Anti-Theft Locking For Stolen Vehicles and Canny Password Protected Access to Personalized Vehicles

Asmita S. Udagave, S. S. Sankpal

*Abstract***:** *The concern of car thieving has exaggerated staggeringly, largely at knifepoint or automotive parks. it's essential would like of the event of a vehicle thieving alert and placement identification system for vehicle homeowners to confirm thieving interference and speedy recovery tries in things wherever a vehicle is missing, taken or driven by any unauthorized person. The thieving alert feature makes use of a trending GSM application that is developed and put in during a transportable device that is embedded within the vehicle to speak with the vehicle owner's transportable. The communication is established via SMS. The communications established include; (i) causation associate degree SMS alert from put in GSM to vehicle owner's transportable once the system activates. (ii)Sending associate degree SMS from the vehicle owner's transportable to lock and unlock the vehicle. A supplementary feature of entrant detection in bolted automotive makes use of PIR device that detects wrong entry of entrant in bolted automotive and inform regarding it to owner and police*

*Keywords***:** *GPS; GSM; PIC16F877A; PIR motion sensor.*

I. INTRODUCTION

Insecurity is one in every of the main provocations that the whole world is facing currently, every country having their curious security problems. The rate in each a part of the society currently has become a terrific issue specified vehicles ar currently used for accomplishing criminal activities over before. the difficulty of car larceny has exaggerated enormously, principally at muzzle or automotive parks.In view of those, there's a requirement for security of purloined vehicles in most refined manner that isn't vital. So keeping in sight, the planned system can build a trial to style & develop a straightforward & low price vehicle larceny system employing a appropriate constitutional microcontroller. Here GPS technology is employed to seek out the precise location of the vehicle and GSM is employed to send the message to the owner of the vehicle. At any condition if the vehicle seems to be theft, the owner simply has to send a secret SMS to that vehicle, such that a vehicle will be stopped and all the doors will be closed thus the theft will be trapped in locked car. And owner of car can deactivate the ignition of car from remote location. Sometimes we need to travel with the valuables like GPS holders, laptop, jewelry bags or any important assets .

Thieves may presumes such a high valuable items placed inside a car. For such problems one supplementary feature is included in the proposed system that is the system provides an alert signal whenever unauthorized access will takes place inside locked car. Then system will give an alert signal and sends an alert message to owner of the car and police.

II. LITERATURE SURVEY

Real-time trailing and management of vehicles has been a field of interest for several analysisers and tons of research work has been in hot water trailing system. Of late the varied anti-theft modules like hand wheel secured instrumentation, network trailing system and ancient electronic alarm area unit developed beside shopper identification and real time performance observance. Variety of developments has taken place in anti-theft systems for vehicles and a few of the relevant ones area unit as follows:
N.Pal & R.Mandliya [3] have represented trailing system supported GPS and GSM technology. It conjointly counts the space traveled b/w 2 stations. The system permits to hide the target anytime and anywhere in any climate. This technique uses GPS and GSM technologies SIM three hundred tri- band GSM/GPRS engine for trailing purpose. Shruthi.K. et al [4] have provided vehicle trailing system that uses the worldwide Positioning System (GPS) and international System for Mobile Communication (GSM) technologies and a Smartphone application for trailing of any movable plus. Victimization good phone application the user will track the taken vehicle with a click of a button. It uses GSM Module- SIMCOM SIM900 V1.0 ITEAD Studio, GPS Receiver- GPS-01 gospel Technetronics Cirocommextra, Web Camera. Extra options were enclosed for capturing image and causation mail. G.Deshmukh & Dr. S.P. Metkar[5] have mentioned "RTOS Based Vehicle Tracking System" that is ready to get a vehicle's GPS coordinate and transmit it victimization the GSM electronic equipment to the server victimization GPRS property. RTOS replaces VTS system that is helpful for time settled behavior and multi Tasking. Multiple tasks area unit it sends GPS location of auto to server & Collect all detectors knowledge (Temperature sensor, alcohol detector, nictation detector, measuring instrument) that senses condition of the Car/vehicle and send it to server and if any action need then it'll do this. P.Singh et al [6] have projected associate degree "Advanced Vehicle Security System" style associate degree advance vehicle security system that uses GPS and GSM

