

Anti-Theft Protection of Vehicle by Cloud & GPS with Fingerprint Verification

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Abstract-As of late vehicle following framework is getting tremendous ubiquity as a result of the rising number of the stolen vehicles. Vehicle robbery is going on stopping and now and again driving in unsecured spots. This examination work investigates how to maintain a strategic distance from this sort of taking and gives greater security to the vehicles. The executed framework contains single-board installed framework which is furnished with worldwide framework for versatile and worldwide situating framework (GPS) alongside a microcontroller introduced in the vehicle. The utilization of and GPS innovations enables the framework to track the protest and gives the most up-to-date data about on-going treks. In addition, unique finger impression check is done in the actualized framework to guarantee the driving of right individual. The executed framework is exceptionally straightforward with more noteworthy security for vehicle hostile to burglary insurance and minimal effort system contrasted with others.

I. INTRODUCTION

A vehicle following framework consolidates the establishment of an electronic gadget in a vehicle or armada of vehicle to empower the proprietor or outsider to track the vehicle's area and gathering information all the while. Present day Vehicle Tracking framework (VTS) is the innovation used to decide the area of a vehicle utilizing distinctive techniques like GPS module and other radio route frameworks working through satellites and ground based stations . GPS based vehicle area and following framework gives viable, ongoing mapping based vehicle area following. The framework utilizes geographic position and time data from the Global Situating Satellites .

In the wake of rising of GPS framework created by The United States government , first it was just for military reason. Subsequent to opening for open, it has been utilized generally. Al-Bayari furthermore, Sadoun examined in points of interest Automatic Vehicle Location (AVL) framework that works under GIS condition . A finish FPGA usage of the vehicle position following framework utilizing short message administrations (SMS) was announced by Hapsari . The plan and usage of a portable question administration framework that makes utilization of the existing systems and its expansion GPRS

for information correspondence was talked about by Xiaobo Fan et al.. Hsiao also, Chang created investigative model to examine the ideal area refresh procedure with the target of least aggregate cost. Tamiletal. did comparable works. Video reconnaissance what's more, following of moving regular citizen vehicle done by Nishi Kanta Pati added new measurement to the advancement of the following frameworks .

In this exploration work, a framework has been created in view of microcontroller that comprises of a GPS and A two way correspondence process is accomplished utilizing a modem. This think about additionally involves a bio-metric assurance arrangement of the vehicle and unique finger impression confirmation of the driver of the vehicle is utilized to shield the vehicle from against burglary. Unique mark acknowledgment or unique mark validation can be characterized as a technique for checking a match between two human fingerprints in a computerized conduct. Fingerprints are one of numerous structures of biometrics used to distinguish people and check their character. It is realized that each individual has an exceptional unique mark picture. At the point when driver gives his confirmed unique mark picture before beginning the vehicle, the framework will be considered as reasonable condition. In any case, when vehicle's area is changed without unique mark check, the framework will be taken as unusual condition. At that point the framework will send a SMS to proprietor of the vehicle with a URL of 'GOOGLE MAP' having the arrange of the present area of the vehicle. SMS will be at that point sent to the proprietor having refreshed area's co-ordinate each interim of 10 seconds until doing the best possible unique finger impression check. Also, vehicle's proprietor can get the vehicle's area whenever by SMS subsequent to making a 'missed call'.²

II. METHODOLOGY

A unique mark sensor is likewise utilized for bio-metric check. There are numerous unique mark sensor advances i.e. optical, capacitive, warm, RF, ultrasonic, piezo-electric, piezoresistive, MEMS. Optical sensor innovation has been utilized here. Caught finger picture is carefully prepared and put away in memory as a format. The unique

mark of Vehicle's driver is taken by this gadget before the beginning of vehicle. Unique mark coordinating calculation is utilized to contrast and beforehand enlisted picture for checking confirmation. Among relationship based coordinating, edge highlight based coordinating and details based coordinating, last one is famous as it is proficient also, precise. On the off chance that vehicle's area is changed without unique finger impression confirmation, the framework will think about that something is turning out badly. At that point the GPS motor will gather the co-ordinate of that place and send SMS to the PDA number of the proprietor of the vehicle.

As the information getting from GPS has some blunder due to delay in ionosphere, shady sky, multi way blurring happened by tall trees, structures or mountains, framework can recognize it as irregular circumstance if picked up co-ordinate has somewhat changed because of its blunder. Flat precision is regularly 2-15 meters in open sky. It is in excess of 50 meters inside a building (i.e. carport and so on.). So we have made a nonexistent geo-fence of sweep of 100meters. At the point when the area of that vehicle will be discovered of that geo-fence without legitimate unique mark check then the framework will make fundamental strides. Fig. 2 demonstrates the approach of sending SMS with appropriate security check.

