

Vehicle Security System Based on Location Tracking and Remote Locking

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Abstract— Currently almost of the public having an own vehicle, theft is happening on parking and sometimes driving in security places. The safe of vehicle is extremely essential for a public vehicles. Vehicle tracking and locking system install in the vehicle, to track the place and locking engine motor. The place of vehicle identified using Global Positioning System (GPS) and Global System Module (GSM). This systems constantly watch a moving vehicle and report the status on demand. When the theft identified, the responsible person send SMS to the Arduino then Arduino issues control signal to stop the engine motor. Authorized person need to send SMS to Arduino to restart the vehicle. This is more secured, reliable and low cost security system.

Key words: Arduino UNO, GSM Modem, GPS Module, Relay, Engine Ignition

I. INTRODUCTION

At the present time, the rate of crime is increasing rapidly because it is kind of evident from the actual fact that thefts became a matter of routine. Particularly these vehicles may incur use losses on the part of the amount invested on these vehicles. To overcome this problem, there are numerous technologies are available in the market such as GPS & GSM system. GSM & GPS technologies are employed to make vehicle theft almost impossible. Global system of mobile communication is a globally accepted standard for digital cellular communication.

Owner of the vehicle uses subscriber identity module (SIM) inserted within his cell phone to send message to GSM modem which is a part of vehicle theft prevention system that is attached to vehicle. From the mobile operator perspective, a GSM modem looks just like a mobile phone. GPS technology A GSM modem is specialized type of modem which accepts a SIM card, and operates over a subscription to a mobile operator, just like a mobile phone is used for tracking vehicles. The global positioning system(GPS) is a space-based navigation system that provide location and time information in all weather conditions, anywhere or near the Earth where there is an un obstruct line of site to four or more GPS satellite.

The development of satellite communication technology has made it easy to identify the vehicle location. The proposed system integrates both GSM & GPS technologies. It provides real time information such as location of user in moving vehicles in a concise and easy-to-read format. Currently GPS vehicle tracking ensures user's safety while travelling. This vehicle theft prevention and tracking system is used to client's vehicle as a theft prevention and rescue device.

A. Aim of Project

The main objective of this project is to find out exact location of the stolen vehicle by thefts and inform the concern authority through an SMS. This GSM based vehicle theft control system retrieves the exact location of vehicle in terms of longitude and latitude that data is fed to the Arduino that is interface to GSM modem. The Arduino retrieves the exact location details from the GPS send as a SMS to the concern authority over GSM modem on periodical intervals which is set by the user. This project can be develop by making an arrangement to stop the ignition of vehicle by the owner remotely by sending an SMS in theft situation. The owner can lock or unlock his/her vehicle with the help of SMS. The complete system is designed taking in consideration the low range vehicle provide extreme security.

Vehicle tracking system is one of the biggest technological advancement to track the activities of vehicle. The vehicle owners are able to track their vehicles on real time basis .Due to real-time tracking facility, vehicle tracking systems are becoming increasingly popular among owners of expensive vehicle.

B. Methodology

This idea of "Vehicle Security System Based on Location Tracking and Remote Locking" is intelligent enough to alert your mobile phone during attempted vehicle theft. This GPS technology enables you to track your vehicle location using mobile phone. GPS tracker will communicate with your mobile phone via SMS as per your wish. Two wheeler security system empowers you to switch off bike ignition during emergency. Bike security system detects unauthorized ignition and moment. GPS vehicle tracking system can be installed in all types of vehicle irrespective of model and make. Bike location identification is track using the bike GPS tracker and alerted via SMS if your bike is stolen, you will get an SMS alert and u can switch off your bike engine just by sending SMS to your bike's security system. When user find that his vehicle is stolen he will send and alert SMS to lock system of vehicle .system will decode that SMS and activate relay which will lock the engine and vehicle will be stopped, and the current location of the vehicle will be send to the user due to GPS activation. After that the system will wait for an unlock SMS from the user whenever the SMS is received it will decode that SMS deactivate the relay and thereby activate the vehicle engine.

II. BLOCK DIAGRAM

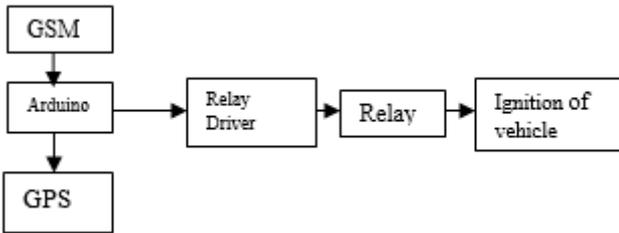


Fig. 1: Block Diagram for Vehicle Security System Based on Location Tracking and Remote Locking

A. Flowchart

Flowchart of this project is as given below on behalf of process going in a manner

