Implementation of Vehicle Tracking Device(VTD) With web server

Sk. Sabit Faisal
Department of computer science and Engineering
East West University
Dhaka,Bangladesh
sabitewu@gmail.com

Mezbahun Nabi Tasdid
Department of computer science and Engineering
East West University
Dhaka,Bangladesh
tasdid106@gmail.com

Md. Daud Ali Khan
Department of computer science and Engineering
East West University
Dhaka,Bangladesh
daudali043@gmail.com

Abstract—these days, vehicle burglaries are expanding at a disturbing rate everywhere throughout the world. Security of their vehicle has dependably been a worry to individuals. We are creating secured vehicle following and control framework. In this framework the client will be ready to control his vehicle through an android based Cell phone or at home using personal computer. GPS is one of the advancements that are utilized as a part of a colossal number of utilizations today. One of the applications is following your vehicle and keeps standard observing on them. This following framework can illuminate you the area and course went by vehicle, and that data can be seen from any other remote area. It likewise incorporates the web application that gives you correct area of target. This framework empowers us to track focus in any climate conditions. This framework utilizes GPS and GSM advancements. The paper incorporates the equipment part which includes and programming part is utilized for interfacing all the required modules and a web application is moreover created at the customer side. Fundamental target is to plan a framework that can be effectively introduced and to give stage for promote upgrade. This Project exhibits a location limitation framework utilizing GPS and GSM-SMS administrations. The framework grants limitation of the vehicle and transmitting the situation to the proprietor on his cell phone as a short message (SMS) at his demand.

Keywords: Android, Global System for Mobile (GSM), Data Encryption Standard (DES), Subscriber Identity Module (SIM), Global Positioning System (GPS)

II. INTRODUCTION

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Vehicles are costly. Other than a house, maybe, few buys we make will be justified regardless of another vehicle. What's more, much the same as some other costly resource, a vehicle carries with it an auxiliary cost, the danger of robbery. In some laid-back parts of the world, locking the entryways might be sufficient to avoid the danger. Wherever else, it's a smart thought to arm yourself, and your vehicle, with some security.

To counteract robbery, a large portion of the vehicle proprietors have begun utilizing the robbery control frameworks. The monetarily accessible hostile to robbery frameworks have separate also, security impediments. They

are not convenient and very solid. With our framework, one can deal with his/her vehicle by means of an application on a Smartphone. She/he can bolt/open the vehicle remotely. Be that as it may, if the vehicle security is still broken, the proprietor will be advised and he can track the current area of vehicle. This framework has Global Positioning System (GPS) which will get the directions from the satellites among other basic data. Following framework is imperative in present day world. This can be valuable in officer checking, following of the burglary vehicle and different other applications. The framework is microcontroller based that comprises of a worldwide situating framework (GPS) and worldwide framework for versatile correspondence (GSM). This task utilizes just a single GPS gadget and a two way correspondence process is accomplished utilizing a GSM modem. GSM modem, furnished with a SIM card utilizes a similar correspondence process as we are utilizing as a part of standard phone. The framework isn't restricted to discover the area of the objective yet additionally figures the separation voyage b/w two stations. This framework is easy to understand, effortlessly installable, effectively open and can be utilized for different other purposes. After establishment framework will find focus by the utilization of a Web application (HTML based application) in Google delineate. The framework permits to track the objective whenever and anyplace in any climate conditions.

III. BACKGROUND

Constant following and administration of vehicles has been a field of enthusiasm for some analysts furthermore, a considerable measure of research work has been improved the situation following framework. As of late the different against

