VEHICLE THEFT PREVENTION

Project Report submitted in partial fulfillment of the requirement for the degree of

BACHELOR OF TECHNOLOGY

IN

ELECTRONICS AND COMMUNICATION ENGINEERING

By

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Under the Supervision of

Dr. Harsh Sohal

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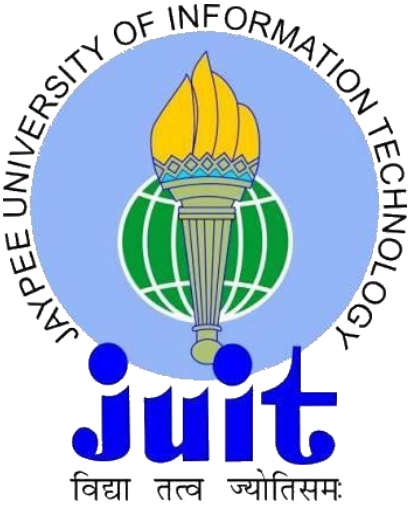

JAYPEE UNIVERSITY OF INFORMATON TECHNOLOGY, WAKNAGHAT

MAY 2021

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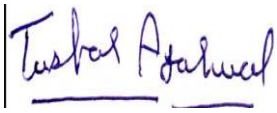
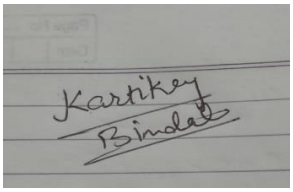
DECLARATION

We thusly announce that the world detailed in this Project Report entitled "VEHICLE THEFT PREVENTION" submitted at Jaypee University of Information Technology, Waknaghat, India is a file record of our work completed under the oversight of Dr. Harsh Sohal. We haven't presented this framework somewhere else for some other degree or confirmation.





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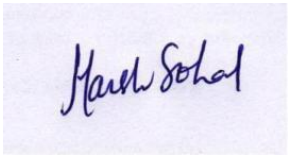
This is to ensure that the above confirmation made by candidates is consistent with the best of my insight.



Dr Harsh Sohal

20 MAY 2021

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ABSTRACT

Uncertaintyis one of the numerous problems that the total world is a fronting currently. The lawbreaking proportion altogether features of the final public lately has become discouragement issue with the tip goal that vehicle square measure presently used for perpetrating crimes over antecedently. The problem of auto theft has expanded colossally, typically at gun muzzle or vehicle leaves. Taking under consideration, there isa demand for satisfactory accounts of taken, distinguished and convalescedVehicles that aren't sharpreachable in ourpublic and in of itself significant. The development of a vehicle lawful offense alert and space Id structure is by all accounts a ton of vital for vehicle owners to guarantee burglary invalidation and a catalyst unmistakable confirmation towards recovery tries in conditions any place Vehicle is absent, taken or taken away by an unapproved individual. The burglary arranged ability uses a GSM application made and presented during a phone gismo that is profound situated the Vehicle to chat withowner's mobile. The correspondence is about up through SMS. The correspondences came upon incorporate causing a SMS alert from introduced telephone mobile application. The web application to determine the running area of a vehicle by methods using GPS has the Standard ability to isolate.

CHAPTER 1
INTRODUCTION

Uncertainty is the various problems that the complete world is fighting with, each part of the world with various safety troubles. Crime percentage in our standard public these days is getting terrifying as vehicles are been utilized for carrying out wrongdoing and examination suggests that culprits of this demonstrations utilize taken automobiles grabbed at weapon focuses which is making harms stay and residences [3]. The problem of car burglary is increasing step by step in our trendy public and regardless of the endeavors of the safety groups, not all of the taken automobiles are continuously prominent, discovered or recuperated. Moreover, a tremendous deal of taken cars was once distinguished and recuperated in every other purview now not quite the same as where they had been taken both by means of police or common society yet due to absence of present day records framework in which records (as an example profile) or facts of taken motors may be checked or gotten to. Those distinguished or recuperated cars could not get to their proprietors on agenda. However the importance appended to problem of recuperated motors person, [13] saved up that identity management structures (idms) gives help for protection endeavors while bringing costs related all the way down to overseeing clients and their personalities. As indicated with the aid of [7] there is suspicion that car robbery simply happens in shabby areas, but car housebreaking can likewise happen wherever in any region of a metropolis. The scientists moreover declared that robbery is the various ordinary perspectives displayed by individuals wherein the duty for, for example, car, land, and other actual houses can be modified without the statistics on the owner. As of late, the feature of cell telephones in the majority is to a super quantity nonetheless unexplored [14]. This changed into collaborated via , that considering the speedy redesigns in pda development, it have all the earmarks of being that during destiny cellular telephones would displace desktops. Moreover, new creative vehicle worldwide situating structures had been made with the bounds of operating automobile controls, for instance, capturing the entrance, stopping and starting the vehicle engine, buying and selling fuel tank off, locking of dealing with and hindering the automobile brake and deal with. Some of these can convey the crook or unapproved patron stupid with very few different options even as endeavoring to take or use the vehicle. However, vehicle global situating shape has reliably been helpful right here at some point of the long haul, but it is less convincing now and again in view of precise demanding situations, for example,

nonattendance of world device for cell communication (gsm)network consideration, International positioning machine (gps) signal mutilation and nonappearance of pressure source to the trackers inside the car, that is at this point occurring. In like manner, maximum of these structures do not have the helpfulness of uncovering taken, perceived or recovered automobiles which ends up to delays in looking for car or automobile now not attending to the veritable owner on the fantastic time when observed. Thinking about the troubles, this paper proposes a extra wide unfold of functionalities, (for instance, profile on absent, perceived and recovered) at the net utility and the usage of the automobile battery as a discretionary wellspring of ability to the vehicle offered cellular cellphone as portrayed in fragment iii.

