GPS/GSM Enabled Personal Tracker

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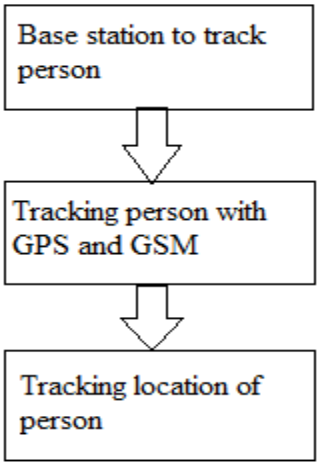
Abstract- *Recently, all over the world crime against children and women is increasing at higher rates and it is a perfect time to offer safety support system for the control room. The proposed system is helpful in tracing the location of child and women when they are in trouble. The child module acts as a transmitter which includes ARM7 microcontroller (LPC 2138/48), GSM module, GPS module and tizzy button when child finds some problem.*

This section describes the conceptual design of a child tracking system. The child information is transmitted and received using GSM technology. The receiver module includes android cell phone and monitoring database. Child module is fixed to each and every child. The position of the moving child is tracked by GPS and is sent to ARM7 microcontroller. This controller forwards the GPS data (latitude and longitude) to GSM board. GSM will in turn send the position of the moving child to two receivers. When the child is in trouble, he may press button and tizzy circuit is triggered by ARM7 microcontroller and intimation about corresponding child is given through text message to their parents.

Keywords- Buzzer, GPS Module, GSM Module, GPRS, MAX 232, Tizzy button.

I. INTRODUCTION

GSM and GPS based tracking system will provide effective, real time person location, and reporting. This system works as the person having the tracking system which comprises of GPS technology, GSM technology and battery which is compatible for this system, also having the SIM with GPRS enabled facility from the person who wants their position would be able to see on Google earth live moving with the help of GPS technology and GSM technology. Fig.1.1 shows person having tracking device with GPS and GSM modem with the help of this we can track the person's exact location.



GPS system can be used to get locations which includes information like latitude and longitude, altitude etc. It is free of cost facility available to every individual. GPS works by using four global positioning satellite signals to compute positions in three dimensions in the receiver clock. Our proposed design is cost-effective, reliable and has the function of accurate tracking.

Project objectives:

The project objectives is to,

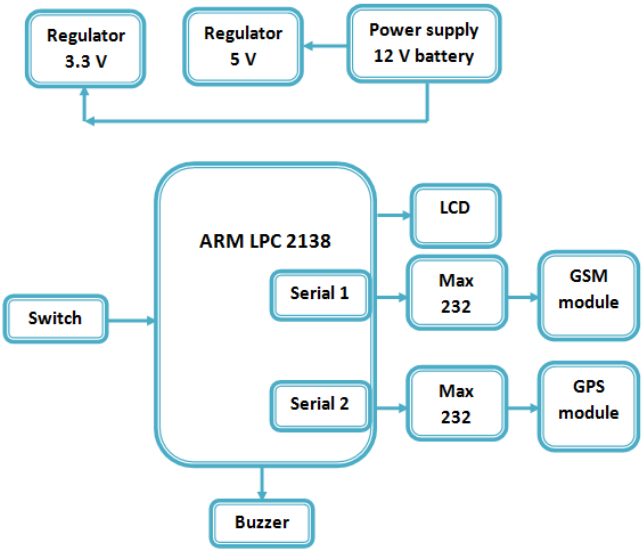
1. Analyse existing literature in the field of GPS and GSM monitoring and tracking in order to as certain current and potential uses of GPS, to track location especially in indoor environments. The system uses the information with the help of GPS and GSM modem and also having SIM with GPRS facility. 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.
2. To investigate the current uses and applications of GPS tracking through multiple usability context analysis.
3. Perform an observational study to find the implications of tracking a person using a GPS device.
4. Use the findings obtained in objective second and third as a base to form a discussion on the ethical issues of GPS tracking and monitoring.