robbery modules like guiding wheel bolted gear, organize following framework and customary electronic caution are produced alongside customer recognizable proof and constant execution checking. The paper introduced by Omary et al depicts a continuous following framework that gives precise confinements of the followed vehicle with minimal effort. Geo module cell quad band module is utilized for execution. An observing server and a graphical UI on a site is additionally created utilizing Microsoft SQL Server 2003 and ASP.net to see the best possible area of a vehicle on a particular guide. The paper additionally gives data with respect to the vehicle status, for example, speed, mileage. [1] Hu Jian-ming; Li Jie; Li Guang-Hui portrays a car hostile to burglary framework utilizing GSM and GPS module. The framework is created utilizing rapid blended write single-chip C8051F120 and stolen car is distinguished by the utilization of vibration sensor. The framework stays in contact with car proprietor through the GSM module, for the wellbeing and unwavering quality of car. [2] Fleischer, P.B.; Nelson et al portrays advancement and organization of GPS (Global Positioning Framework)/GSM (Global System for Mobile Communications) based Vehicle Tracking and Alert Framework. This framework permits between city transport organizations to track their vehicles continuously and gives security from equipped burglary and mischance events. [4] Le-Tien, T.; Vu Phung portrays a framework in light of the Global Positioning System (GPS) and Worldwide System for Mobile Communication (GSM). It portrays the commonsense model for steering furthermore, following with portable vehicle in a huge region outside condition .The framework incorporates the Compass sensor-YAS529 of Yamaha Company and Accelerator sensor-KXSC72050 of Koinix Organization to secure moving course of a vehicle. The framework will get places of the vehicle through GPS recipient and afterward sends the information to directed focus by the SMS (Short Message Administrations) or GPRS (General Package Radio Service) benefit. The managed focus contains an advancement unit that backings GSM methods WMP100 of the Wavecom Company. At long last, the situation of the portable vehicle will be shown on Google Map. [5]

IV. ARCHITECTURAL SPECIFICATION

- **GPS:** Global positioning modules are prominently utilized for route, situating, time and different purposes. GPS
  radio wire gets the area esteems from the satellites. GPS gives data about Message transmission time and Position around them.
- **GSM sim808 module:** GSM modem is utilized for transmitting and accepting the information. SIM 300 is a tri-band GSM/GPRS motor. It chips away at different frequencies i.e. EGSM 900MHz, DCS 1800MHz and PCS 1900MHz

- **Li-ion battery:** A lithium-ion battery or Li-ion battery is a type of rechargeable battery in which lithium ions move from the negative electrode to the positive electrode during discharge and back when charging.
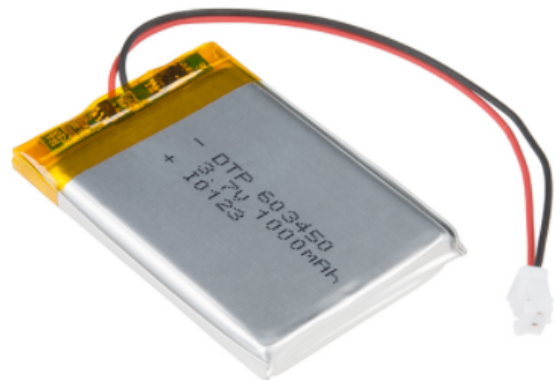

- **TP 4056 charger:** This charger is a very small module for DIY people, it uses the TP4056 controller and standard configuration is with 1A charge current. It does not include any power supply or tray. It did not include any documentationeither, just a couple of boards.


- **Lm 2596 voltage converter:** The LM2596 series of regulators are monolithic integrated circuits that provide all the active functions for a step-down (buck) switching regulator, capable of driving a 3-A load with excellent line and load regulation. These
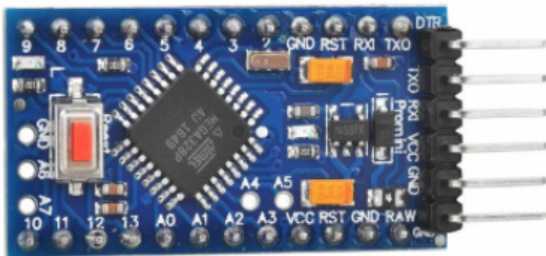
devices are available in fixed output voltages of 3.3 V, 5 V, 12 V, and an adjustable output version.
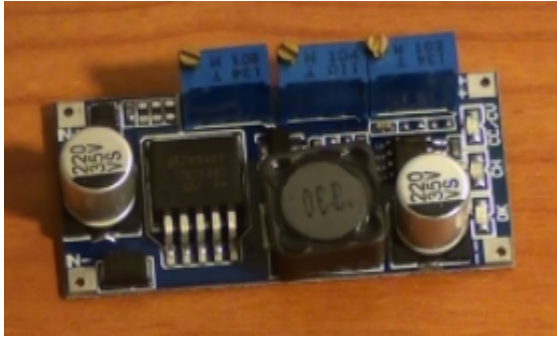
- **MPU6056:** Motion tracking gadget.
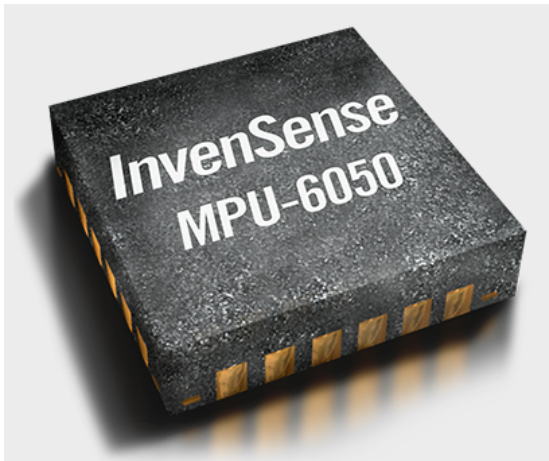