From Fig. 1, it is seen that if a stopped vehicle moves from the geo-fence with appropriate unique finger impression confirmation, at that point no SMS will be sent. Be that as it may, if a stopped vehicle moves from the geofence made without appropriate unique mark check, at that point there will be a SMS sent to the proprietor's mobile phone with a 'GOOGLE MAP' connect containing suitable co-ordinate of that area. On the off chance that to stop a vehicle, one needs to reset the framework. At that point the framework makes new geo-fence centring that new place.

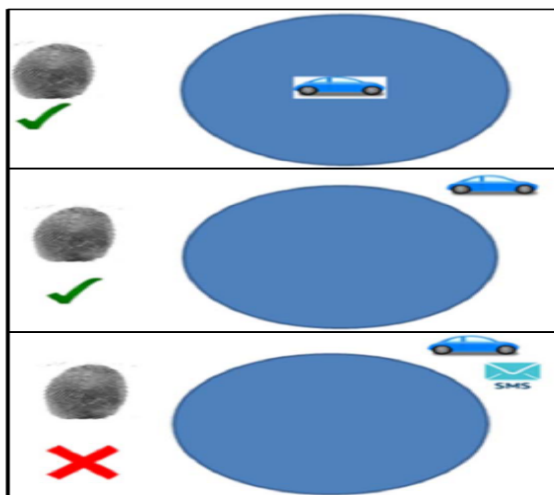


Fig. 1 Security check and sending SMS. area, we exhibit After introduction of GPS beneficiary, it gets co-ordinate (scope, longitude and height), time and a few others data in NMEA arrange . This data is being refreshed in

consistently. In the wake of beginning, microcontroller gets first co-ordinate from GPS recipient. Following refreshed co-ordinate, it checks whether the separation of the refreshed area of co-ordinate is more noteworthy than 100 m or not. On the off chance that are the underlying and last longitude and are the beginning and last scope, at that point from Haversine recipe we can get separate, D.

Proprietor of the vehicle can likewise get the area of the vehicle whenever by giving a 'missed call'. Stream outline of the entirety technique is portrayed in Fig. 2

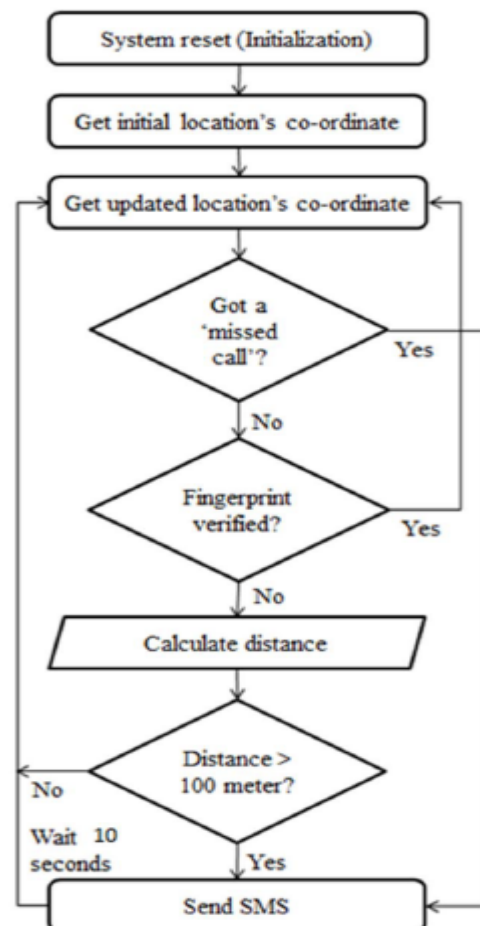


Fig. 2 Flow chart of security check and sending SMS.

III. SYSTEM DESIGN

In this exploration work, Arduino Mega2560 microcontroller is utilized for interfacing to different equipment peripherals. An Arduino mega2560 microcontroller is interfaced to modem and GPS recipient. A modem is utilized to send the position of the vehicle from a remote place. SIM908 is utilized as a part of this examination. GPS motors are incorporated into one gadget. GT-511C1R is utilized as unique mark gadget.

Fig. 3 demonstrates the square graph of vehicle following framework with Fingerprint check. GPS motors have isolate radio wire. GPS and unique mark gadgets are associated by means of microcontroller.

