

Implementation of novel vehicle theft detection using GPS, GSM using Raspberry pi

Revathi Donga¹ & S.SV.Kiranmayi²

¹ M.Tech Student, Dept. of ECE, Akula Sree Ramulu Institute of Technology, Andhra Pradesh, India

² Assistant Professor, Dept. of ECE, Akula Sree Ramulu Institute of Technology, Andhra Pradesh, India

ABSTRACT: *The main determination of this project is to prevent vehicle theft where its functionality is achieved by detecting vehicle status in theft mode and by sending an SMS which is generated automatically. This SMS is then sent to the owner of the vehicle then the owner can send back the SMS in order to disable the ignition of the vehicle. Thus in this way crimes can be reduced to a great extent as vehicles today are being stolen in large number. Also when a person tries to steal the vehicle, the microcontroller is interrupted and the command is sent to the GSM modem to send SMS. On the receipt of the message, the owner sends back the SMS to the GSM modem in order to stop the engine. This GSM modem is interfaced to the RaspberryPi3. As the RaspberryPi on the receipt of the message uses a mechanism that helps to stop the engine. Motor is being used in this project in order to indicate vehicle ON/OFF state. In this project we are using a GPS system that helps to find out the exact position of the vehicle with the help of its latitude and longitude which then can be sent to the owner of the vehicle via SMS. This data can be then entered by the owner on Google map to find out the exact location of the vehicle.*

IndexTerms: ARM11

I. INTRODUCTION

Thousands of automobiles are lost each year in the state and thousands of automobiles are also recovered by the Police from when they catch the culprits or even when the culprits leave the vehicles they have stolen after they have used them. The usual problem with the recovered vehicles reaching the actual owners is that the vehicle need not be found in the same jurisdiction as one in which the complaint was launched. So, when a vehicle is recovered, usually the Police try to trace out the actual owner of the vehicle from the RTO based on the license and chassis number. But this is a lengthy and time consuming process for the RTO to trace out the actual owners from the

records and inform back to the Police stations. Because of these delays, vehicles that are recovered all long time to actually reach their owners. Despite the various technologies that have been introduced in recent years to detect car thefts and tracking it, It was reported that as many as cars were stolen yearly in the world. According to NCIC, in 2006, 1,192,809 motor vehicles were reported stolen, the losses were 7.9\$ billion. Several security and tracking systems are designed to assist corporations with large number of vehicles and several usage purposes. A fleet management system can minimize the cost and effort of employees to finish road assignments within a minimal time. [1][2] This project consists of a android based remote vehicle disengaging system will provide effective, real time vehicle location, mapping and reporting this information value and add by improving the level of service provided. A vehicle tracking system will inform where your vehicle is and where it has been, how long it has been. The system uses geographic position and time information from the [8] Global Positioning Satellites. The system has an "On-Board Module" which resides in the vehicle to be tracked and a "Base Station" that monitors data from the various vehicles. In today's world as the population increases day by day the numbers of vehicles also increases on the roads and highways. This result in more accident that interns leads to the traffic jams and public get help instantaneously. This module provides information about the accident to the hospital and police station. As a result sudden help level of supervision and management for cargo transport vehicles, especially trucks carrying coal it is important to develop transport vehicles remote monitoring module [2].

A server computer at the (remote) monitoring station, that is continuously waiting for data from the system, should record the actions of the vehicle into a database. This contains the information regarding Vehicle velocity, position, identity and temperature in two fashions. The information given to monitoring station is in continuous manner and when the accident occurs. The development of vehicular design brings public many convenience in life but also brings many problems at the same time, for

example, traffic congestion, difficulty in monitoring dispersive vehicle, theft and other series of problems[4]. We are intended to made this monitoring wireless using RASPBERRY PI hardware platform ported with real time operating system μ C/OS-Vehicle is the primary spot where security begins. In nowadays, auto logo robberies are expanding. In India, logo of vehicle is stolen at regular intervals a disturbing insights. Henceforth we must need vehicles to furnish with the most recent pattern of advancements and measures to make it a safe from criminal. The security framework has been improved in all fields in the general public. Car security has likewise accomplished numerous fast changes, yet the expenses of all the security redesigns are so high and it is not moderate for all the vehicle proprietors. This venture is meant to give the best security answer for auto logo at reasonable expense. Here, we make an endeavor to add to a framework in light of raspberry pi-2 innovation.

II. RELATED WORK

1. Finger Vein Recognition Based Driver Authentication and Alertness System Using GSM. In this paper author suggested that with the assistance of biometric framework we can secure our car. We need to begin the motor by squeezing their finger in the biometric framework. There are two conceivable outcomes that finger vein match or neglect to coordinate. In the event that the finger vein is match vehicles begin working appropriately. On the off chance that it neglects to match it cautions the auto proprietor by sending the message through GSM system. This framework additionally alarms about the driver liquor admission and sleepiness. This framework depends on the Raspberry pi innovation.

2. Smart Surveillance Monitoring System Using Raspberry PI and PIR Sensor. In this paper author recommended that keen observation using so as to check framework is actualized Raspberry pi and PIR sensor. There is infrared sensor to identify the vicinity of number of persons in the room. Camera is naturally turned on when the vicinity of individual is distinguished. At that point the data is caught and sends it to the advanced mobile phone of approved individual through 3G Dongle.