1.1PROJECT OVERVIEW

The precept justification this enterprise is to avert automobile robbery. This handiness is delicate by perceiving car fame in theft mode and by way of sending a sms which is made consequently. This sms is then delivered off the proprietor of the vehicle. The owner would then have the choice to send back the sms tin solicitation to incapacitate the start of the car. Consequently thusly infringement may be dwindled for the most element as cars nowadays are being taken in big variety. Hereafter, motors these days require high safety which may be cultivated with the assist of this software. How the[3] structure capacities is where an person endeavors to take the car, the microcontroller is disappointed and the request is sent off the gsm modem to send sms. On the receipt of the message, the owner sends returned the sms to the gsm modem. That is achieved to stop the motor. This gsm modem is interfaced to the microcontroller. This microcontroller at the receipt of the message uses a phase that helps with ending the motor. Engine is being used in this project to expose car on/off country.

In addition improvement need to be feasible to this enterprise via the usage of a gps device that allows with finding the particular circumstance of the automobile with the help of its scope and longitude which by way of then can be dispatched off the proprietor of the vehicle through sms. This statistics can be then [6] entered through the proprietor on google guide to discover the precise location of the vehicle.

1.1 SYSTEM WORKING

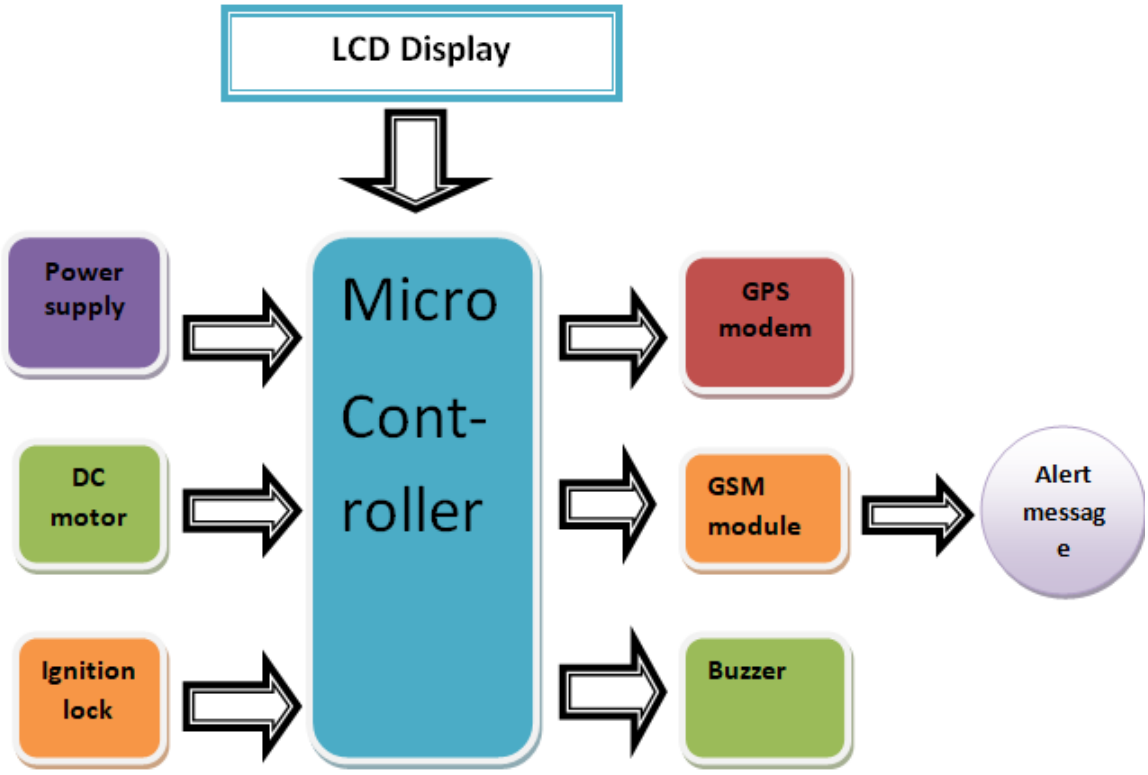

Figure 1.1: Block diagram

While we pass for paintings next to riding the vehicle, the framework ought to be kept inside the dynamic mode with the assistance of a transfer gift within the framework. In the occasion that anybody by way of chance beginnings the vehicle that is as of now in dynamic mode, the voltage within the circuit seems to be high which offers the signal to the microcontroller. This microcontroller once more conveys message to the gsm and gps to send sms to the owner, and furthermore its location like longitude, latitude and pace of the vehicle through gps to gsm and gsm sends the sms to the owner. [8] if the proprietor discovers any burglary to the vehicle then the proprietor with the assistance of sms he's going to cutt off the begin through switch off the flicker further to with help of transfer and gas deliver to the motor.