- **Aurdino Pro mini:**

V.HARDWARE OUTLOOK

The GSM 8080 is the core of all functions of this system. When system is plugged on, Aurdino pro mini executes it's code. When code is executed, GSM tries to navigate with it's present satellite, after connecting with the satellite it takes the longitude and altitude value. This values are taken by the GSM it sends it to the installed server. The server then connects with the internet and the internet gives the exact position of the device. A IP address is set inside the code so

that The GSM can easily track down the distant server. This system The product writing computer programs is done in 'C 'dialect. Information (co-ordinates) got by GPS from the satellites is characterized in the product. Translating the NMEA (National Marine Electronics Affiliation) convention is the principle reason for building up this product. The versatile number of the client ought to be incorporated into the product programming keeping in mind the end goal to get the area esteems from the SIM card which we are utilizing as a part of GSM modem. The NMEA convention comprises of set of

messages. These messages are ASCII character set. GPS gets information and present it in the frame of ASCII comma – delimited message strings. '$' sign is utilized at the beginning of each message. The areas (scope and longitude) have the organization of ddmm.mmmm. i.e. .degrees minutes and decimal minutes. The product convention comprises of the GGA (worldwide situating framework settled information) and GLL (geographic position scope/longitude). Be that as it may, in this framework we are utilizing CGA as it were. The stream graph of the framework is given as
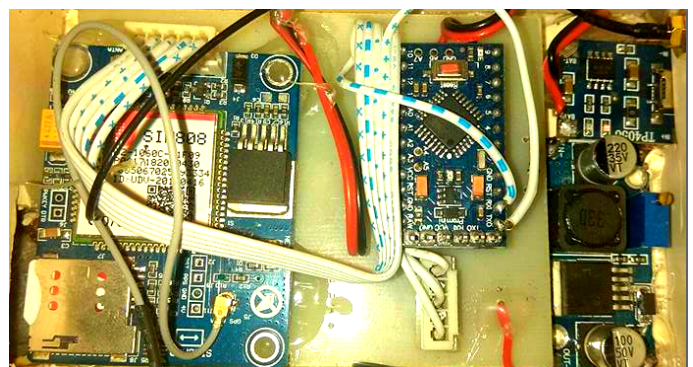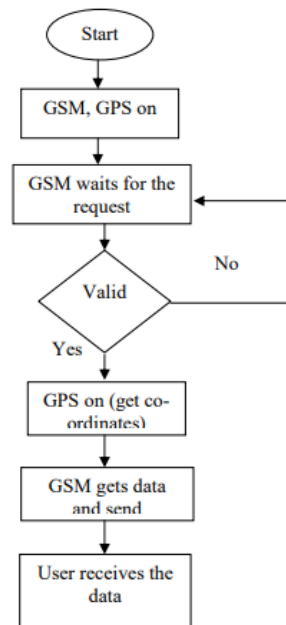
VI. TRACKING OUTLOOK

