

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 3, March 2015

GPS/GSM Enabled Person Tracking System

Amol Chaudhari ¹, Shabbir Bohra ², Harshada Karma ³, Ashwini Dhupadale ⁴

B.E. Student, Department of E&TC Engineering, Shatabdi Institute of Engineering and Research Centre, Nashik, India¹

B.E. Student, Department of E&TC Engineering, Shatabdi Institute of Engineering and Research Centre, Nashik, India²

B.E. Student, Department of E&TC Engineering, Shatabdi Institute of Engineering and Research Centre, Nashik, India³

B.E. Student, Department of E&TC Engineering, Shatabdi Institute of Engineering and Research Centre, Nashik, India⁴

ABSTRACT: There are various systems for tracking the position of a vehicle but there is no such system made for tracking a human being. The main aim of our project is to track an intruder or criminal or a person which can be caught doing illegal job. GPS(Global Positioning System) is used to track the location and time information of the person.

KEYWORDS: Global System for Mobile Communication, Global Positioning System, Global Navigation Satellite System, General Packet Radio Service

I. INTRODUCTION

The aim of our project is to reduce the overall cost of tracking system based on Global Positioning System (GPS) which is an satellite system based service. GPS system is nothing but Global Navigation Satellite System (GNSS). GNSS prior to use for tracking the position of suspect such as its Latitude, Longitude and Altitude. It provides the reliable location of time and conditions of weather anywhere on or near the earth surface. GPS receiver can be freely accessed.

Also Global System for Mobile Communication (GSM) tracking system is alike GPS system which can be used for providing real time location and reporting of person. This system works as the person having the tracker which is having GPS Technology, GSM technology and battery which is compatible for this system. The SIM with GPRS enabled facility from that the person who wants to their persons will be able to see on Google earth live moving with the help of GPS technology and GSM Technology. The system uses the information with the help of GPS and GSM Modem and also having SIM with GPRS facility.

Now a day's tracking a human being has become a very crucial job, so to solve this problem its necessary to make a system which will be cost efficient and also based on GPRS and GSM on mobile phones rather than using a GPS receiver.

The positioning of system is used for variety of applications such as including sea, Navigation, person, air and vessel tracking, surveying and mapping etc. Our proposed design is cost-effective, Reliable and has the function of accurate tracking.

The tracking system currently deployed in the country utilizes the GSM system to locate the Tracked object. The limitation of this system is that the GSM technology can only identify the Base Transceiver Station (BTS) and the sector antenna under whose coverage the tracked Object is located and this operation requires the services of the mobile operator whose Network is used to carry the tracking information for the information to be accessed. A communication program installed in ARM-7 from that device communicates with GSM modem to provide users real time Data related to a person's movement and location. To investigate the current uses and applications of GPS tracking through multiple Usability context analysis.

II. RELATED WORK

The four mainly used methods for tracing the person are shown and explained below. One of the method is The Automotive Navigation System (ANS) is generally used for tracking Automobiles. Second one is the GPSylon is used

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 3, March 2015

to enable maps which can be downloaded from Expedia Maps Server. And Third one is Open GTS provide web based GPS tracking system. Our system aims at the automatic detection of location of person .

1. Automotive Navigation System:-

It is an satellite navigation or tracking system which is designed to used for tracing the automobiles. This type of system is available in high definition cars but with an disadvantage of high cost. GPS navigation system can be used for tracking the position of vehicle on road with the help of Maps present in database. With the help of the database the required directions to trace the particular car. The portable GPS devices have helped increase and enhance safety for the people.

2. GPSylon System:-

It shows the maps download from Expedia Map Server which is nothing but used to connect to GPS device and track the position using maps in database. At that moment, it can also read GPS data in NMEA [National Marine Electronics Association] standards from serial or can be an GPS file across the network. GPS receiver uses the data for tracking the real time position and information of human being. The data can be position, time, velocity. The main feature is to display the maps with the help of digital Atlas. These maps are shown in different scales and if any of the map are missing then the scale larger then that is shown instead of black screen. It can also download single or multiple maps with the help of Expedia Map Server.

3. Open GTS:-

GTS is nothing but GPS Tracking System. It is an open source GPS tracking system for tracing the person's position. It requires the internet access.

III. SYSTEM OVERVIEW

In our project, GPS is used to monitor the person's location anywhere on earth. The who has to be located must have GSM model with SIM GPRS enabled. The GPS consist of GPS Transmitter and GPS Receiver. In other words, the GPS unit simply measures the travel time of the signals transmitted from the satellites, then multiplies them by the speed of light to determine exactly how far the unit is from every satellite its sampling. By locking onto the signals from a minimum of three different satellites, a GPS receiver can calculate a 2D (two-dimensional) positional fix, consisting of your latitude and longitude.