CHAPTER 2
LITERATURE REVIEW

The Vehicle Theft prevention is an extremelywell-known undertaking in the fields of emerging technology and control building. Along these lines is a great deal of work that has been accomplished and more work is as yet been done on this.The accompanying area is a writing audit on this specific theme. A writing survey is an exploration endeavorwith the help of which an analyst looks into on comparative work tohis/hers. This important piece of examination helps the analyst to determinehow different specialists has controlled the difficult he/she is endeavoring to fathom. This provides knowledgeabout the most proficient technique to approachtaking care of the current scenarios and gives data on available advances and apparatuses for taking care of the issues.

A few people utilize the GPS framework just to follow the coordinate location of the Vehicle like, vehicle speed, Longitude, Latitude, however it is not valuable for vehicle control. A few people utilize just Global system for mobile (GSM)for only controlling the vehicle yet isn't usefulto follow vehicle, a few scientists utilizeGSM, Global positioning system (GPS) framework to help in controlling the vehicle just as to follow that area. Writing survey of the framework is as per the following:

- Asaad M. J. et al, proposed a novel technique in 2012.In this strategy Vehicle GPS beacon is introduced in explicit vehicle which causes the proprietor to follow area of the particular vehicle. This is finished[2]usingWorldwide situating agenda and Worldwideagenda for versatile communication. This technique helps in screening of a Vehicle constantly and reports its status to the proprietor.
- Ramya V et al., proposed a framework in 2012 which identifies impediments when an obstruction draws close to the vehicle. It alarms the vehicle client of the moving toward risk. The vehicle client makes a prompt move to dodge any difference in mishap to himself and the person on foot. It additionally screens the framework for any harmful gases and lingerie the proprietor on the off chance that it gets mindful of its essence.

- Peijiang Chen et al., proposed a framework in 2008 in which the vehicle boundaries are observed from distant area. The different boundaries got from vehicle is shipped off the far off focus through GSM where a PC is utilized to show the outcomes in VB
- Saranya.B, Sasikala.N, et al proposed a framework with a standardized identification scanner is utilized to peruse the standardized tag present on the item. The microcontroller will check the contribution from the standardized identification scanner with the predefined code present in it. In the event that the scanner tag isn't coordinated with the code, at that point the microcontroller will impart the sign to the driver circuits for controlling the engine activities.
- Kiruthikamani.G et al proposed a framework in which the speed of the vehicle is constrained by methods for correspondence through RFID Technology for short separation range. Which won't be appropriate for significant distances.
- Albert Alexe, R.Ezhilarasie et al proposed a framework dependent on distributed computing. Here sensor facts' are gathered and dependent on that necessary moves are made. Additionally the vehicle's area is discovered utilizing GPS.

• Maheshwari V.Chandravar,Shital Y. Gaikwad suggested in their work on "Against Theft Security System Using GSM,GPS &RFID Technology reliant upon ARM7",Intrernational Journal of Engineering Research and Technology,vol.2,Issue 9,September 2013. The vehicle is given the RFID peruser. The vehicle is made by using two Direct stream motor which would be related with the microcontroller using Motor Driver consolidated circuit for extending the flow. The Door gathering is made using DC motor which would be controlled using the hand-off. Exactly when the robbery is there, the entrance will bolt normally. Exactly when unapproved people need to open the entrance of vehicle then he/she can't open without RFID tag.

CHAPTER 3

METHODOLOGY

3.1 Proposed methods

The planned technique represents the specialists structure designed for accomplishing an additional financially savvy vehicle robbery caution and ID framework. The system suggests the utilization of the Global positioning system(GPS) and GSM techniques.

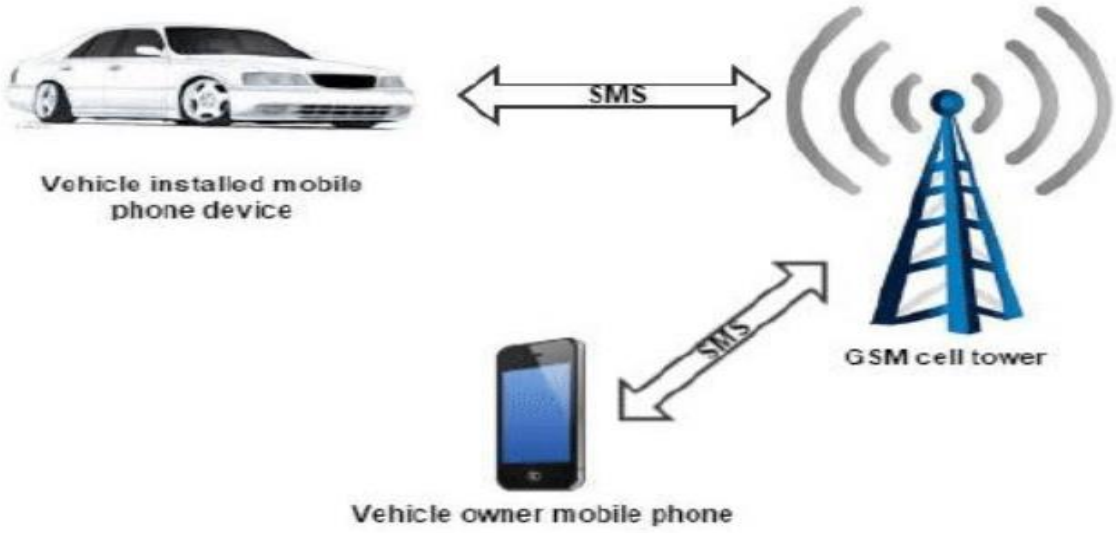

Figure 3.1 Architecture of vehicle theft alert system

Figure 3.1 tells to an actual working conditionindicating the communicationset up in realizing the theft ready usefulness. TheGlobal System for Mobile communication (GSM) utilizes an organization transporter by looking at cell phone poles in the region to communicate data starting with one cell phone then onto the next. The GSM cell tower (for example pole) empowers the SMS(short message service) to be sent starting with a cell phone then onto the next or with the web application to a cell phone.