The web application named as Tracking System is appeared in assumes that speaks to the total yield of the framework. In this framework two applications are created that are connected to each other. Initial one is utilized to get the underlying position of the vehicle (beginning stage) and as framework will get the diverse co-ordinates (longitude and altitude) changing to the following one will be done to get the separate voyaged b/w the two positions. The application will keep running on BANGLA CAT server and will run just if the web is being used.
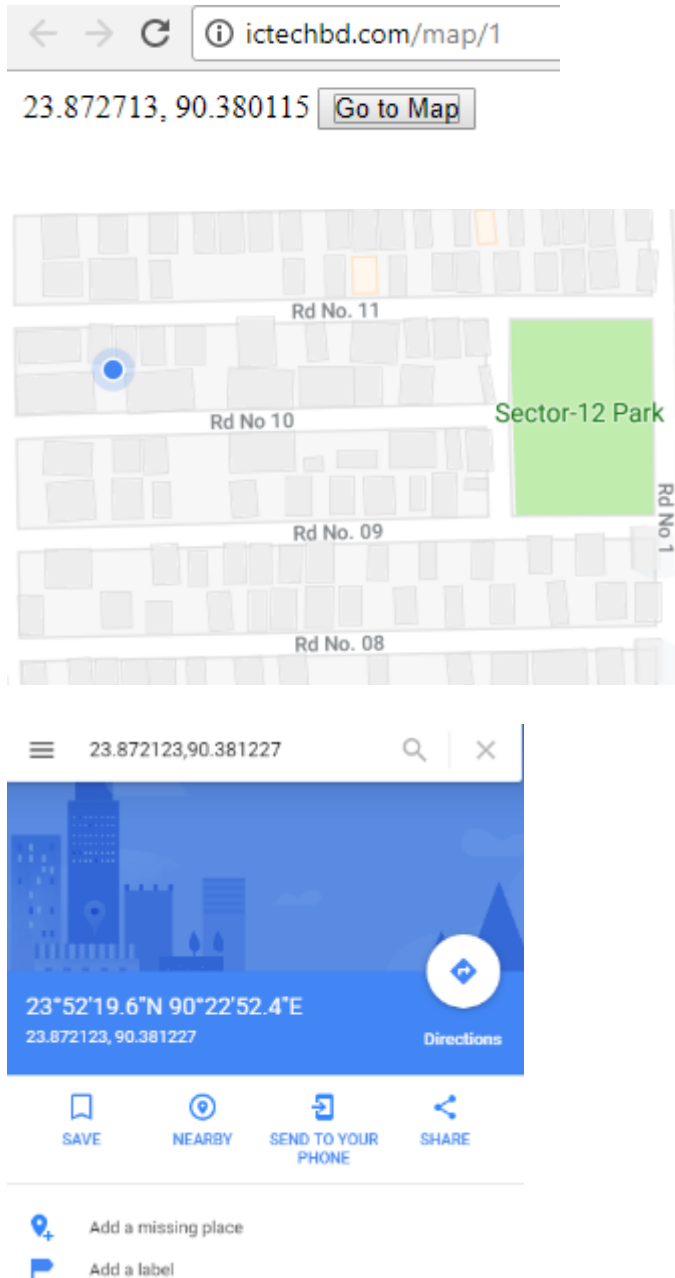
VII. DISCUSSION

Three satellites may appear to be sufficient to explain for position, since space has three measurements and a position on the Earth's surface can be expected. In any case, even a little clock mistake duplicated by the huge speed of light the speed at which satellite signs proliferate—brings about a vast positional mistake. Consequently collectors utilize at least four satellites to illuminate for the recipient's area and time. The precisely registered time is successfully covered up by most GPS applications, which utilize just the area. A couple of particular GPS applications do however utilize the time; these incorporate time exchange, movement flag timing, and synchronization of PDA base stations.

VII. CONCLUSION

The undertaking is tied in with controlling robbery of a vehicle. The framework is tied in with making vehicle more secure by the utilization of GPS, GSM innovation and a web application. The reproduction is finished by PROTEUS programming. It can likewise be helpful for:
1. Guardians to care for their kids.
2. To track creatures in wildernesses
3. Conveyance administrations
4. Cops office and fire administrations

This undertaking can be additionally improved by the utilization of camera and by building up a portable based application to get the continuous perspective of the vehicle rather to check it on PC, which would be more helpful for the client to track the objective.