So, GPS is the simple unit which triangulates the position of person. GPS Receiver receives the human longitude and latitude from satellite through GPS Antenna. GPS receiver is interfaced with the ARM through RS232 converter. RS 232 converter is used to convert RS232 logic to TTL logic vice versa because GPS receiver is the RS232 logic and ARM-7 is the TTL logic.

Then the receiver sends the received signal to ARM-7. Here the ARM-7 is the flash type reprogrammable ARM-7 in which we have already programmed. Now the ARM-7 displays the persons tracking on the LCD display. Then position information signal is transmitted through GSM network. The tracking the persons having GPS and GSM from that in PC we can monitor the human current position on the earth.

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 3, March 2015

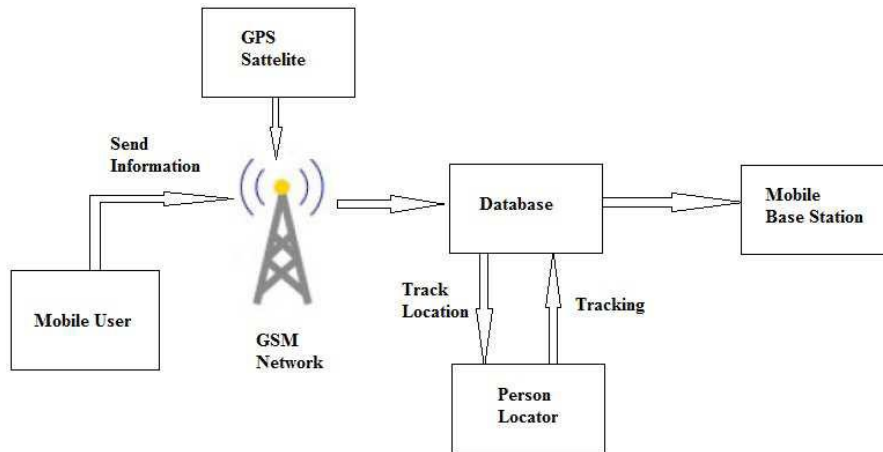


Figure 1:. System Architecture

As shown in figure1; it works on mainly two different phases. First is tracking phase and second one is the mapping phase.

In first phase i.e. Tracking Phase the person's having the GPS application which can trace the location of other person with the GSM module having SIM900 (Subscriber Identification Module) with internet access. It also includes the current location along with the help of GPRS system.

In the second phase i.e. Mapping Phase, it shows the current location which is shown by GPS will be displayed on Google Earth. The wide usage of GSM and GPS systems by millions of people throughout the world is for vehicle tracking and school kids and everyone can buy as per their need.

GSM networks consist of three major systems the Switching System (SS), Base station (BS) and the Mobile Station (MS). GSM Module is just like mobile system which consists of SIM card which can be placed in SIM card slot. This method of communication allows a path to be established between two devices. Once the two devices are connected, a constant stream of digital data is relayed.

A GSM modem is a specialized type of modem which accepts a SIM card, and operates over a subscription to a mobile operator, just like a mobile phone. GSM uses a process called Switching.

IV. SIMULATION AND RESULTS

In the below shows Fig. 2 proper results and working of our system in form of figures. In fig (a) Tracking position of person. The base station will be tracking the position of person's location with the help of GPS and GSM. In fig. (b) How GPRS works. In this service the data will be received via GPS and will then be transmitted by GPRS to user end. In fig. (c) Tracking System

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 3, March 2015

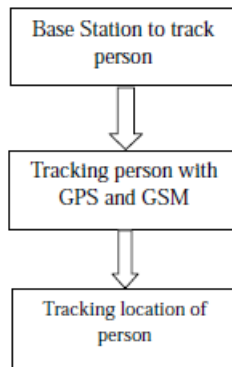


Figure.: (a)



Figure.: (b)

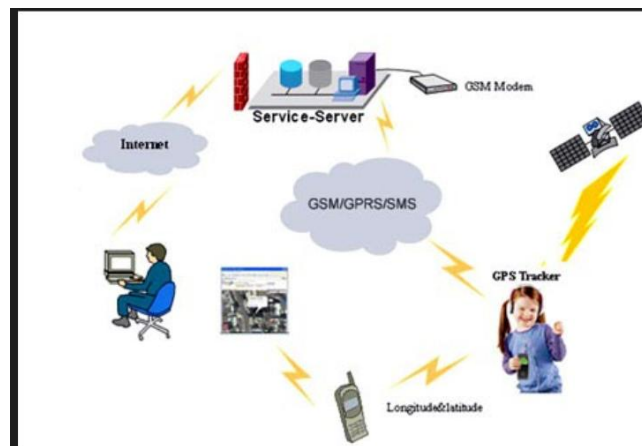


Figure.: (c)

Figure 2: Tracking system results (a) Tracking Position of person (b) How GPRS works (c) Tracking System.