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system to forestall thieving and to work out the precise location of auto. The preventive measures like engine ignition cutoff, Fuel offer cutoff, electrical shock system and paint spray system area unit put in within the vehicle that is controlled victimization user GSM Mobile. Zi Li et al [10] in a paper "Location Privacy Violation via GPS-agnostic Smart Phone Car Tracking" demonstrate that an assailant continues to be able to track someone by victimization the embedded meter detector in victim's good phone, even once the GPS module is disabled all the time. During this paper a replacement attack that uses a wise phone to trace a automotive while not requesting access to GPS module on this phone. The assailant initial detects the angles of automotive turns utilizing the dynamic magnitude of compass readings, which might be collected from a meter detector put in on the good phone, and so compares automotive flip angles with road intersection angles to search out the trail traversed by a target driver. R. Gao & M. Zhao [11] have projected VeTrack, a true time vehicle trailing system that utilizes mechanical phenomenon sensors within the Smartphone to supply correct vehicle location. It doesn't trust GPS/RF signals, or any extra sensors instrumenting the atmosphere. A driver merely starts the VeTrack application before coming into a parking structure, and so VeTrack can track the vehicle movements, estimate and show its location during a garage map in real time, and record the ultimate parking location, which might be employed by the motive force later to search out the vehicle. VeTrack uses solely mechanical phenomenon knowledge, and every one sensing/ computing happen domestically on the phone. It uses a completely unique shadow mechanical phenomenon tracing technique to convert Smartphone movements to vehicle ones. It conjointly detects landmarks like speed bumps and turns robustly.

III. SYSTEM IMPLEMENTATION

The project proposes device that tracks every single move of your car which you can observe from any corner of globe on demand. Car is password protected so unauthenticated person will never have access to features of car. There are two levels of security one is mobile number so only authorized people will have access to car and every function is password protected. If someone hacks password and tries to access car functionalities firstly that will never operate with unauthorized mobile number also owner and police will get the mobile number that performed unauthorized access. At worst case if someone success to crack all levels of securities we can lock access of the car at any point of time from remote location.
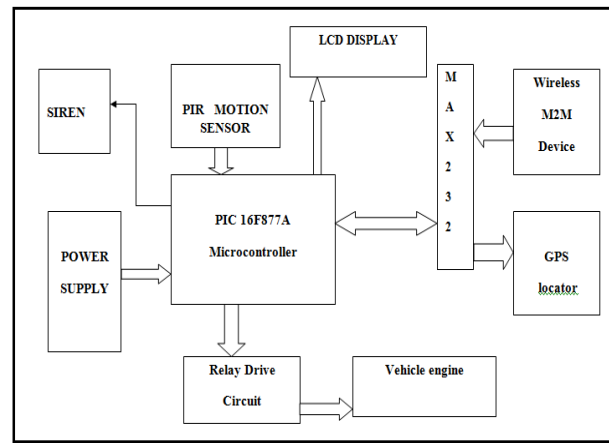

Fig1.System architecture of Anti-theft locking for stolen vehicles and canny password protected access to personalized vehicles

The proposed system uses the front line technology with the help of C programming language and microcontroller unit bloom via PIC microcontroller16F877.The project proposes a device that tracks location of your car anytime and anywhere. The above system consists of central microcontroller which is the heart of this system that takes care of every single move of your car. This project composed of two fragments: user element and in-vehicular element. User element consists of Smartphone and SIM card while in-vehicular element consists of PIC microcontroller 16F877A, GSM module, GPS receiver, PIR sensor, MAX232, relay drive circuit, LCD display and external power supply. The working flow of above system shown in fig1 is explained with below given cases:

CASE 1: authorized person can detect the position of car by forwarding a secret watchword as a text message like CL* to the wireless M2M device which is gathered with PIC microcontroller and which is placed inside vehicle. When GPS receiver gives information about coordinates of vehicle to the microcontroller unit, this information will send back to user via GSM module.

CASE 2: If user wants to unlock the car by forwarding a secret watchword as 1234U* to the wireless M2M device which is already gathered with PIC controller, then microcontroller will detect that it is authenticated number and it will give the signal to relay drive circuit and the relay drive circuit gets energized and car will be unlock.
Similarly user can lock the car by sending a valid password as 1234L*and the car will be locked.

CASE 3: If anyone hacks this password and tries to accessing features of car, the microcontroller will detect that it is unauthenticated number and it will send SMS to the owner about unauthorized access.

CASE 4: In an unfavorable case, if anyone succeeds to crack all security levels and tries to robber a car, then owner can lock car at any point from a remote location and can find the location of lost car by following CASE 1.