3.2 Working of Global positioning system (GPS)

- Global positioning system (GPS) orbit the Earth twice a day in very precise orbits and carry signal information to Earth
- Global positioning system (GPS) receivers receive and take the information and calculates the user's exact location.

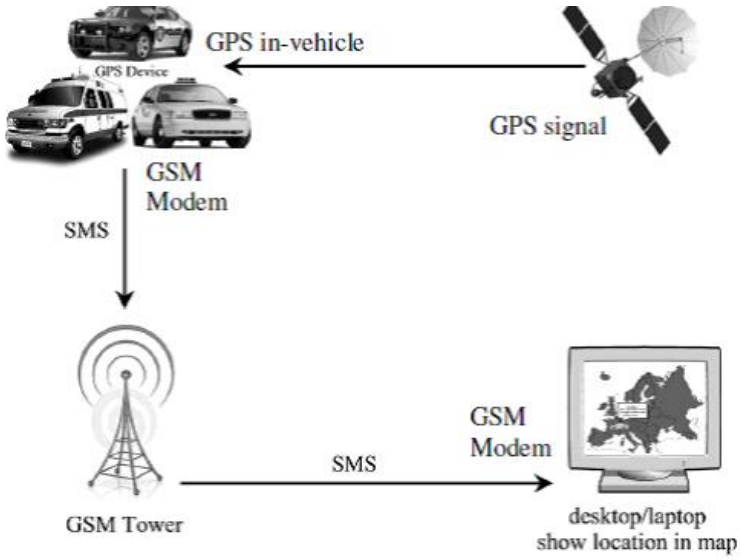

Figure 3.2: Network plan

- The GPS receiver locked on to the signal of at least three satellites to evaluate 2D position (longitude and latitude) and track movement.
- The GPS receivers can only receive data from the satellites. They can't communicate back with other satellites and GPS.
- GPS system can only evaluate location but can't send it to the central control room. In order to send the information to control room we generally use GSM networks.

3.3 Flow diagram of model

If vehicle is forcefully ignited then automatically turn onanti theft detection system. On the other hand, If vehicle is started in authorized way feedback system automatically disables the anti-theft detection system. When vehicle[10] started forcefully a warning

message is delivered to registered mobile number as “Car Started”. Owner has access to stop the vehicle by sending the message “Stop” in relay and GPS enable the Arduino to send location coordinate. GPS attached to the arduino enable GSM to send the live coordinates of the location in every 10 second. These coordinate when used in Google map help to locate the exact position of the vehicle

