

## Call Triggered Pet Tracking System

**Aishwarya**

**Ashwini Shettar**

**Bhavya B. R**

**Dheeraj.N. Kulal**

B.E (Student), Electronics and Communication Engineering  
Department, Dr. AIT, Mallathalli, Bengaluru, India

**Girija S**

Asst. Professor, Electronics and Communication  
Engineering Department, Dr. AIT, Mallathalli, Bengaluru,  
India

*Abstract: GSM -GPS Modules have been ruling the field of wireless communication. Its application to the field of Pet Tracking systems could help in monitoring the pet. Here we have used a GSM module interfaced with the microcontroller to which the call is made to fetch the pet's location using GPS, which could be used to find the pet if its off your sight.*

*Keywords: GSM, GPS,*

### I. INTRODUCTION

An article in the Washington Post under the headline “The death of the pet can hurt much as loss of relative” spoke about how a woman was disturbed by the death of her most faithful friend. This article implied that pets do build an emotional attachment with their owners. Just imagine of a situation of losing it. Yes! truly a nightmare. But not anymore because of the innovation in the field of Pet Tracking devices. The use of GSM and GPS has just made tracking of the pets at your fingertips. There are many companies that manufacture pet tracking devices with their own unique features. In our project we have interfaced GSM-GPS with a microcontroller and triggered location using the call to the module, giving the most up-to-date information of the pet position. This can also be used to track the position of vehicles carrying valuable goods. The approach towards the project is simple, feasible and user friendly.

### II. RELATED WORK

Earlier Tracking System used an application for “Locating Friends, Pets and Family Using Mobile Phones with Global Positioning System (GPS)”. The architecture of the

system is based on client-server approach. The client periodically sends its coordinate location updates to the server which stores it in a database. Thus, any client wishes to learn the location of another client will have to register and login to the server to request the location. This approach increased the server overload and requires internet connectivity for both client and server. Another approach is that to use GSM, GPS and Bluetooth modules in the child and a smartphone in the parent. The distance from the child is calculated via received signal strength indicator (RSSI). A complementary system adds a voice module to detect the cry of a child and notify the parents. This approach increases the complexity and needs accuracy of calculation.

The proposed system for tracking the pet will allow the owner to track the pet when required, via a call. The System contains single android phone that is equipped with GPS – GSM modem along with processor that is installed in pet. During pets motion its location update can be continuously reported using GPRS service. This information will be plotted using Google maps on monitoring device.

### III. SYSTEM MODEL

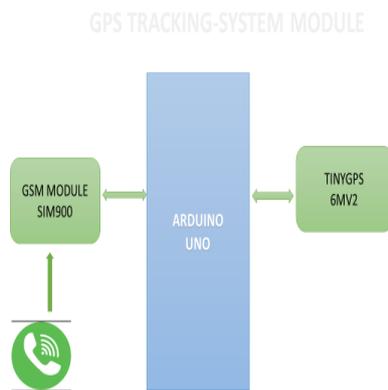


Figure 1: GSM-GPS tracking system module

The Tracking system contains the GSM Module and TinyGPS module interfaced with Arduino UNO. When the owner triggers the tracking system through a call, automatically the call hangs up and the TinyGPS module is activated. The location of the pet is sent to the owner through message (GSM module).

#### PROBLEM STATEMENT

The system aims in manual tracking of the pet using global positioning system (GPS) to get the most up-to-date position.

#### SOLUTION

The best possible and economic solution for the pet safety and its tracking are as follows:

- ✓ The pet is equipped with a tiny GPS tracker interfaced with Arduino UNO, and GSM module to bring about the concept of manual tracking.

This setup placed on the pet will automatically cut the owner's call that would be used as a trigger to start the tracking process and sends accurate latitude and longitude values to the triggered mobile number.

On placing these values on the google maps, we can see the exact location of the pet.

### IV. SIMULATION AND EXPERIMENTATION

To track the pet location, we make use of GSM (Global System for Mobile communication) SIM900 module, tiny GPS (Global Positioning System) module and an Arduino UNO microcontroller. Arduino UNO is interfaced with both GSM and GPS modules. Since we implement this device for pet safety, location of the pet is required only when the owner wishes to know. After connecting the GSM module with the above-mentioned components, the connection status is indicated by a 'status LED' which blinks continuously forever 3 seconds when successfully connected to the SIM network. Since our project is confined to domestic needs, we are using

tiny GPS module. GPS is used to detect latitude and longitude of any location on the Earth with exact UTC time (Universal Time Coordinates). The GPS receives the information from the GSM module through serial communication. The RX and TX pins of GPS are connected to serial pins of Arduino respectively. The code to trigger the GPS module via GSM module, when the owner calls to the inserted SIM card, seeking the pet location, is dumped on to the Arduino board. The software used is Arduino IDE. The owner, seeking pet location has to call to the SIM number. The GSM module upon receiving the call will automatically terminate the call and in turn triggers the GPS module. The GPS module is programmed to send the real-time tracking position data in NMEA format (National Marine Electronics Association protocol) to the owner's cell phone. NMEA consists of several sentences, of which four important sentences are:

\$GPGGA: Global Positioning System Fix Data

\$GPGSV: GPS satellites in view

\$GPGSA: GPS DOP and active satellites

\$GPRMC: Recommended minimum specific GPS/Transit data

These strings contain many GPS parameters like time, date, longitude, latitude, speed number of satellites in use, altitude and many other things. In our program only \$GPGGA string is used which specifies the latitude and longitude of the current location. Using these values, the owner can identify the pet location via google maps.