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An additional feature is also included in this project that the system provides an alert signal when an intruder enters into locked car and tries to robber an important asset placed inside locked car. This is through with the assistance of PIR detector that detects changes within the quantity of infrared emission happening upon it that varies counting on the temperature and surface characteristics of the objects before of the detector. The detector converts the ensuing modification within the incoming infrared emission into a modification within the output voltage, and this triggers the detection and activates siren and additionally offers notification to owner of the automotive once unwelcome person enters into the automotive once automotive is secured.44

IV. RESULTS AND DISCUSSIONS

As explained in working flow of proposed project, the system works by following different cases.

- When system turns ON supplying power to respective modules, it will display the name of project as "Stolen Vehicle on Demand Tracking" also the system send a "hello" message to authorized user.
- When an authenticated person wants to lock the car by forwarding a secret watchword as 1234L* to the wireless M2M device, system again shows a message as "NO IS CORRECT & status - L" as shown in below fig 2.
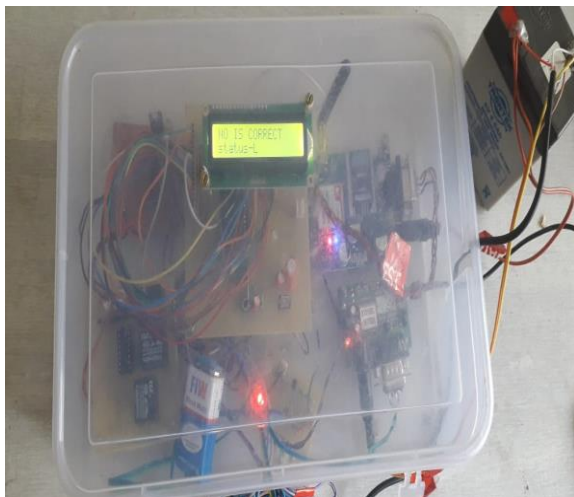
Fig 2.shows status of vehicle which is locked

- Similarly when an authenticated person wants to unlock the car by forwarding a secret watchword as 1234U*to the wireless M2M device, system again shows a message as "NO IS CORRECT & status - U".
- If someone hacks this password and tries to access functionality of car by sending that password to the system, then microcontroller detects that it is unauthenticated mobile number, and it will send a message to unauthenticated number that "he is not authorized person" and also informs the concern person (authenticated) about unauthorized access. And the system will never operate with

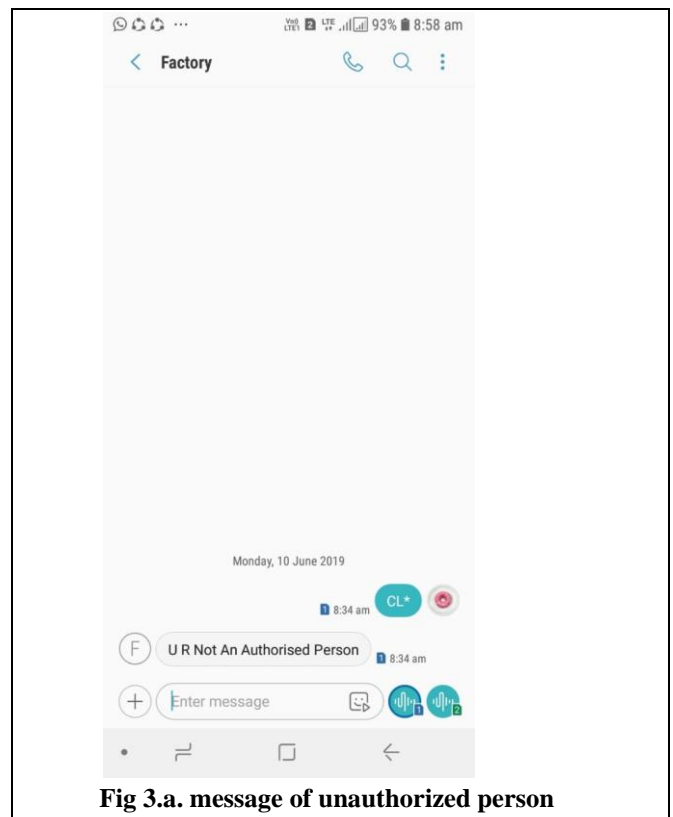unauthorized number it is as shown in below fig 3a and 3b.
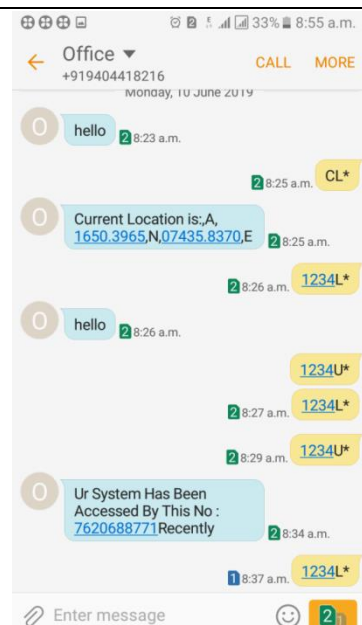
Fig 3.a. message of unauthorized person