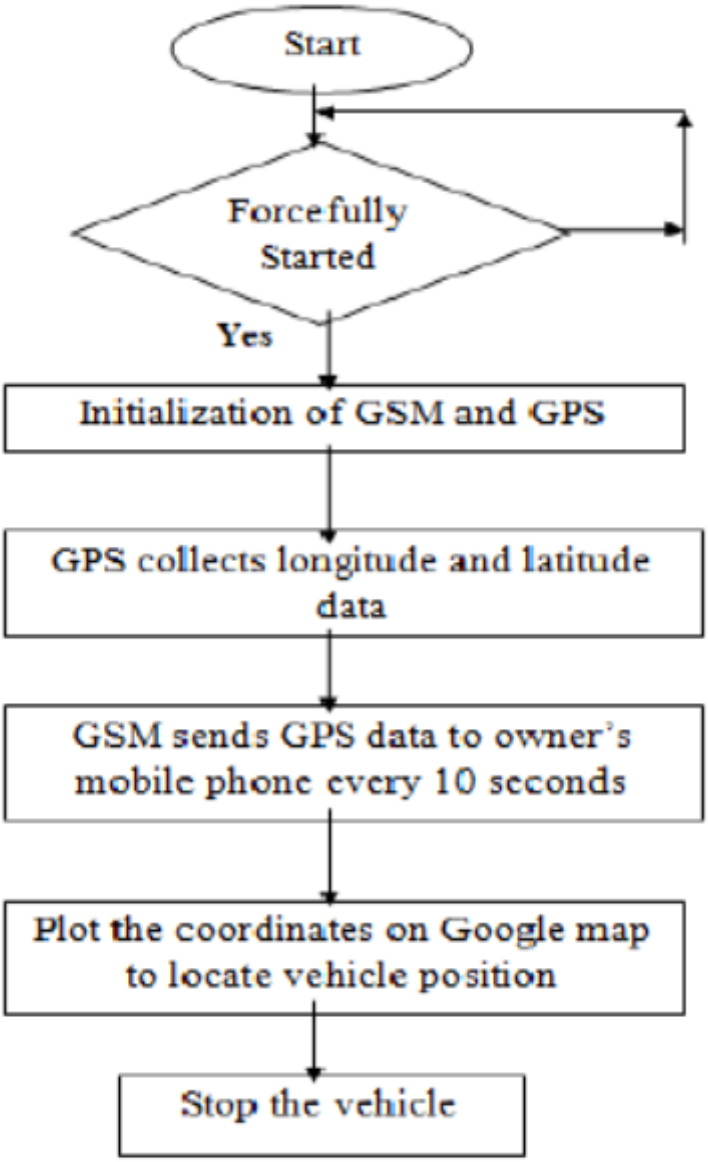

Figure 3.2: Flow chart

CHAPTER 4

IMPLEMENTATION

4.1 HARWARE REQUIREMENTS

- Arduino UNO board
- GPS module
- GSM module
- MAX 232
- LCD 16*2
- Buzzer
- Relay
- Connecting wires
- DC motor
- Ignition key
- Power supply

4.2DESCRIPTION OF HARDWARE COMPONENTS USED

4.2.1 Arduino UNO board

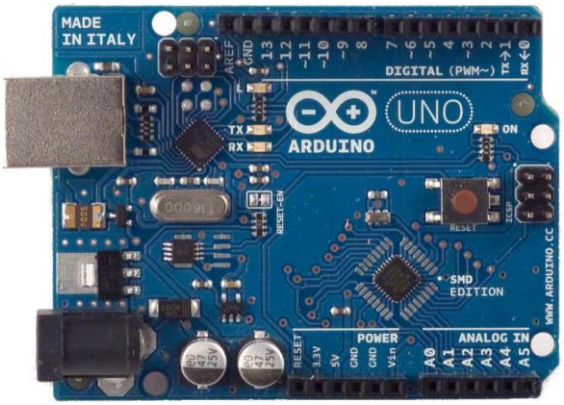

Figure 4.1: Arduino UNO board

Arduino is an open-source stuff and programming association, undertaking and patron organize that plans and makes unmarried-board microcontrollers and microcontroller packs for constructing modernized gadgets. Its things are recommended beneath the gnu lesser preferred public license (lgpl) or the gnu wellknown public license (gpl),[1] permitting the formation of arduino sheets and programming unfold by way of every body. Arduino sheets are reachable presently in preassembled shape or as do-it-with outa other character's assist (diy) devices.

Arduino board plans make use of a meeting of chip and regulators. The sheets are equipped with units of bleeding aspect and clear facts/yield (i/o) sticks that is probably interfaced to one-of-a-kind progression sheets ('safeguards') or breadboards (for prototyping) and distinct circuits. The sheets highlight continuous correspondences interfaces, including customary serial bus (usb) on express fashions, which are moreover applied for stacking applications from pcs. The microcontrollers may be modified utilising c and c++ programming vernaculars. Despite making use of not unusual compiler tool chains, the arduino enjoy offers a merged development condition (ide) considering the processing language revel in. The arduino revel in started in 2005 as a program for understudies on the interaction layout institute ivrea in ivrea, italy,[2] trying to provide an inconsequential effort and essential route for novices and specialists to make devices that communicate with their condition utilising sensors and actuators. Commonplace occasions of such contraptions proposed for juvenile professionals be a part of important robots, indoor regulators and advancement identifiers.

The arduino adventure started on the interplay design institute ivrea (idii) in ivrea, italy. Round at that point, the understudies used a simple stamp microcontroller, at an fee that become a large cost for certain understudies. In 2003, hernandobarragán made the headway stage wiring as a grasp's hypothesis adventure at idii, below the oversight of massimobanzi and caseyreas, who are recognized for manipulate the processing language. The undertaking goal changed into to make clear, insignificant exertion gadgets for making stepped forward endeavors by way of non-engineers.

4.2.2 GPS module

Figure 4.2: GPS module

GPS modules offer helpful data about geological area, elevation ,speed, and then some, all of which we can execute into a wide assortment of uses. GPS depends on a refined exhibit of satellites circling the earth and transmitting radio frequencies, yet luckily, the apparatuses and programming we need to access and utilize this information are promptly accessible and simple to investigate.

All GPS (which addresses Global Positioning System) units work in a comparative fundamental way. The GPS network is included 24 satellites that circle the earth in precise, predefined bearings while broadcasting radio signals that contain data about the satellite's careful region. Each satellite's circle and going with radio sign is novel.

GPS beneficiaries are intended to:

1. Recognize the moving toward signs from the various satellites.

2. Examine the region data and its transmission time.

3. Use this information to find the gatherer's precise territory.

The GPS device needs in any occasion three signs to choose its circumstance in two-dimensional space and at any rate four signs to choose its territory in three-dimensional space. Dependent upon territory, period of day, and the presence or nonappearance of constructions that may block the sign, we can expect that an authority ought to follow as much as eight satellites at some arbitrary second.

4.2.3 GSM module

Figure 4.3: GSM module(SIM 800A Quad Band GSM**)**

The sim800a quad-band gsm/gprs module with rs232 interface is a finished quad-band gsm/gprs plan in a lga (land grid bunch) type which may be embedded within the purchaser applications. Sim800a maintain quad-band 850/900/1800/1900 mhz, it could send voice, sms, and facts records with low pressure use.

With microscopic size of 100 x fifty three x 15 mm, it is able to discover a direction into meager and negligible solicitations of hand make. Presenting and embedded at, it grants general fee saving and rapid an ideal chance to-grandstand for purchaser applications.