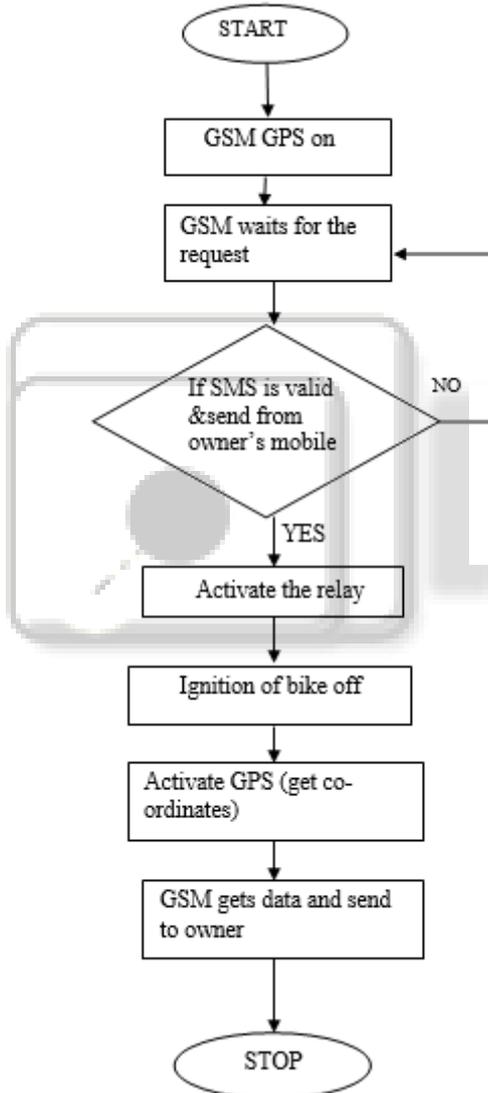


Fig. 2: Flowchart

1) Arduino UNO

The Arduino UNO is a microcontroller board based on The ATmega328 (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header, and a reset button. It contains everything needed to support microcontroller; simply connect it to a computer with USB cable or power it with a AC to Dc adapter or battery to get started.

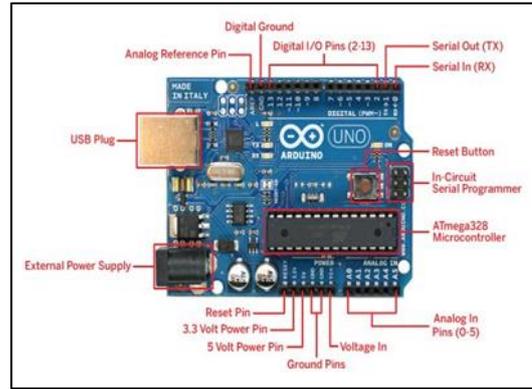


Fig. 3: Arduino UNO

2) GSM Modem

The GSM modem is used to send and receive the message to and from the owner. It is a specialized type of modem which accepts a SIM card, and operates over a subscription over a mobile operator, just like a mobile phone. From the mobile operator perspective, a GSM modem looks just like a mobile phone.



Fig. 4: GSM modem

3) GPS Receiver Module

GPS-330R(USB interface) is a compact all in one GPS module solution intended for a board range of Original Equipment Manufacturer (OEM) products, where fast and easy system integration and minimal development risk is required.

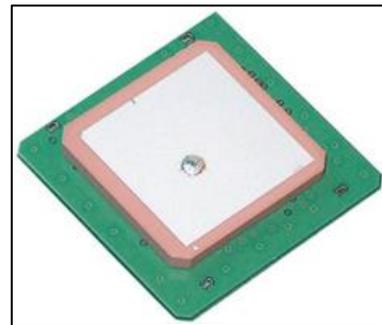


Fig. 5: GPS Receiver Module

III. RESULT

When user find that his vehicle is stolen he will send and alert SMS to lock system of vehicle. System will decode that SMS and activate relay which will lock the engine and vehicle will be stopped, and the current location of the vehicle will be send to the user due to GPS activation. After that the system will wait for an unlock SMS from the user whenever the SMS is received it will decode that SMS deactivate the relay and

thereby activate the vehicle engine and bike will get started again.

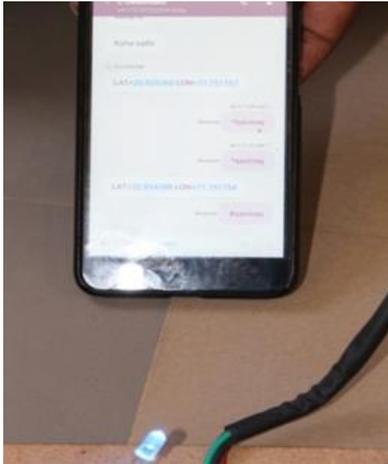


Fig. 6: SMS received on owner's mobile providing exact location in terms of latitude and longitude



Fig. 7: security system to be installed in vehicle

IV. CONCLUSION

In this paper GPS theft vehicle tracking and identification control system modern technologies such as GSM and GPS are used in order to know the exact location of theft vehicle alert the user so that the user can stop the vehicle by sending an SMS. The user can easily identify the location of theft vehicle which in turns saves the money and time .Further, by providing proper control signal even the direction of vehicle, steering moment and fuel injection, acceleration and starting of the motor can be easily controlled by user and this process can be implemented effectively

V. FUTURE SCOPE

- 1) Presently only SMS features are available, we can include the call feature for ease of operation.
- 2) We can also stop the engine using android application.
- 3) Microphones could be interface to the GPS/GSM module so that during theft activity voice call could be established with the owner.

VI. APPLICATIONS

- 1) GPS vehicle theft detection can be use in transportation vehicle of companies schools, colleges and industries.
- 2) This project can be used in all bikes and even in cars.

- 3) Microphones could be interface to the GPS GSM module so that during theft activity voice call could be established with the owner.
- 4) Ambulance and Ems fleets can be monitored and send quickly to the critical patient thus providing timely medical facility and saving lives.

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