Fig3.b.alert message of authorized person

When the car is in locked condition and if anyone enters into the locked car then that motion is detected by PIR sensor and it triggers the microcontroller and it will give alert signal by glowing LED and turning ON buzzer as shown in fig 4

The system also sends a message to authorized person and police (here another mobile number) about detection of intruder when car is locked which is as shown in fig 4a &4b.
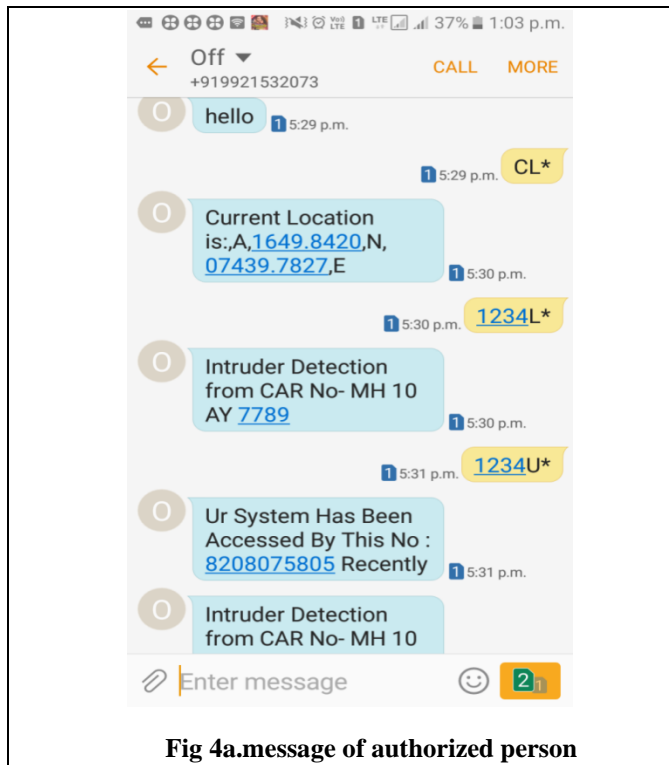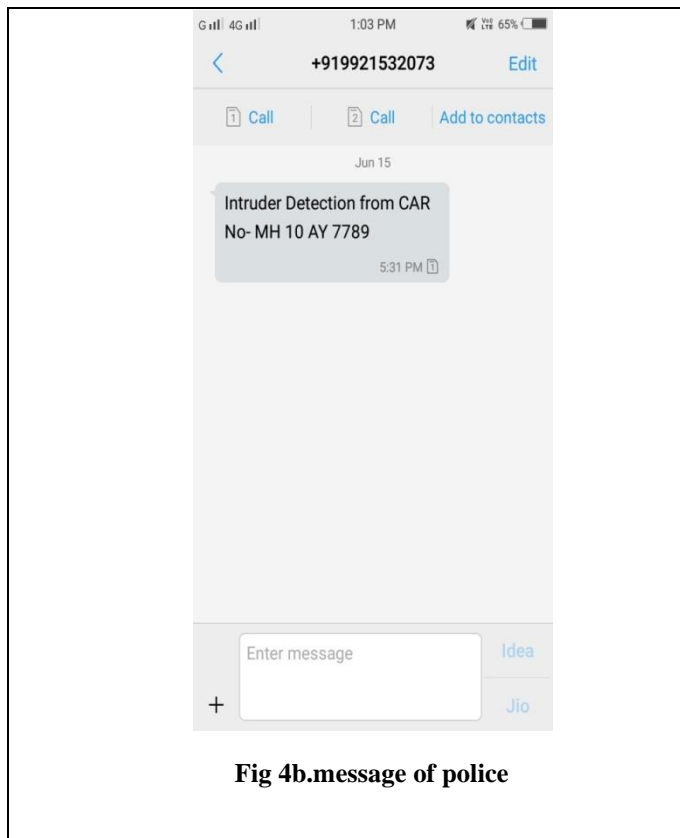

