking but also providing the security levels for accessing functionalities of car. Along with that whenever thieves will trying to presumes a high valuable items places inside a locked car ,the proposed system will immediately send an alert signal to owner of the car.
Keywords: Tracking system; GPS; GSM; PIR sensor; microcontroller.

I. Introduction

Now a day's vehicle theft is increasing at an alarming rate around the world. People have started to use the theft control system installed in their vehicles. Anti theft vehicle control system that are commercially used are very expensive. So keeping in view, the proposed system will make a modest attempt to design & develop a simple & low cost vehicle theft control system using a suitable inbuilt microcontroller.

One car is stolen every 15 seconds worldwide which is a serious issue. Even more surprising the fact is some vehicle owners do not secure their cars at all. Sometimes we need to travel with the valuables like GPS holders, laptop, jewelry bags or any important assets .Thieves may presumes such a high valuable items placed inside a car .

That's why the proposed system provides an attempt to design & develop a simple & cost effective vehicle theft control scheme using an inbuilt microcontroller .This system design is aimed at implementing a vehicle tracking system which can help user to track your vehicle 24/7 hours and provides anti theft services. Various parameters like longitude, latitude etc can be obtained & thus we can find the location of our vehicle.

The proposed system tracks every single move of your vehicle which can observe from any corner of globe on demand. This system is not limited to providing on demand tracking but also it provides multiple security levels to accessing functionalities of car. Along with that the system also provides an alert signal whenever unauthorized access will takes place inside locked car.

II. Literature Review:

Real-time tracking and management of vehicles has been an interesting field for various researchers and a plenty of research work has been done for tracking system. The various anti-theft modules like steering locked equipment, tracking system and traditional electronic alarm are developed along with client identification and real time monitoring. A number of developments have taken place in anti-theft systems for vehicles and some of the relevant ones are as discussed here

A.Anusha & S.Ahmed [1]proposed a system which is deployed in the interior of the vehicle whose location is to be determined on the web page and supervised at real time. Besides tracking the location of the vehicle, information of engine temperature to prevent the ignition/spark, information about the condition of the driver such as, Drunk/Drossiness is detected. They used Global Positioning System (GPS) and Global System for Mobile Communication (GSM) for vehicle tracking and monitoring purpose using SIM800 module ARM-7, Microcontroller LPC2148 , temperature a sensor LM35, Alcohol sensor MQ-2.While N.Mangla[2] et al a paper "A GPS-GSM

Predicated Vehicle Tracking System, Monitored in a mobile app based on Google Maps" which explains the importance, working and the application of vehicle tracking system as an application of IOT. This system comprises of a GPS antenna, a GSM modem, Atmega 328 microcontroller and a mobile application that plots the vehicle location on a map and also helps the user steer to it. In another paper of N.Pal & R.Mandliya[3] proposed tracking system based on GPS and GSM technology. Which also counts the distance travelled b/w two stations. The system allows to cover the target anytime and anyplace in any weather conditions by using GPS and GSM technologies SIM 300 tri- band GSM/GPRS engine for tracking purpose. In another system along with tracking extra features were included for capturing image and sending mail which is proposed by Shruthi.K.[4]et al. providing vehicle tracking system which uses the Global Positioning System (GPS) and Global System for Mobile Communication (GSM) technologies and a Smartphone application for tracking of any movable asset. It uses GSM Module-SIMCOM SIM900 V1.0 ITEAD Studio, GPS Receiver- GPS-01 Tenet Technetronics Cirocommextra, Web Camera. G.Deshmukh & Dr. S.P. Metkar[5] discusses "RTOS Based Vehicle Tracking System" which is able to obtain a vehicle's GPS coordinate and transmit it using the GSM modem to the server using GPRS connectivity. RTOS replaces VTS system which is useful for time deterministic behavior and multi Tasking. Multiple tasks includes sending GPS location of vehicle to server & Collect all sensors data (Temperature sensor, alcohol sensor, eye blink sensor , accelerometer)which senses condition of the Car/vehicle and send it to server and if any action require then it will do that. While P.Singh [6] et al proposed an "Advanced Vehicle Security System" that uses GPS and GSM system to prevent theft and to determine the exact location of vehicle. The preventive measures like engine ignition cutoff, Fuel supply cutoff, electric shock system and paint spray system are installed in the vehicle which is controlled using user GSM Mobile. H.Afzal & Dr. V. D. Maheta[7] proposed a system which is designed and implemented in a real car that does not provide only car security feature but provides additional features such as unlocking and locking of the car, and switching ON and OFF the car engine remotely using smart phone .It uses GSM technology to implement different features in a car. To implement this system uses GSM modem SIM 908, GPS modem, 16f887 Microcontroller, Relays, Transistors. It eliminates problem of the people upon losing a car key by providing an alternative way to control the car using smart phone. While Hu Jian-ming et al[8] describes theft system using GSM and GPS module. The system is developed using single-chip C8051F120 and stolen automobile is detected by the use of vibration sensor. The system provides continuous contact with automobile owner through the GSM module, for the safety and reliability of automobile. In an another paper of I.M.Almomani[9]et al describes Ubiquitous GPS Vehicle Tracking and Management System which provides two types of end user applications, a web application and a mobile application. This system is useful for monitoring driving behavior of employees or parents monitoring their teen drivers. It provides tracking services includes acquiring the location and ground speed of a given vehicle in the current moment or on any previous date .It gives SMS alerts when the vehicle exceeds pre-defined limits. Tracking vehicles in this system utilizes a wide range of new technologies and communication networks including GPRS, GSM, the Internet or the World Wide Web and GPS.