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APPENDIX:
Executed Code in Arduino

```
int8_t answer;
char gps_data[100];
int counter;
String data = "";
String t;
String d;
String latitude="";
String longitude="";
char aux_str[200];
char aux;
char lat[10];
char lon[10];
char inchar;
int led1 =8;
void setup(){
   Serial.begin(9600);
   Serial.println("Starting...");

   delay(3000); //mili sec 3 sec koz aktu time lage start korte hang kheye jay
   delay(3000);
   delay(5000);
  while (sendATcommand("AT+CREG?", "+CREG: 0,1", 2000) == 0);


      sendATcommand("AT+SAPBR=3,1,\"Contype\",\"GPRS\"", "OK", 2000); //server er sathe connection nilo banglacat delay diye diye
      sendATcommand("AT+SAPBR=3,1,\"APN\",\"banglacat\"", "OK", 2000);
      sendATcommand("AT+SAPBR=3,1,\"USER\",\"\"", "OK", 2000);
      sendATcommand("AT+SAPBR=3,1,\"PWD\",\"\"", "OK", 2000);
while (sendATcommand("AT+SAPBR=1,1", "OK", 20000) == 0)
      {
            delay(5000);
      }///sim initialization...........
   // starts GPS session in stand alone mode
   answer = sendATcommand("AT+CGNSPWR=1", "OK",1000);
   if (answer == 0)
   {
      Serial.println("Error starting the GPS");
      Serial.println("The code stucks here!!");
      while(1);
   }
}
void loop(){
   //memset(lat, 0, sizeof (lat));
   //memset(lon, 0, sizeof (lon));
   //engine();
   delay(2000);
   getgps();

   if((latitude != "")&&(longitude != ""))
   {
      answer = sendATcommand("AT+HTTPINIT", "OK", 20000);

      if (answer == 1)
      {

            answer = sendATcommand("AT+HTTPPARA=\"CID\",1", "OK", 5000);
            if (answer == 1)
            {
```

```
sprintf(aux_str,"AT+HTTPPARA=\"URL\",\"http://10.210.0.241/bike_gps/gpsdata/gps_data?userId=3333&lat=%s&lng=%s",lat,lon);
                      sprintf(aux_str,"AT+HTTPPARA=\"URL\",\"http://ictechbd.com/map/%s/%s",lat,lon);
                      Serial.print(aux_str);
                      //delay(30000);
                      answer = sendATcommand("\"", "OK", 6000);
                      if (answer == 1)
                      {
                            // Starts GET action
                            answer = sendATcommand("AT+HTTPACTION=1", "+HTTPACTION:0,200", 10000);
                            if (answer == 0)
                            {
                                 Serial.println(F("Done!"));
                            }
                            else
                            {
                                 Serial.println(F("Error getting url"));
                            }
                      }
                      else
                      {
                            Serial.println(F("Error setting the url"));
                      }
                }
                else
                {
                      Serial.println(F("Error setting the CID"));
                }
          }
          else
          {
                Serial.println(F("Error initializating"));
          }
          sendATcommand("AT+HTTPTERM", "OK", 5000);
     }
          delay(2000);
}
void getgps(){
     answer = sendATcommand("AT+CGNSINF","+CGNSINF:",5000);       // request info from GPS
     if (answer == 1)
     {
          counter = 0;
          do{
             while(Serial.available() == 0);
             gps_data[counter] = Serial.read();
             counter++;
          }
          while(gps_data[counter - 1] != '\r');
          gps_data[counter] = '\0';
          if(gps_data[0] == ',')
          {
             //Serial.println("No GPS data available");
          }
          else
          {
             //Serial.print("GPS data:");
            // Serial.println(gps_data);
             //Serial.println("");
          }
     }
     else
     {
          Serial.println("Error");
     }

     data = gps_data;
      for (int i = 14 ; i < data.length(); i++)
      {
         if (data.substring(i,i+1) == ",")
```

```arduino
        {
            d = data.substring(i+1);
            break;
        }
    }
    //Serial.println(t);
    //Serial.println(d);
     for (int i =0 ; i < d.length(); i++)
    {
      if (d.substring(i,i+1) == ",")
        {

          latitude = d.substring(0, i);
          t = d.substring(i+1);
          break;
        }
}
for (int i =0 ; i < t.length(); i++)
    {
      if (t.substring(i,i+1) == ",")
        {

          longitude = t.substring(0, i);
          break;
        }
}

latitude.toCharArray(lat,10) ;
longitude.toCharArray(lon,10) ;
// Serial.println(latitude);
// Serial.println(longitude);
}
int8_t sendATcommand(char* ATcommand, char* expected_answer1, unsigned int timeout)
{

    uint8_t x=0,  answer=0;
    char response[100];
    unsigned long previous;

    memset(response, '\0', 100);      // Initialize the string
    delay(100);
    while( Serial.available() > 0) Serial.read();     // Clean the input buffer
    Serial.println(ATcommand);     // Send the AT command
      x = 0;
    previous = millis();

    // this loop waits for the answer
    do{

      if(Serial.available() != 0){
        response[x] = Serial.read();
        x++;
        // check if the desired answer is in the response of the module
        if (strstr(response, expected_answer1) != NULL)
        {
          answer = 1;
        }
      }
      // Waits for the answer with time out
    }
    while((answer == 0) && ((millis() - previous) < timeout));

    return answer;
}
```