Fig 4a.message of authorized person

Fig 4b.message of police

V. CONCLUSION

The planned work is entirely regarding dominant felony of a vehicle. The system is regarding creating the vehicle safer by the utilization of GPS, GSM technology. The simulation is completed by PROTEUS computer code. The planned work is with success enforced with experimental results. The transport System provides data of a vehicle position, through a GPS Module and GPRS property victimization GSM module and sends the situation of a vehicle to the owner of car. we've got provided multiple level securities to accessing options of automotive through Smartphone upon losing a automotive key. to boot we've got given the supply of knowledge regarding unauthorized access by the system. With the assistance of PIR motion detected device we've got provided safety for any vital plus placed within latched automotive.

REFERENCES

1. A.Anusha, Syed Musthak Ahmed "Vehicle Tracking And Monitoring System To Enhance The Safety And Security Driving Using IOT" 2017 International Conference on Recent Trends in Electrical, Electronics and Computing Technologies,pp-49-53,2017
2. Neha Mangla, Sivananda G, Aishwarya Kashyap, Vinutha "A GPS-GSM Predicated Vehicle Tracking System,Monitored in A Mobile App based on Google Maps" International Conference on Energy, Communication, Data Analytics and Soft Computing (ICECDS-2017) , Vol.No.5,Issue No S1,pp.2916-2919,2017
3. Nitin Pal1, Rakesh Mandliya2 "Design Of GPS-GSM Based Tracking System" International Journal Of Engineering Sciences & Management , Pp15-19 Vol. 6, Issue 1,January-March 2016
4. Shruthi.K1*, Ramaprasad.P2, Ruschil Ray3, Manjunath A. Naik4, Shubham Pansari5 "Design of an Anti-theft vehicle Tracking System with a Smartphone Application" 2015 International Conference on Information Processing (ICIP) ,pp755-760, Dec 16-19,2015
5. Girish L. Deshmukh, Dr. S.P. Metkar, "RTOS Based Vehicle Tracking System" 2015 International Conference on Information Processing (ICIP) ,pp.621-624,Dec 16-19,2015
6. Pritpal Singh, Tanjot Sethi, Bunil Kumar Balabantaray, Bibhuti Bhushan Biswal "Advanced Vehicle Security System" IEEE Sponsored 2nd International Conference on Innovations in Information Embedded and Communication Systems ICIIECS'15,pp.1-6,2015
7. Hammad Afzal, Dr. Vrajesh D. Maheta "Low Cost Smart Phone Controlled Car Security System" 2014 IEEE International Conference on Industrial Technology (ICIT), pp.670-675,Feb. 26 - Mar. 1 .2014
8. Hu Jian-ming; Li Jie; Li Guang-Hui, "Automobile Anti-theft System Based on GSM and GPS Module,"Intelligent Networks and Intelligent Systems (ICINIS), 2012 Fifth International Conference on , vol., no.,pp.199,201, 1-3 Nov. 2012
9. Iman M. Almomani, Nour Y. Alkhalil, Enas M. Ahmad, Rania M. Jodeh "Ubiquitous GPS Vehicle Tracking and Management System" 2011 IEEE Jordan Conference on Applied Electrical Engineering and Computing Technologies (AEECT),pp.1-6,2011
10. Zi Li, Qingqi Pei, Ian Markwood, Yao Liu, Miao Pan,and Hongning Li "Location Privacy Violation via GPS-agnostic Smart Phone Car Tracking" IEEE Transactions on Vehicular Technology ,Vol.No. 67,Issue No. 6,pp. 5042-5053,2018
11. Ruipeng Gao, Mingmin Zhao, Tao Ye, Fan Ye, Yizhou Wang, Guojie Luo, "Smartphone-based Real Time Vehicle Tracking in Indoor Parking Structures" IEEE Transactions on Mobile Computing,Vol No.16,Issue No.7,pp.2023-2036,2016
12. Zhou Yi ,Wang Ding and Yu Yanfei, "On Dynamic Scheduling of Vehicles Based on GPS / GIS / RFID", IEEE International Symposium on IT in Medicine & Education, vol.1, pp. 1252-1256,Aug. 2009
13. Mrs. S. S. Sankpal and Udagave Asmita S., "Model of anti-theft locking for stolen vehicles", international journal of electronics engineering ISSN: 0973-7383, Volume-11, Issue-1,Jan- June 20190

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