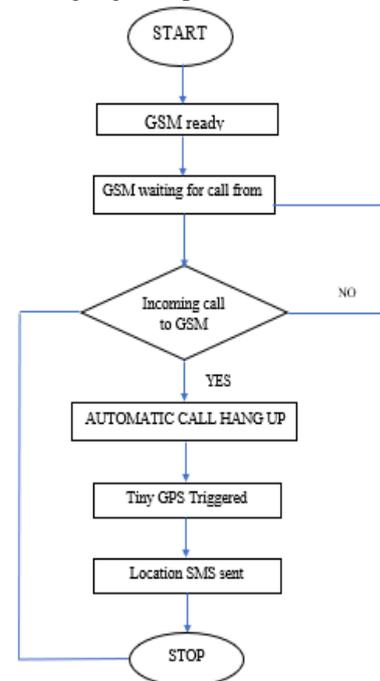


Figure 2: Flowchart of system module

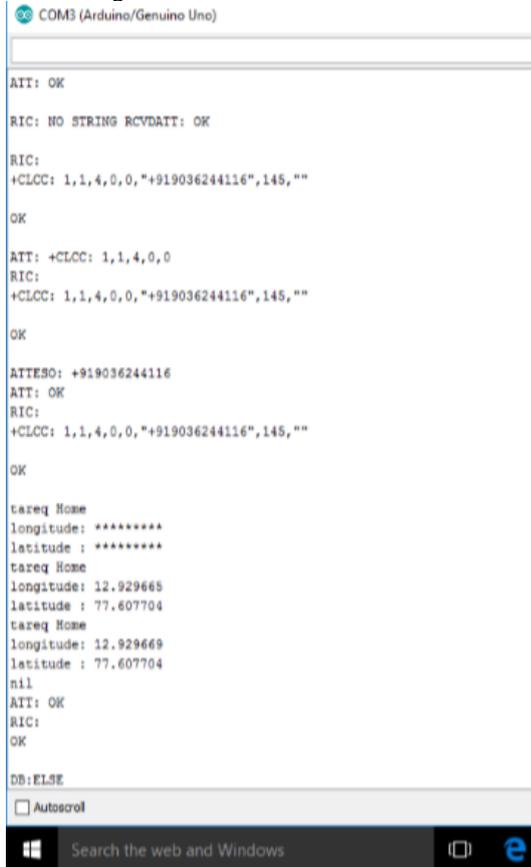
### V. CONCLUSION

In this project the concept of pet safety is taken to next level by track feature implemented. The owner is alerted and can track his pet being in any part of the world. This system will prevent the pet from theft and help in tracking it with the

touch of your finger. This system gives the real-time location of the pet.

- ✓ Minimal human interaction.
- ✓ Decision made by the GSM module to call the owner.
- ✓ GPS provides latitude and longitude readings which makes tracking simpler.

This system can be improvised to offer supplementary features like message, email alert for extreme temperature, health monitoring etc.



```
COM3 (Arduino/Genuino Uno)
ATT: OK
RIC: NO STRING RCVDATT: OK
RIC:
+CLCC: 1,1,4,0,0,"+919036244116",145,""
OK
ATT: +CLCC: 1,1,4,0,0
RIC:
+CLCC: 1,1,4,0,0,"+919036244116",145,""
OK
ATTESO: +919036244116
ATT: OK
RIC:
+CLCC: 1,1,4,0,0,"+919036244116",145,""
OK
tareq Home
longitude: *****
latitude : *****
tareq Home
longitude: 12.929665
latitude : 77.607704
tareq Home
longitude: 12.929669
latitude : 77.607704
nil
ATT: OK
RIC:
OK
DB: ELSE
 Autoscroll
```

Figure 3: Serial monitor displaying location of pet

## ACKNOWLEDGEMENT

I owe debt of gratitude to Prof. Girija. S (Assistant Professor., Department of Electronics and Communication Engineering Dr. AIT, Mallathalli, Bengaluru) for providing her timely advice, constructive criticism and excellent supervision.

## REFERENCES

- [1] Elliott D. Kaplan and Christopher J. Hegarty (2006), Understanding GPS Principles and Applications Second Edition
- [2] Pet Tracker-Pet Tracking system using motes, <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.153.3053&rep=rep1&type=pdf>
- [3] <https://forum.arduino.cc/index.php?topic=236691.0>
- [4] [https://en.wikipedia.org/wiki/GPS\\_wildlife\\_tracking](https://en.wikipedia.org/wiki/GPS_wildlife_tracking)