The sim800a modem has a sim800a gsm chip and rs232 interface at the same time as engages basic dating with the computer or pc the use of the usb to the serial connector or to the microcontroller the usage of the rs232 to ttl converter. On the point when you interface the sim800a modem the usage of the usb to rs232 connector, you need to locate the privilege com port from the tool manager of the usb to serial adapter.

By means of then you can[12] open putty or some other terminal programming and open a courting with that com port at 9600 baud charge, which is the default baud velocity of this modem. At the factor while a consecutive affiliation is open via the computer or your microcontroller you could start sending the at orders. Proper while you send at orders for example "atr" you ought to find back an answer from the sim800a modem saying "ok" or different reaction relying upon the request sent.

4.2.4 MAX 232

Figure 4.4:MAX 232

This rs232 to ttl serial interface module is a board with the max3232 handset coordinated circuit (ic). It really works with sequential correspondence amongst ttl and rs232 ports with the aid of giving the important electric signal transformation.

The max3232cse+ ic, which arrives in a sixteen pin slender so package deal. It wishes among three.0 v to 5.5 v to work and has two recipients and two transmitters. It has a maximum severe ensured facts pace of 120 kbps, and the hardware calls for 4 zero.1µf fee-siphon aid capacitors. It's far likewise possible with the prestigious max3232 ic pins. Those sheets interface with frameworks with a uart consequently, they paintings with atmel and % microcontrollers.

4.2.5 LCD 16*2 screen

Parent four.Five: lcd sixteen*2 display screen

This is lcd1602 parallel lcd display that gives a simple and financially savvy solution for adding a sixteen×2 white on rgb liquid crystal show into your venture. The exhibit is sixteen character by 2 line show has an exceptionally clear and excessive differentiation white content material upon a blue basis/backdrop illumination.

This is superb blue backdrop illumination lcd show. It is first-rate for arduino primarily based mission. This lcd1602 parallel liquid crystal display show with yellow backlight is quite easy to interface with arduino or other microcontrollers.

4.3CIRCUIT DIAGRAM

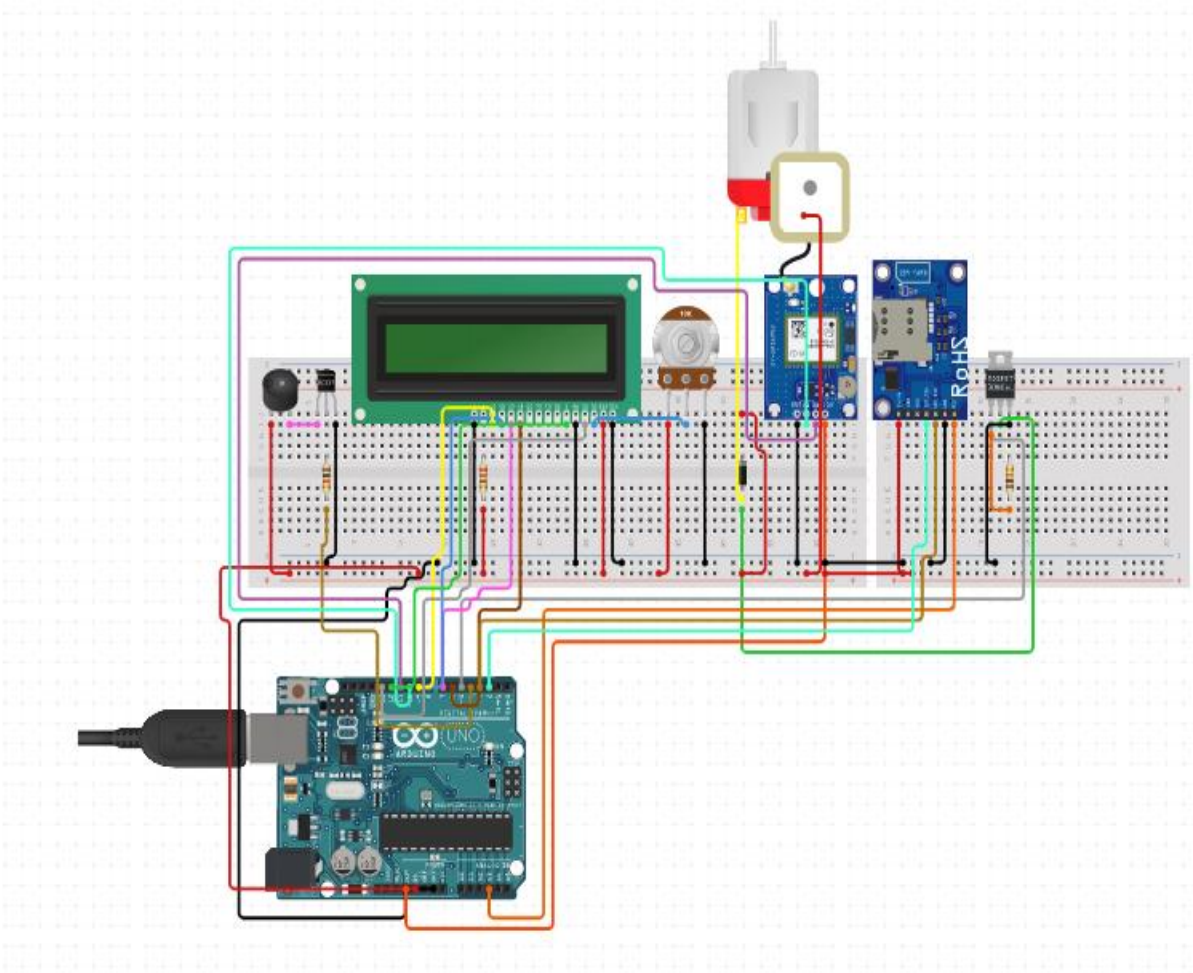

Figure 4.6: Circuit diagram

That is lcd1602 parallel lcd show that gives a sincere and financially savvy solution for adding a 16×2 white on rgb liquid crystal show into your challenge. The presentation is 16 man or woman by using 2 line display has an affordable and high differentiation white content upon a blue foundation/backdrop illumination.

