IMPLEMENTATION OF VEHICLE THEFT INTIMATION OVER SMS AND REMOTE CONTROL OF ITS ENGINE USING GSM AND GPS

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ABSTRACT - This project deals with the design & development of a theft control system for an automobile, which is being used to prevent/control the theft of a vehicle. The developed system makes use of an embedded system based on Global System for Mobile communication (GSM) technology. The designed & developed system is installed in the vehicle. An interfacing mobile is also connected to the microcontroller, which is in turn, connected to the engine. Once, the vehicle is being stolen, the information is being used by the vehicle owner for further processing. The information is passed onto the central processing insurance system which is in the form of the sms, the microcontroller unit reads the sms and sends it to the Global Positioning System (GPS) module and using the triangulation method, GPS 1. module feeds the exact location in the form of latitude and longitude to the user's mobile. By reading the signals received by the mobile, one can control the ignition of the engine; say to lock it or to stop the engine immediately. The main concept in this design is introducing the mobile communication into an embedded system. The designed unit is very simple & low cost. The entire designed unit is on a single chip.

Keywords- ESP32, GPS, GSM, IGNITION KEY, RELAY, MOTOR, LCD.

1. INTRODUCTION: In India according to vehicle theft, burglary census from 2013 the vehicle thefts are increasing nearly 8.47 % on an average, for this situation the technology to avoid the theft of the vehicle must also be increased, Microcontroller based real time vehicle theft detection and prevention system provide solution for this problem. The Global system of mobile (GSM) communication is a globally accepted standard for cellular communication. The vehicle owner uses Subscriber Identity Module (SIM) inserted with in his

mobile phone to send messages to GSM modem and GPS system which is a part of the vehicle theft prevention system that is attached to vehicle. This system is used for any vehicle like bus, bikes or cars and is cost effective.

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The main scope of this project is to send an alert message to the owner of the vehicle when the vehicle is stolen. This project includes a GSM modem, GPS system, microcontroller, buzzer and solenoid valve for fuel cut-off and a sensor to detect vehicle theft. When someone tries to steal the vehicle then microcontroller gets interrupted and orders GSM Modem to send the SMS, the owner receives a SMS that his car is being stolen and also the exact location of the vehicle through GPS system. With a message from owner mobile, the ignition system and fuel supply to the vehicle is cut off and the buzzer gets off.

2. LITERATURE SURVEY:

1. Kaushik et al [1] developed an anti-burglary vehicle security system, which uses thumb impression to start the vehicle. The authorized persons thumb impressions are stored in the database of the system. The vehicle is started if the finger print of the database is matched. If anyone accessed the vehicle by chance then the fuel tank will be emptied through the relay bolt fitted to the tank at the same time it gives alarm that the vehicle is theft so that the unauthorized person cannot refill the emptied fuel tank.

2. S S Pethakar et al [2] uses GSM, GPS & RFID security system for taxi like vehicles. For starting the vehicle the worker must use the RFID card in which the identification number is provided such that the identification numbers already preloaded in to the database of the system, If the number is matched, GPS and GSM comes in to play and sends SMS to the vehicle owner the location like latitude and longitude of the vehicle. If the owner detected theft by chance then he sends the SMS to the GSM such that it will lock the doors of the vehicle.

3. Nagaraja et al [3] used GSM system, Microcontroller, and relay switch for the ignition system. It theft is detected the Microcontroller activates the GSM system to send SMS to the owner, If the owner gives reply to the SMS then the relay switch is activated and it deactivate the ignition system. 4. Alkheder [4] uses GPS-GSM system that uses Google earth application. The system contains GPS module provided in the vehicle, this GPS module exchanges information with the GSM system to send SMS to the owner. After getting SMS to the owner, he can trace the latitude, longitude and speed of the vehicle using Google earth application.

5. Yelam Madan Rajendra, Jondhale Suyog Balasaheb, Kote Satyam Ravindra, Prof. Dahiphale P.D (2024) [1], The proposed system offers dual encompassing layers of security, password safeguarding for the vehicle and a remote ignition cut-off mechanism. Additionally, this system incorporates a feature International Journal of Research Publication and Reviews, Vol (5), Issue (5), May (2024), Page - 1188-1191 1189 for vehicle tracking through GPS technology. To notify the owner, GSM technology is utilized. In the event of an incorrect password entry, an alert message is dispatched to the owner. Furthermore, a message is sent when the vehicle's ignition system is activated. The owner has the ability to halt the engine by responding with an SMS.