3. Smart Automobile Security System Using Lab view. This paper manages the outline of the framework, which will give the arrangement on the best way to secure the vehicle with GSM innovation. The framework is utilized to control the outlet of the fuel injector by method for electronic solenoid valve, which will be controlled by the microcontroller through the driver circuit. The secret key is given to the approved individual of the vehicle. The shut solenoid opens and the vehicle begins unless and until secret word will coordinate. In the event that it

neglects to coordinate, the framework will send message to the approved individual by means of GSM modem. A caution is likewise joined to the framework. LABVIEW stage can reproduce the framework.

III. PROPOSED FRAMEWORK

Following Fig.1 show the system architecture block diagram including the Raspberry Pi processor based development board, MEMS sensor and motor controlling Door (motor driving card), LCD and related hardware.

In this project that when somebody is attempting to take the motorbike it will stop the ignition of vehicle and caution the proprietor with alert. It is exceptionally troublesome for the criminal to take the vehicle by utilizing this gadget. Sensors are set on the vehicular body. It will stop the ignition of the vehicle when somebody touches it and when any one is attempting to touches for more than 3 times. Unless and until we deactivate the gadget with remote the ignition of vehicle won't begin. Also it gives the two way communication between the authorize person and installed system. Higher level of car security features is provided by this system. When intrusion is detected this system will send the warning message to the car owner. As soon as the car owner receives the message he has authority to control any car feature through his phone. This system is also able to detect the location of the car by using GPS positioning concept. It consists of a productive car security framework is executed for hostile to robbery utilizing an installed framework involved with a Global Positioning System (GPS) and a Global System of Mobile (GSM). By utilizing Google Earth, The customer connects through this framework with vehicles and decides their present areas and status. The position of focused vehicles can be followed by client on Google Earth.

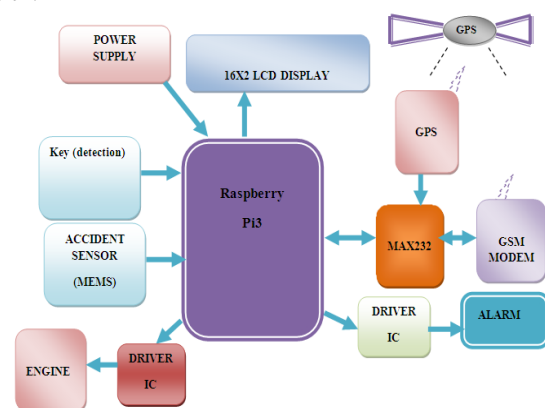


Fig.1 Functional architecture

RASPBERRY PI: The Broadcom SoC used in the Raspberry Pi is equivalent to a chip used in an old smart phone (Android or iPhone). While operating at 700 MHz by default, the Raspberry Pi provides a real world

performance roughly equivalent to the 0.041 GFLOPS. On the CPU level the performance is similar to a 300 MHz Pentium II of 1997-1999. The GPU provides 1 Gpixel/s or 1.5 of graphics processing or 24 GFLOPS of general purpose computing performance. The graphics capabilities of the Raspberry Pi are roughly equivalent to the level of performance of the Xbox of 2001. The Raspberry Pi chip, operating at 700 MHz by default, will not become hot enough to need a heat sink or special cooling. The SoC is stacked underneath the RAM chip, so only its edge is visible. On the older beta model B boards, 128 MB was allocated by default to the GPU, leaving 128 MB for the CPU. On the first 256 MB release model B (and Model A), three different splits were possible. The default split was 192 MB (CPU RAM), which should be sufficient for standalone 1080p video decoding, or for simple 3D, but probably not for both together. 224 MB was for Linux only, with just a 1080p frame buffer, and was likely to fail for any video or 3D. 128 MB was for heavy 3D, possibly also with video decoding (e.g. XBMC).

GSM MODEM SECTION: This section consists of a GSM modem. The modem will communicate with microcontroller using serial communication. The modem is interfaced to microcontroller using MAX 232, a serial driver.

GPS MODULE: Global Position System (GPS) is a space-based satellite navigation that provides location and time information in all weather conditions, anywhere on or near the Earth. The GPS receiver tracks 51 satellites simultaneously. The module is mounted on the PCB along with the 3.3V low drop voltage regulator, transmit, receive and power indication LEDs, Schmitt trigger based buffer for 5V to 3.3V logic level conversion. This GPS receiver gives data output in standard National marine electronics association (NMEA) format. The GPS receiver gives -157dBm.

IV. RESULTS AND DISCUSSIONS

In this project, GPS modem get the signals from the satellites and those are given to the microcontroller. The signals may be in the form of the coordinates; these are represented in form of the latitudes, longitudes and altitudes. Position (longitude, latitude) identity and theft to the monitoring station and to the user/owners mobile that should help them to get help if accident or the theft. We are intended to make this monitoring wireless using RASPBERRY PI hardware platform. In today's world thefts are increasing day by day almost.

V. CONCLUSION

Thus we have introducing car anti-theft system. This system is capable of protecting the car logo by alerting the car owner. The proposed system plays an important role in real time tracking and monitoring of vehicle by updating vehicle real time information on the owner side after certain interval of time in order to monitored vehicle continuously through GPS. Also ADXL335 Accelerometer senses the collision/rash drive of the vehicle and sends this information in real time to a owner.

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BIO DATA**Author 1**

Revathi Donga currently pursuing M.Tech Embedded systems in Dept. of ECE, Akula Sree Ramulu Institute of Technology, Andhra Pradesh, India.

Co-Author-1

S.SV.Kiranmayi completed her M.Tech. Presently working as Assistant professor in Akula Sree Ramulu Institute of Technology, Andhra Pradesh, India.