III. Motivation

By considering all of these vehicle security system projects, an idea is came out that tracking is essential in critical situations like when vehicle is lost one is confused what to do, if something expensive valuables placed inside car & one wants to check it regularly, a new model is designed which overcomes these problems which provides tracking the location of vehicle along with an additional security to the vehicle by providing multiple security levels to accessing functionalities of car. In this model an extra facility is also provided to the vehicle which detects motion of object when intruder enters into locked car and trying to presume high valuables placed inside locked car. Thus we can intelligently protect our vehicle.

IV. Model of anti theft locking for stolen vehicle

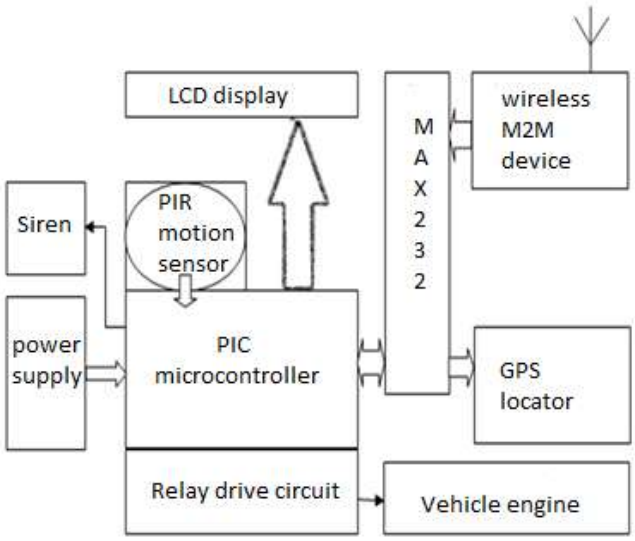

Fig: functional block diagram of vehicle tracking system

GPS based Vehicle Tracking Devices are one of the integral parts of every cars these days which helps to keep a continuous eye on your vehicle. The project proposes device that tracks every single move of your vehicle which you can observe from any corner of globe on demand. The above system consists of central microcontroller which takes care of every smart application that we are proposing here. This system comprises Global Positioning System (GPS) to get exact location of the vehicle and Wireless M2M device for end to end communication.

An individual PIR sensor used, detects changes in the amount of infrared radiation impinging upon it, that varies depending on the temperature and surface characteristics of the objects in front of the sensor field. When an object, such as a human, passes in front of the background, here body of the car , the temperature at that point in the sensor's field of view will rise from car body temperature to body temperature, and then back again. The sensor converts the emerging change in the incoming infrared radiation into a change in the output voltage, and this triggers the detection and turns on siren and also gives notification to owner of the car when intruder enters into the car when car is locked. Car is password protected so unauthenticated person will never have access to features of car. There are two levels of security one is mobile number so only authorized people will have access to car and every function is password protected. If someone hacks password and tries to access car functionalities firstly that will never operate with unauthorized mobile number also owner and police will get the mobile number that performed unauthorized access. At worst case if someone success to crack all levels of securities we can lock access of the car at any point of time from remote location.

V. Conclusion

This paper presents tracking system along with different security levels for accessing functionalities of car. It also provides an alert to owner and police when intruder enters into locked car. Thus it will give most well rounded protection.

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