Vehicle Locating using GPS and GSM

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Abstract

Proposed design is a remote location finding using SMS. We can get the GPS coordinates of the vehicle by sending an SMS to the mobile number present in this module. It contains an Arduino Board, GPS module and a GSM module. The Arduino waits for an SMS from the car owner to be received on the GSM module, when the SMS arrives Arduino fetches the GPS coordinates from the GPS module and then sends a SMS back to the car owner using the GSM module. This can be helpful in case of theft, unauthorized use or tracking of the vehicle using the GPS coordinates.

Keywords: GSM, GPS

I. INTRODUCTION

Despite tall claims made by law-enforcement agencies about their success in controlling car thefts, information tabled in the Lok Sabha shows that as many as 1.65 lakh vehicles were stolen in a single year—2013. Uttar Pradesh is one of leading the states with the highest number of vehicle theft cases. Maharashtra comes second.

Cars get stolen all the time, but if you want to track yours and make sure you can always find it, The system uses an Arduino Uno, a GSM module, a GPS module, and a few other smaller parts. The idea here is pretty simple: you hide the Arduino somewhere in the car, connect it up to the battery, and then it connects to GPS. When you want to find your car, send a text message and you'll get the coordinates sent back to you. It's a pretty cheap system that's easy to hide so anyone won't think to remove it.

II. METHODOLOGY

Arduino waits for a trigger from a special SMS from the owner of the car, once triggered fetches the GPS coordinates and sends the GPS coordinates in the form of SMS using the GSM module.

III. HARDWARE USED

A. Arduino Uno

Arduino is an open-source physical computing platform based on a simple I/O board and a development environment that implements the Processing/Wiring language. Arduino can be used to develop stand-alone interactive objects or can be connected to software on your computer. The open-source IDE can be downloaded for free. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a DC adapter or battery to get started.
B. SIM800 – GSM Module

GSM is a global system for mobile communication and is used to send messages to pre-programmed numbers. The modulation technique used is GSMK. The protocol used by GSM modem for setup and control is based on the Hayes AT-Command set. AT is the abbreviation of Attention. GSM AT commands are extension commands. For example, +CMGS (Send SMS message), +CMGL (List SMS messages), and +CMGR (Read SMS messages) are extended commands. The main objective of this application is whenever an accident occurs, it will send a message and the position of the vehicle, which is accessed using GPS, to a pre-programmed number.

C. GPS Module

The Global Positioning Service is a space-age navigational system that can pinpoint your position anywhere on the globe, usually within a few yards or meters. GPS uses a constellation of 24 satellites in precise orbits approximately 12,000 miles above the Earth. The satellites transmit data via high-frequency radio waves back to Earth. GPS uses satellite ranging to triangulate your position. In other words, the GPS unit simply measures the travel time of the signals transmitted from the satellites, then multiplies them by the speed of light to determine exactly how far the unit is from every satellite’s sampling.

IV. RESULTS

The proposed design is completely automated and hidden in the car. It is used in locating the car during a theft, or can be used to monitor the locations the car is travelling. This system can also be used by an Enterprise, or Company to find the whereabouts of the company vehicle. Overall, this system provides automated location tracking of the vehicle, and is pretty much accurate because of the location to be tracked is tracked using GPS coordinates.
V. CONCLUSION

The system is a simple design. It is reliable also. The primary application of this design is to detect the location and alert the vehicle owner with location coordinates in the form of an SMS.

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