II. LITERATURE REVIEW

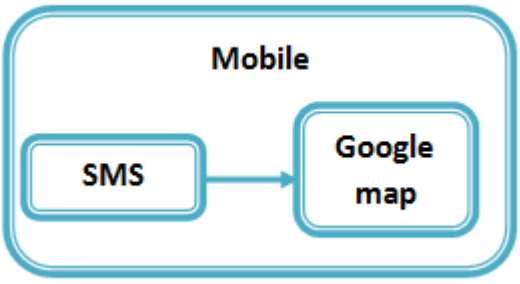
A GSM modem is a specialized type of modem which accepts a SIM card, and operates over a subscription to a mobile operator, just like a mobile phone. GSM uses a process called circuit switching. This method of communication allows a path to be established between two devices. Once the two devices are connected, a constant stream of digital data is relayed. GSM networks consist of three major systems the Switching System (SS), The Base Station (BS) and the Mobile Station (MS).

B.P.S. Sahoo and Satyajit Rath have performed tracking software module, the raw data provided b y the GPS receiver is captured by the software and processed to ex tract the required location and speed information. The ARM-7 connected to the system is also responsible for monitoring the GPS receiver and GSM modem to receive and transmit the data to LCD and Mobile Phone as text message. Abid khan, Ravi Mishra, currently this system is to design and integrate a new system which is integrated with GPS-GSM to provide following feature: a) Location information, b) Real time tracking using SMS, c) persons activity d) Communication is instantaneous therefore we can receive running report quickly. It is completely integrated so that once it is implemented in all device or cell phone, then it is easy to track such device or cell phone at any time.

III. BLOCK DIAGRAM AND DESCRIPTION



Above block diagram shows UNIT 1



Above block diagram shows UNIT 2

We have used Microcontroller ARM LPC2138 along with other peripherals like switches, LCD, GPS module and GSM module, etc. LCD 16*2 is interfaced with ARM microcontroller through port 1 and port 0. Variable commands like waiting for keys, key pressed, etc, are displayed on LCD during execution of complete project. Push button switch is connected to ports of microcontroller to indicate parents are around a child. GPS module is interfaced with microcontroller through MAX232 driver IC to serial port. Also GSM module is attached with microcontroller through MAX232 driver IC to serial port.

If switch interfaced with controller is not got pressed within particular time period after hearing the sound from buzzer, SMS will be sent to pre allocated number. Location of the child will be then sent through SMS. User at receiver end can copy the URL in the SMS and can see the location on Google map.

IV. SOFTWARE DEVELOPMENT

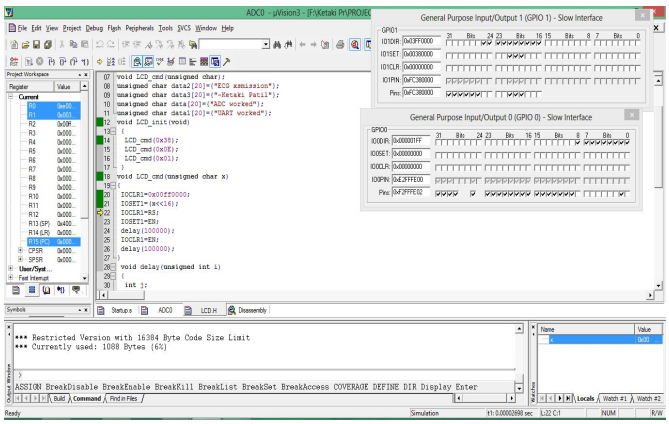
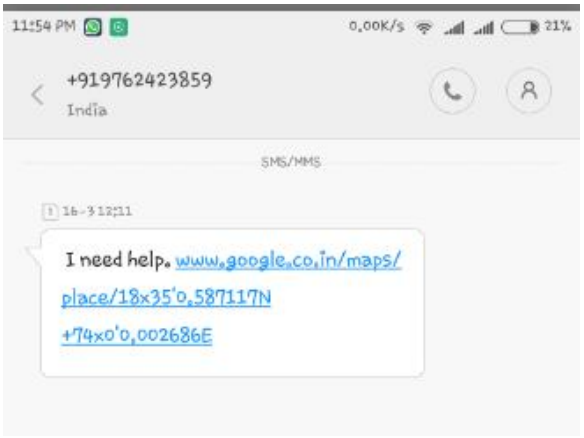