This is remarkable blue backdrop illumination liquid crystal display show. It is excellent for arduino based totally this circuit chart addresses the institutions of different segments with arduino uno board.

Unapproved start of motor (engine) will deliver a signal to the arduino. This arduino is coded to moreover enact the gsm part with pins rx/tx of the circuit. In an effort to ship an admonition to the owner by way of an immediate message. At the identical time gps will likewise be enacted through arduino pins gnd, d2, d3, 5v are related to gnd, rx, tx, vcc of gsm separately send again the co-ordinates of the area to the last stated. This further these co-ordinates therefore are exceeded to the gsm as a way to send them to the proprietor. This cycle is rehashed after at everyday intervals. Due to the notice proprietor might also solution to the instantaneous message this is stoped. That allows you to be gotten via gsm and similarly communicated to arduino. At that point arduino will animate the switch this is associated with 5v stock of arduino and could flip motor off.

Assignment. This lcd1602 parallel liquid crystal display show with yellow backlight is not difficult to interface with arduino or different microcontrollers.**4.4SOFTWARE REQUIREMENTS**

4.4.1 Integrated Development Environment

Figure4.7: Integrated Development Environment

The incorporated development environment (ide) is an application for home windows ,macos , linux,and so on. On this product we are able to perform programming in c and c++ language. It is beneficial to make and circulate ventures to arduino sheets.

Beneath average population allow we will release source code for the ide. The arduino ide supports the lingos c and c++ the usage of tremendous principles of code putting collectively. The arduino ide gives object library from wiring journey, which gives diverse information and strategies. The created code required just two limits, for beginning the comic strip and the crucial program circle, that are accumulated and associated with a program stub guideline() into an executable cyclic authority application with the overall population allow toolchain, likewise it is included with the ardino ide transport. The arduino ide utilizes the code to exchange over the executable code into a e book archive in hexadecimal encoding that is stacked into the arduino board with the aid of a loader application inside the board's firmware

.4.4.2 Google maps

Figure 4.8: google maps

Google maps is a piece region and versatile web planning administration application and innovation given through google, providing satellite symbolism, avenue courses, and street view viewpoints, simply as capacities, as an example, a course organizer for walking, automobile, motorcycle (beta check), or with public transportation. Additionally upheld are maps implanted on outsider web sites via the google maps api. Moreover, a finder for metropolitan corporations and distinct institutions in diverse countries all for the duration of the planet. Google maps satellite snap shots are not refreshed progressively; be that as it is

able to. Google adds records to their number one database consistently. Google earth aid expresses that the more a part of the photographs are near to three years of age.

CHAPTER5

APPLICATIONS AND ADVANTAGES

5.1 Applications

Applications of GPS and GSM bases vehicle theft prevention system are as follows:

1)This system can also be used as transporting vehicle for School buses,college , industries and Companies to provide safety to their employees and students.
2)Vehicle theft detection can be used in our vehicles for personal safety.

3) This system can also be used to detect accidents.

4) This system can also be used as ATM cash monitoring vehicle.

5) This system can also be used as household security applications.

6) Route monitoring

5.2 Advantages

1) Vehicle theft prevention system is easy to use and easy to install.

2) GPS provides us with exact location co-ordinates. So there is less chances of error.

3) Cost effective

CHAPTER 6
CONCLUSIONS

6.1Project Achievements

The targets set in the start of the task were met. The undertaking as entire was a lofty learning because of the wide exhibit of orders required from development and configuration, to control and programming usage.

6.2Project Limitations

- Location of GPS (global positioning system) can be imperfect sometimes. -A GPS units ascertain the area of the gadget by getting and deciphering the sign from at least 3 satellites. Nonetheless, specialized trouble ca effect impeding of those signs when the view is hindered by large structures, large trees or hindrances on the way of journey. Such issues may make GPS unit shows erroneous location and can mess with you up.
- Battery may be drain out - Force stoppage can cause breaking down of the GPS unit, particularly the GPS frameworks which workwith a decent battery life. An inactiveGPSunits burnsthrough heap of intensity in any event, when the vehicle is inert.
- Outside conditions– Outside conditions might turn intense. For the moment, if there is sun flares, the satellite signs might get influenced. Nonetheless, legislative offices declare them early so that those with the GPS unit can find a way to defeat this trouble.
- Human intercession - Innovative spy is a type of electronic fighting and can quietly influence these typeofGPScontains vehicle global positioning frameworks. GPS jammers are likewise on the ascent, particularly utilized by problematic powers. You may not be ready to go around the effects of those issues.
- Analyzing travel data may consume time and labours- As managers, you may have to pend invest considerable time in analyzing the unit for an accurate reading.