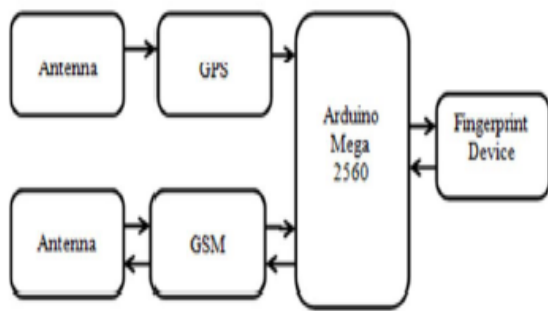


Fig.3 Block diagram of vehicle tracking system with fingerprint verification.

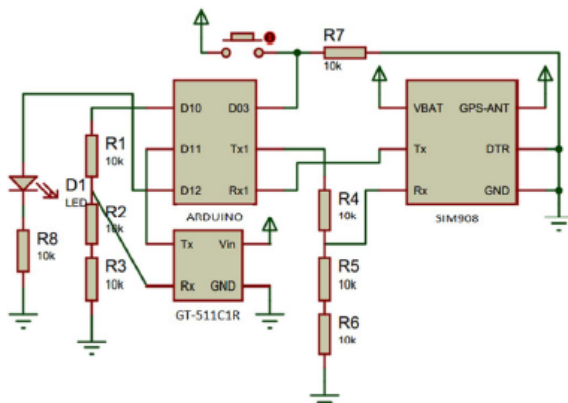


Fig. 4 Schematic diagram of in-vehicle tracking unit.

IV. SYSTEM DESCRIPTION

In the vehicle, following unit is introduced which incorporates Arduino-2560, SIM908 and GT-511C1R. SIM908 and GT- 511C1R gadget are associated with the Arduino through serial COM port. Appropriate voltage level transformation is finished by resistor divider. Fig. 4 demonstrates the schematic chart of in-vehicle following unit. Different parts of the attaching unit are portrayed beneath.

A. Arduino MEGA-2560 Microcontroller

Arduino MEGA-2560 is effective microcontroller board in light of ATmega2560. It has 54 computerized input/output pins (of which 14 can be utilized as PWM yields), 16 simple inputs, 4 UARTs (equipment serial ports. It has 256 KB of glimmer memory, 8 KB of SRAM and 4 KB of EEPROM. Fig. 5 appears the Arduino MEGA Board.

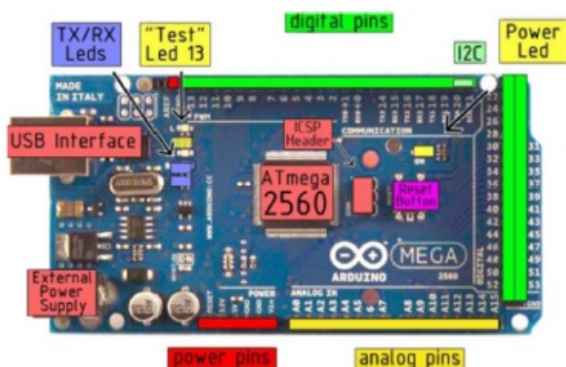


Fig. 6 Full specification of Arduino MEGA 2560.

B. GPS/GPRS/(SIM908)

SIM908 has Quad-band GPRS/GSM motor. It takes a shot at the frequencies of 900 MHz, 1800 MHz, 850 MHz and 1900 MHz .GPS innovation for satellite route is likewise bolstered in this gadget. As both of the GPS and GSM innovation is upheld by it, any intentionally following is conceivable at anyplace and whenever with flag scope.



Fig.6 SIM908 module

D. Fingerprint Module (GT-511C1R)

GT-511C1R has an on-board optical sensor and 32-bit CPU that does perusing and distinguishing the fingerprints with sending the relating order. The module can just save to 20 distinct fingerprints and is just equipped for 30° unique mark acknowledgment. The optical unique finger impression calculation utilizes 240x216 pixel picture for its information. It catches crude picture from the sensor also, changes over it to 240x216images for the unique mark calculation. Not squeezing of finger comes back with non-recognize. Fig. 7 demonstrates the unique finger impression scanner (GT-511C1R).



Fig. 7 Fingerprint module (GT-511C1R).

V. CONCLUSION

In this examination work, vehicle area can be followed and counteractive action of it from burglary with unique mark confirmation is finished with least cost in semi constant mode. Unique finger impression innovation is exceptionally compelling security check innovation and furthermore in bring down cost to abstain from taking of vehicles. In future, cell phone (i.e. android, windows)

application can be made and interfacing a devoted PDA introduced in vehicle with unique finger impression gadget should be possible to get ongoing vehicle following with between dynamic mapping.

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