



An Implementation of Children Tracker Application Using Raspberry Pi

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Abstract:

The main idea in an implementation of Raspberry Pi on children tracker application is for children safety protection. This system is for guidance of user to detect the coordinate of their children. Raspberry Pi is one of the technologies that are used in this development for interface between Global Positioning System (GPS) module and global system for mobile (GSM). Raspberry Pi also acts as the main controller to communicate with the GPS module. In system development part, this communication process is started with detection the children coordinate and send it to the user. Then, the system will produce the latitude and longitude result in real time by using android application. Besides that, this system is user friendly, easily installable and accessible for various other purposed. This project development allows to track the target anytime and anywhere in any weather conditions.

Keywords: Raspberry Pi3, Android, Global Positioning System (GPS), Short Messaging Service (SMS), Global System for Mobile Communications (GSM).

I. INTRODUCTION

The Child tracking system is necessarily required for the parents as crime against children is increasing at very high rate like kidnaping, harassment, even some time harsh punishment from school etc.

now a day's Most of the mobile phones are equipped with location services capabilities allowing us to get the device's geographic position in real time The mobile application use the GPS and SMS services found in Android mobile phones.

It allows the parent to get their child's location on a real time map. Child tracking system will track movement of their child anywhere outside their home.

In this tracking system GPS offers outstanding capabilities in locating positions that helps in locating missing or lost children outside of define area. So parents do not have need to do continuous monitoring of child movement, system will.

The system will not only provide Location of the child but also provide information if child requires emergency help through the text message. This project deals with an Android based solution to aid parents to track their children in real time.

II. BLOCK DIAGRAM

Figure.1 shows the general block diagram of the system. The children information are transmitted and received using the GSM technology. The child module act as a transmitter which includes Raspberry Pi3, GSM module, GPS module and push button.

The Receiver module includes Android mobile device with SMS and Google map application. The child module is fixed to the child.

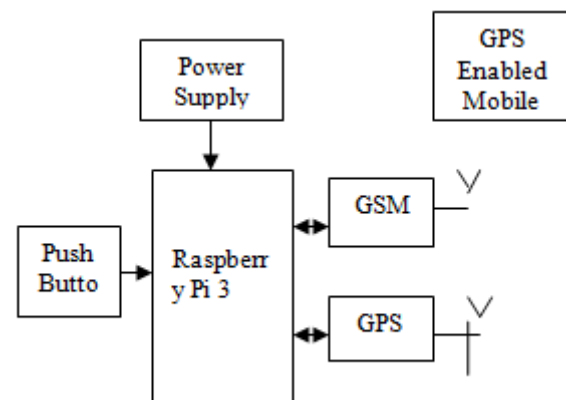


Figure.1. General Block Diagram of the System

This system initializes the GSM and GPS in initial stage, after that it will be waiting for the SMS from the mobile terminal to send the GPS details or the location request signal. The push button will make this communication completely duplex. By pressing the push button child can send his location to their parent at anytime he wants. If the formatted message is received in the GSM which is connected to Raspberry Pi, it reads the Current GPS position and send it over the GSM Network. Requested mobile will receive the Real time GPS value of the children. The position of the moving child is tracked by GPS and the information is send to the Raspberry Pi. After filtering it forwards the GPS data (latitude and longitude) to GSM. The GSM will intern send the position of the moving child to receiver.

III. HARDWARE SYSTEM DESIGN

1. Raspberry PI (PI3): Raspberry Pi is a small computer which can perform multiple tasks. It has a multi-tasking OS Raspbian which is based on Linux platform. It has inbuilt Python script for python programming. Also the coding can be done in C/C++. The readymade libraries are available all over the internet.

Features:

- Chip: Broadcom BCM2836 SoC
- Core architecture: Quad-core ARM Cortex-A7
- CPU:900 MHz
- Memory: 1GB LPDDR2
- Power: Micro USB socket 5V, 2A



Figure.2. Raspberry pi 3

2. **GSM (900A):** Global System for mobile communication is a standard developed by the European Telecommunications Standards Institute (ETSI). The GSM module used in this project is SIM900A which offers all features mentioned above and serves as a medium between transmitter and receiver. GSM board shown in figure.3 receives a latitude and longitude values of the exact position of the child and send this to receiver.

Features:

- Quad-Band GSM/GPRS
- 850/ 900/ 1800/ 1900 MHz
- Built in RS232 Level Converter (MAX3232)
- Built in Network Status LED

Audio interface Connector



Figure.3. GSM Board

3. **GPS:** GPS receiver provides a solution that is high in position and speed accuracy performances, with high sensitivity and tracking capabilities in urban conditions. This module shown in figure.4 delivers major advancements in GPS performances, accuracy, integration, computing power and flexibility. The general specification of the module is given below:

Features:

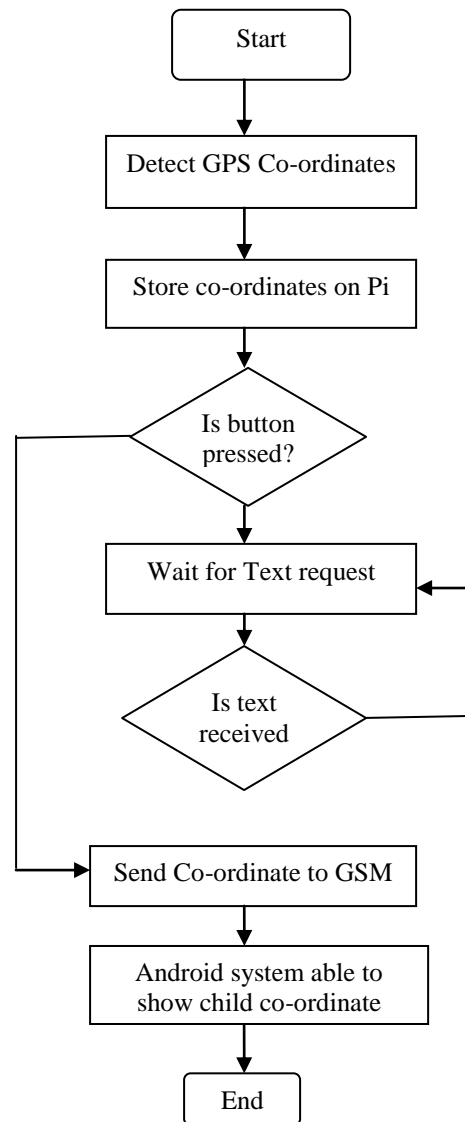
- Highly sensitive
- Low power consumption chipset in a ultra compact form factor
- Compatible with Microsoft Windows 10, 8



Figure.4. GPS Board

4. **Push Button:** Whenever the child feels that he is in danger, he presses the push button. By pressing the push button the message get forwarded to parents mobile and detects the location of child and send it as text message to parents mobile.

IV. SYSTEM DEVELOPMENT



V. REFERENCES

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