**DESIGN AND IMPLEMENTATION OF A LOW COST SYSTEM**

**FOR VEHICLE SAFETY AND LOCATION CONTROL**

**ABSTRACT:**

Recently vehicle tracking system is getting vast popularity because of the rising number of the stolen vehicles. Vehicle theft is happening on parking and sometimes driving in unsecured places. This research work explores how to avoid this kind of stealing and provides more security to the vehicles. The implemented system contains single-board embedded system which is equipped with global system for mobile (GSM) and global positioning system (GPS) along with a microcontroller installed in the vehicle. The use of GSM and GPS technologies allows the system to track the object and provides the most up-to-date information about on-going trips. Moreover, RFID is done in the implemented system to ensure the driving of correct person and also locked the vehicle wheel when vehicle is OFF condition. The implemented system is very simple with greater security for vehicle anti-theft protection and low cost technique compared to others.

**EXISTING SYSTEM:**

In existing system the authors implemented a security system based on the car mechanical keys and which immobilizes the vehicle in case of a wrong combination key input inside the vehicle. The authors in define a vehicle security system based on inter vehicle communication. Also a number of recent anti-theft security systems has been based on RFID tags where RFID tags are used to control the entry into the vehicle and to alert owner in case of forceful entry. Also a combination of RFID tags with modern techniques such as Immobilize. A system based Smart Card to control the entry into the vehicle. The analysis of the related works shows that the security systems presented in the recent years has been focusing on improving the remote control feature of the vehicles. Also the RFID based security systems also found wide acceptance in recent years.

**PROPOSED SYSTEM:**

A vehicle tracking system combines the installation of an electronic device in a vehicle or fleet of vehicle to enable the owner or third party to track the vehicle’s location and collecting data in the process. Modern Vehicle Tracking system (VTS) is the technology used to determine the location of a vehicle using different methods like GSM and GPS module and other radio navigation systems operating through satellites and ground based stations. GSM and GPS based vehicle location and tracking system provides effective, real time mapping based vehicle location tracking. The system uses geographic position and time information from the Global Positioning Satellites. After emerging of GPS system developed by The United States government, first it was only for military purpose. After opening for public, it has been used widely. Al-Bayari and Sadoun discussed in details Automatic Vehicle Location (AVL) system that works under GIS environment. A complete FPGA implementation of the vehicle position tracking system using short message services (SMS) was reported by Hapsari. The design and implementation of a mobile object management system that makes use of the existing GSM networks and its extension GPRS for data communication was discussed by Xiaobo Fan et al.. Hsiao and Chang developed analytical model to analyze the optimal location update strategy with the objective of minimum total cost. Tamil et al. did similar works. Video surveillance and tracking of moving civilian vehicle done by Nishi Kanta Pati added new dimension to the development of the tracking systems.

In this research work, a system has been developed based on microcontroller that consists of a GPS and GSM. A two way communication process is achieved using a GSM modem. This study also comprises of a bio-metric protection system of the vehicle and RFID for driver of the vehicle is used to protect the vehicle from anti-theft. It is known that every person has a unique RFID. When driver gives his RFID verification before starting the vehicle, the system will be considered as fair condition. But when vehicle’s location is changed without RFID verification, the system will be taken as abnormal condition. Then the system will send an SMS to owner of the vehicle with an URL of ‘GOOGLE MAP’ having the coordinate of the current location of the vehicle. SMS will be then sent to the owner having updated location’s co-ordinate every interval of 10 seconds until doing the proper RFID verification.

**BLOCK DIAGRAM:**

**PIC16F877A**

**MICROCONTROLLER**

**POWER SUPPLY**

**GPRS MODULE**

**VIBRATION SENSOR**

**RFID**

**GPS MODULE**

**MEMS SENSOR**

**MOTOR1**

**MOTOR2**

**HARDWARE REQUIREMENTS:**

* PIC16F877A Microcontroller
* MEMS sensor
* Vibration sensor
* GPS module
* GSM module
* RFID
* Two motors

**SOFTWARE REQUIREMENTS:**

* MPLAB IDE Software
* Embedded c language