6.3Future Scope

- The model can also be executed in bicycle with changes made in sparking plus, battery and key. The framework can additionally be improved with speed control system, i.e to forestall the motor if the speed surpasses certain cutoff point. The framework can also be improved for giving parental direction that is to forestall the vehicle on the off chance that it crosses a specific scope of distance.
- In future we will incorporate vibration sensor inside the framework, which may distinguish the force of auto hitting an item. On the off Chance that force surpasses creatin level, it identifies mishap and may send SMS to family members and furthermore the framework can incorporate USB associated webcam.
- This project can undoubtedly be changed over additionally in home burglary identification. The Anti-theft framework recognizes the interruption and illuminate the vehicle holder utilizing a SMS,the additional usefulness is: at a comparabletime external entryway is bolted utilizing engines connected to entryway accordingly hoodlum can't escape at all and there's finished security of vehicles or significant resources.
- The automobile's airbag system also can be wired to the present system to report major accidents to right away alert the cops and ambulance services with the situation of the accident.

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APPENDIX

CODE:

```
#include <TinyGPS++.h>
#include <SoftwareSerial.h>
#include<LiquidCrystal.h>
int Contrast = 100;
LiquidCrystal lcd(13, 12, 11, 10, 9, 8);

static const int RXPin = 4, TXPin = 3;
static const uint32_t GPSBaud = 9600;
// The TinyGPS++ object
TinyGPSPlus gps;
int temp = 0, i;
// The serial connection to the GPS device
SoftwareSerial ss(RXPin, TXPin);
String stringVal = "";
void setup() {
  analogWrite(2, Contrast);
  lcd.begin(16, 2);
  Serial.begin(9600);
  ss.begin(GPSBaud);
  lcd.begin(16, 2);
  pinMode(13, OUTPUT);
  digitalWrite(13, LOW);
  lcd.print("Vehicle theft");
  lcd.setCursor(0, 1);
  lcd.print("  prevention    ");
  delay(2000);
  gsm_init();
  lcd.clear();
```

```
  Serial.println("AT+CNMI=2,2,0,0,0");
  lcd.print("GPS Initializing");
  lcd.setCursor(0, 1);
  lcd.print("  No GPS Range  ");
  delay(2000);
  lcd.clear();
  lcd.print("GPS Range Found");
  lcd.setCursor(0, 1);
  lcd.print("GPS is Ready");
  delay(2000);
  lcd.clear();
  lcd.print("System Ready");
  temp = 0;
}

void loop()
{
  serialEvent();

  while (temp)
  {
    while (ss.available() > 0)
    {
      gps.encode(ss.read());
      if (gps.location.isUpdated())
      {
        temp = 0;
        digitalWrite(13, HIGH);
        tracking();
```

```
      }
      if (!temp)
        break;
    }
  }
  digitalWrite(13, LOW);
}
void serialEvent()
{
  while (Serial.available() > 0)
  {
    if (Serial.find("Track Vehicle"))
    {
      temp = 1;
      break;
    }
    else
    {
      temp = 0;
    }
  }
}
void gsm_init()
{
  lcd.clear();
  lcd.print("Finding Module..");
  boolean at_flag = 1;
  while (at_flag)
  {
```

```
}
lcd.clear();
lcd.print("Module Connected..");
delay(1000);
lcd.clear();
lcd.print("Disabling ECHO");
boolean echo_flag = 1;
while (echo_flag)
{
  Serial.println("ATE0");
  while (Serial.available() > 0)
  {
    if (Serial.find("OK"))
      echo_flag = 0;
  }
  delay(1000);
}
lcd.clear();
lcd.print("Echo OFF");
delay(1000);
lcd.clear();
lcd.print("Finding Network..");
boolean net_flag = 1;
while (net_flag)
{
  Serial.println("AT+CPIN?");
  while (Serial.available() > 0)
  {
    if (Serial.find("+CPIN: READY"))
```

```
        net_flag = 0;
    }
    delay(1000);
  }
  lcd.clear();
  lcd.print("Network Found..");

  delay(1000);
  lcd.clear();
}
void init_sms()
{
  Serial.println("AT+CMGF=1");
  delay(400);
  Serial.println("AT+CMGS=\"7807492785\"");   // use your 10 digit cell no. here
  delay(400);
}
void send_data(String message)
{
  Serial.print(message);
  delay(200);
}
void send_sms()
{
  Serial.write(26);
}
void lcd_status()
{
  lcd.clear();
```

```
  lcd.clear();
  lcd.print("Message Sent");
  delay(2000);
  lcd.clear();
  lcd.print("System Ready");
  return;
}
void tracking()
{
  init_sms();
  send_data("Vehicle Tracking Alert:");
  Serial.println(" ");
  send_data("Your Vehicle Current Location is:");
  Serial.println(" ");
  Serial.print("Latitude: ");
  Serial.print(gps.location.lat(), 6);
  Serial.print("\n Longitude: ");
  Serial.println(gps.location.lng(), 6);

  // https://www.google.com/maps/@8.2630696,77.3022699,14z
  Serial.print("https://www.google.com/maps/@");
  Serial.print(gps.location.lat(), 6);
  Serial.print(',');
  Serial.print(gps.location.lng(), 6);
  Serial.print(",14z");
  send_sms();
  delay(2000);
  lcd_status();
}
```