In below figure, shows the actual demo of our system. It consist of ARM processor board , LCD board and GPS/GSM module for tracking purpose.

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 3, March 2015



Figure (a)

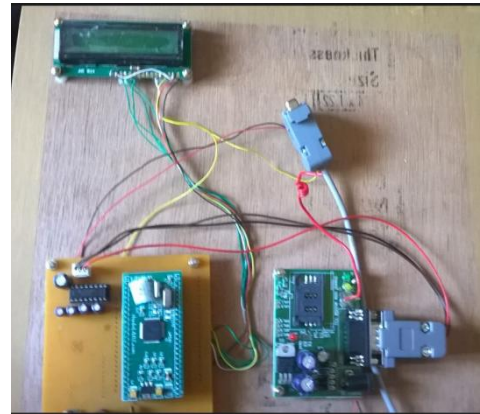


Figure (b)

Figure 3: (a) , (b) Demo of system.

V. ACKNOWLEDGEMENT

The work produced in this report would not have been completed without the encouragement and support of many people who gave their precious time & encouragement throughout this period. We would like to sincerely thank our project guide **Prof. S.J. Jadhav** for the patience she showed during the process of preparation of project from initial conception to final design & construction. We would also like to extend our gratefulness to the head of department **Prof. S.T. Bhoi** . We would also like to thank the teaching & non-teaching staff. We would also like to express sincere gratitude towards the core of our heart principal **Dr. D.P. Joshi** for being supportive and always encouraging. Last but not the least, the backbone of our success and confidence lies solely on blessings of our parents.

VI. CONCLUSION

It provides more security than other system and from the remote place we can access the system. The tracking system “GPS/GSM enabled personal tracker” is a low cost system. However, this system is also useful for some confidential issues such as real time people exact location in natural calamity and also consumes less power as the ARM-7 (LPC 2148), GPS and SIM 900 Modem consumes less power and can be used in sleep mode too. Tracking system is becoming increasingly important in large cities such as in various Applications include tracking of school kids and people can watch them by staying in their home. From this tracking system, the current location of a person will be displayed via Google earth with the help of GPS database and GSM. Thus, we can easily monitor the human being anywhere on the earth with high accuracy.

VII. FUTURE SCOPE

1. The scope of this project is to study and design the GPS/GSM enabled Personal Tracking system that can give an output of the information such as time, position and speed from the GPS receiver.
2. This system can be useful for vehicle tracking.
3. Tracking of soldiers in patrolling during border security.
4. In future, this entire tracking system can be tries to make in compact size, light weight, more accuracy and in real time response.

International Journal of Innovative Research in Science, Engineering and Technology

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 3, March 2015

REFERENCES

- [1] Abid khan, Ravi Mishra, “GPS-GSM Based tracking system”, International Journal of Engineering Trends and Technology Volume3 Issue2.
- [2] B.P. S. Sahoo and Satyajit Rath, “Integrating GPS-GSM and cellular phone for location tracking and monitoring”, Proceedings of Geomatrix’12, INDIA.
- [3] Asaad M. J. Al-Hindawi, Ibraheem Talib, “Experimentally evaluation of GPS-GSM based system design”, Journal of Electronic Systems Volume 2 Number.
- [4] Chen Peijiang, Jiang Xuehua, “Design and Implementation of Remote monitoring system based on GSM,” vol.42.
- [5] Briggs, F. Safety Service for Children and Adults with Special Needs 1. URL“<http://www.ignitepoint.com/?articleid=3021664>”. Pp.167-175.
- [6] LIM SY AI, “People tracking system using global positioning system and global system for Mobile communication”, Faculty of Electrical Engineering University Technology Malaysia JUNE.
- [7] Hitesh S. Chaudhari, V. D. Chaudhari, Dr. K. P. Rane, “Review on Personal Tracker Systems”, International Journal of Engineering Research & Technology (IJERT) IJERT ISSN: 2278-0181 Vol. 3 Issue 3.

Website:-

- www.howstuffworks.com
- www.answers.com
- www.ehow.com
- www.dnatechindia.com
- www.arduino.cc.in
- <http://probots.co.in/Manuals/SIM300.pdf>