6. Poorna Chandran R, Pragadeeshwaran K, Ranjith K, Mani sivaraja pandi A (2023) [2], In this research paper incorporates GSM, GPS, Arduino, and fingerprint verification. It utilizes cutting-edge technologies and security measures to effectively deter vehicle theft. The Arduino microcontroller effectively oversees the different system elements, such as GPS, GSM, and fingerprint verification. Tanmay Kadam, Prajwal Pawar, Shriraj Pokharkar, Suppriya Lohar (2023) [3], 1. The system is designed for detecting car theft and enabling remote engine locking. It is primarily utilized to pinpoint the car's location and immobilize the engine from any remote location. The Android phone serves as the controller, allowing us to manage the system via the Blynk app. Additionally, we can track the car's location using the GPS module. The engine can be shut off using the relay feature on the Blynk app.and rapid artificial intelligence.

3. PROPOSED METHODOLOGY:

In this proposed work, a novel method of vehicle tracking and locking system used to track the theft vehicle by using GPS and GSM technology. This system puts into sleeping mode while the vehicle handled by the owner or authorized person otherwise goes to active mode, the mode of operation changed by in person or remotely. If any interruption occurred in any side of the door, microcontroller is interrupted and SMS is sent to the microcontroller. The controller issues the message about the place of the vehicle to the car owner or authorized person. When send SMS to the controller, issues the control signals to the engine motor. Engine motor speeds are gradually decreases and come to the off place. After that all the doors locked. To open the door or restart the engine, authorized person needs to enter the passwords. In this method, tracking of vehicle place easy and doors locked automatically, thereby thief cannot get away from the car.

BLOCK DIAGRAM:



FIG 1: BLOCK DIAGRAM

ESP32 MICRO CONTROLLER:

The ESP32 detects suspicious activity(like the vehicle starting without proper authorization), it can alert the owner through SMS.

GPS(Global Positioning System):

The GPS module Constantly tracks the vehicle's location and sends that data to the ESP32.

GSM(Global System for Mobile Communication):

Allows the system to communicate with the vehicle owner's phone using SMS.So,the vehicle can send its location to the owner, or receive commands.

IGNITION KEY:

The ignition key tells the system when someone starts the vehicle.

MOTOR:

Represents the vehicle's engine. Controlled via the relay; it can be stopped remotely in case of theft.



RELAY:

Acts as a switch to control the motor (engine).Based on ESP32;s instructions, it can enable or disable the motor.

LCD:

Displays relevant information such as location coordinates, status messages,etc.,to the user(useful during testing or inside the vehicle).

FLOW CHART OF THE SYSTEM



PSEUDO CODE:

START IF CAR STARTED FORCEFULLY GSM,GPS,MODULE ACTIVATED SMS SENT TO OWNER MESSAGE BACK TO GSM MODULE TO STOP CAR CAR STOPPED ELSE DO NOTHING

FIG 3:PSEUDO CODE OF THE SYSTEM

HARDWARE IMPLEMENTATION:



FIG 4:PHYSICAL CONNECTION'S OF THE SYSTEM





FIG 6: Project Under Sky View

OUTPUT:



FIG 7: The Output of the project

RESULT:

When the owner kept the vehicle in parking place. Then any one accessed the vehicle it sends signal to the owner that it is being stolen. If he again sends the SMS to the vehicle to stop then the ignition cutoff, fuel supply become switched off and buzzer will give a loud alarm such that he will left the vehicle in the same location, with the help of reset SMS it will come to its original mode

CONCLUSION:

In this paper, we have proposed a novel method of vehicle tracking and locking systems used to track the theft vehicle by using GPS and GSM technology. This system puts into the sleeping mode vehicle handled by the owner or

authorized persons; otherwise goes to active mode. The mode of operations changed by persons or remotely. When the theft identified, the responsible people send SMS to the micro controller, then issue the control signals to stop the engine motor.

FUTURE SCOPE:

Automobiles with more passive involvement. Ideally, this project could be made more convenient and secure with the use of satellite modems instead of cell phones as tracking device as the system may fail when there is no network coverage. This design can be made more enhanced in future to support camera, handset phone / hands free, mobile data LCD display, web-based tracking software, also PC based stand-alone software. In our project the security system is based on embedded control which provides security against theft. The GSM modem provides information to the user on his request. The owner can access the position of the vehicle at any instant. He sends a message in order to lock the vehicle. The GPS receiver on the kit will locate the latitude and longitude of the vehicle using the satellite service. This is reliable and efficient system for providing security to the vehicles through GSM, GPS and serial communication. The maximum speed according to the standard is 20kbits/sec.

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