Figure shows Simulation Result

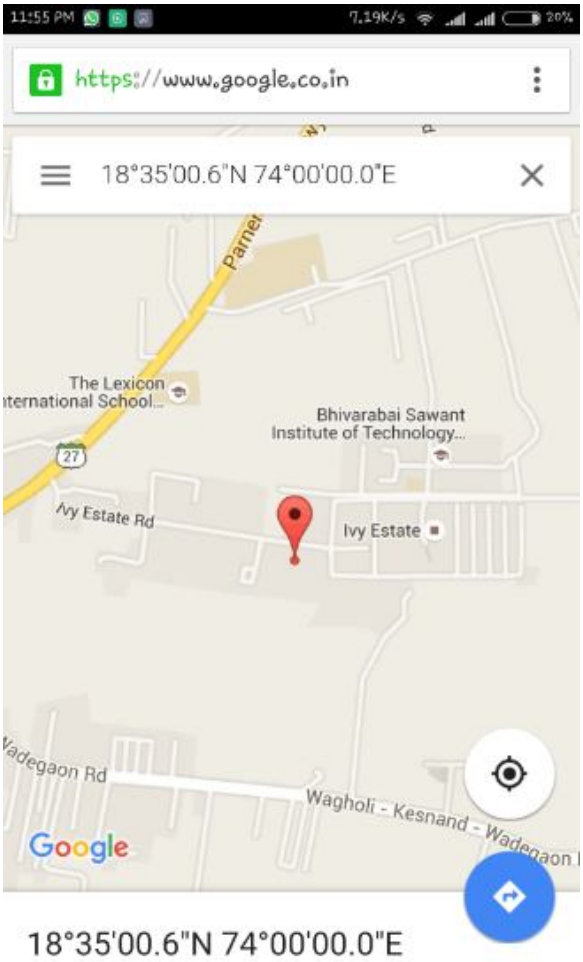
For any hardware to work correctly as desired it is necessary to embed required code written in particular language using associated software. As in this system ARM7 is incorporated, software's that can be used to write code are namely Keil µvision3 and IAR workbench for embedded system. Also, the written code then must be ported on to the

ARM to get the necessary work done. For this either JTAG interface or other software for porting is used. If JTAG interface or debugger is not available then Flash Magic/flash Utility is used for porting code on ARM.

V. RESULTS

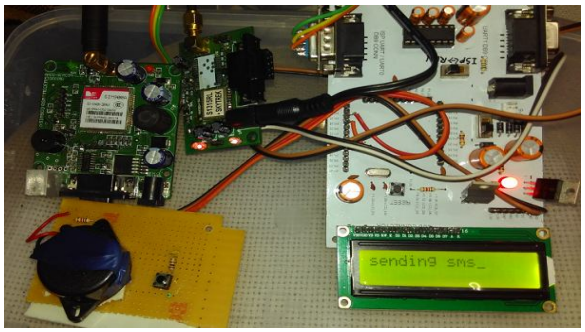


a) Above snapshot shows how GSM module sends location of missing person to the control room.



b) Above snapshot shows effective and real time person location on google map.

VI. DEVELOPED SYSTEM



VII. APPLICATION AND ADVANTAGES

Applications:

1. Can used for military application in case of search operation e.g. recently at “siachen border (jan’16)”.
2. Can be used in crowded places like funfairs, ganpati visarjan, khumb melas etc.
3. Used as women security system.

Advantages:

1. Low power consumption.
2. Easy usability.
3. Good accuracy.

VIII. ACKNOWLEDGEMENT

It gives us a great pleasure to submit our project report of research work. We are extremely grateful to our guide Prof. M.A. Maindarkar of electronics and telecommunication engineering, pune for his constant source of inspiration and continuous guidance and encouragement during this work.

We express our deep sense of gratitude towards Prof. Dr. S.V. Admane, Principal, JSPM’S Imperial college of engineering and research wagholi, pune for encouragement to complete the work.

We are very grateful to Prof. P.R Badadapure Head of department of ICOER, Wagholi, pune for making available all the facilities required for the successful completion of the project.

Lastly, we are thankful to those directly and indirectly helped us and supported us to complete this work.

IX. CONCLUSION

Basically this system focuses more on tracking person location with more accuracy than other systems using GPS module, GSM 900. 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. 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.

This system may also play vital role in military application like tracking of missing soldiers. Also there is no need of any search parties (man power) in case of any missing soldier, instead of that we could offer them a tracking system individually.

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