# Arduino Based Child Tracking System Using GPS and GSM

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**Abstract-** *Now a days the chance of missing childrens are going in rampant. So in order to reduce this problem, we are presenting a paper on Child Tracking System Using Arduino Uno and Google Map. This system is used for tracking the information of the lost child using Google Map along with the position and location of that child through GPS. This process operate simply by keeping the "tracking system device" into the bag of that particular child, who is going to school or outside world and now if in case that child is lost or missed then the parents of that particular child can simply track him/her by sending a message name "TRACK" to the particular operating device which has been kept inside that child bag. In this way the parents get the real time location by receiving the exact position of the child along with the longitude and latitude of that place then it will be copied into the Google map and the location of that lost child can easily be accessed .*

**Key word-** *Global System For Mobile(GSM) module , Global Positioning System(GPS) , Google map , Ardunio Uno, Accuracy . Track*

## 1. Introduction

Now a day's child tracking system is widely used all over in the word and it gives the assurance to the parents that their child is safe from suspicious action. In this paper we will show the system requirement for tracking the child and describe the implementation feature. To implement such system a GPS with high accuracy is required, if the low accuracy GPS is used in this system,. System may give some error of that child location . In this system we send the message name TRACK to the device and the GPS of that device send the longitude and latitude to the GSM module , GSM module receive the information about longitude and latitude of that child location , further this message will be send to the user for tracking the location of that lost child. The Ardunio is a small micro controller which is used for controlling whole process in this system .This paper provides the concept for developing a low cost , high accuracy and user friendly system by using Google map . Google map can improve the accuracy of GPS. This paper presents research that applies Google map to describe the Child Tracking System. Improvements are proved by Google map that make high accuracy .

### 1.1 Architecture Of System Shown in figure

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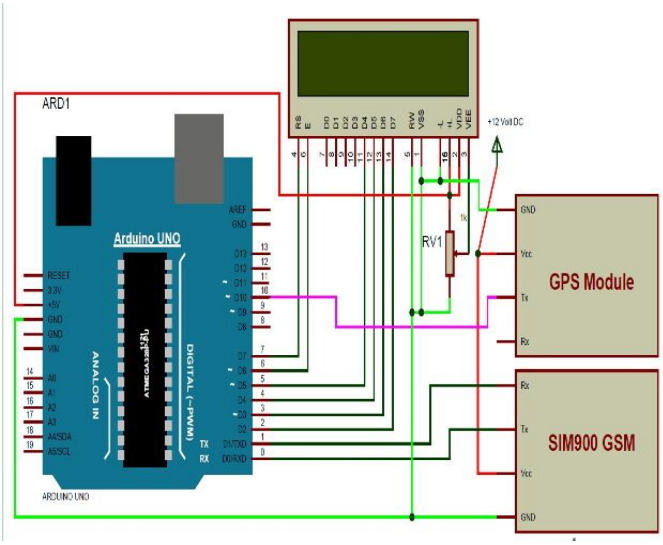
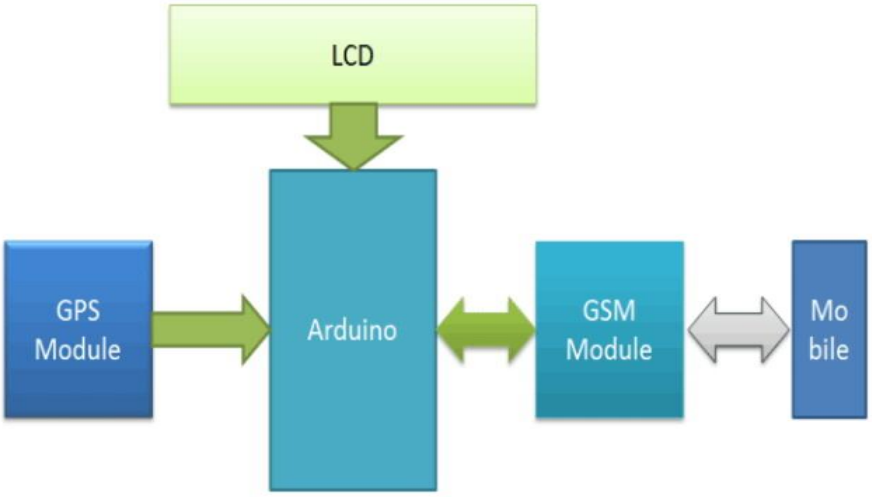


### 1.2 Existing System

The research paper of 2016 child has been tracked but system is complex due to use of ARM controller . And in 2013 the paper GPS and GSM child tracking system using smart phone, But it is not necessary to child have the with him. Now, we design Arduino based child tracking system using GPS and GSM which is economical.

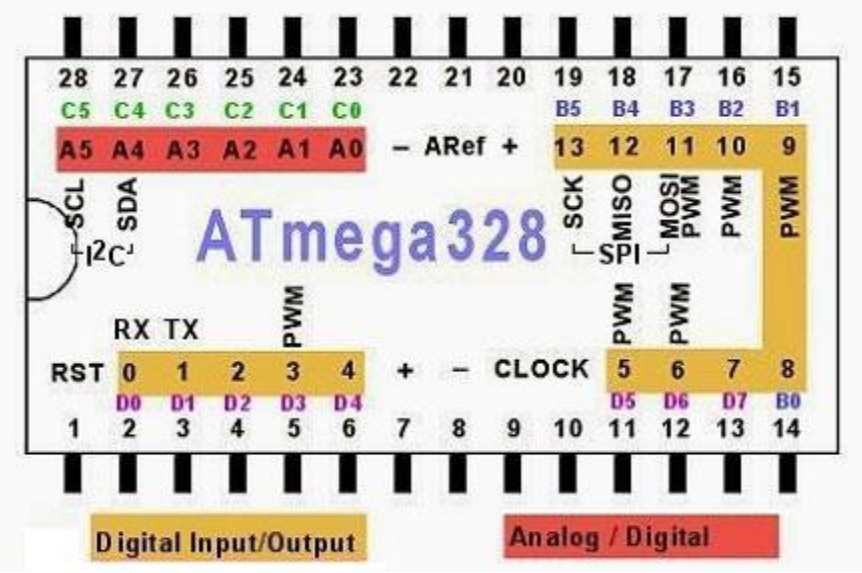
There are various researches in improving the accuracy of GPS point . Now we can simply find the child location by using the Google Map. Google Map Web mapping service developed by Jens Eilstrup Rasmussen. It provides turn by turn navigation along dedicated parking assistance feature. It is primarily available on the mobile.




## 2. HARDWARE SYSTEM DESIGN

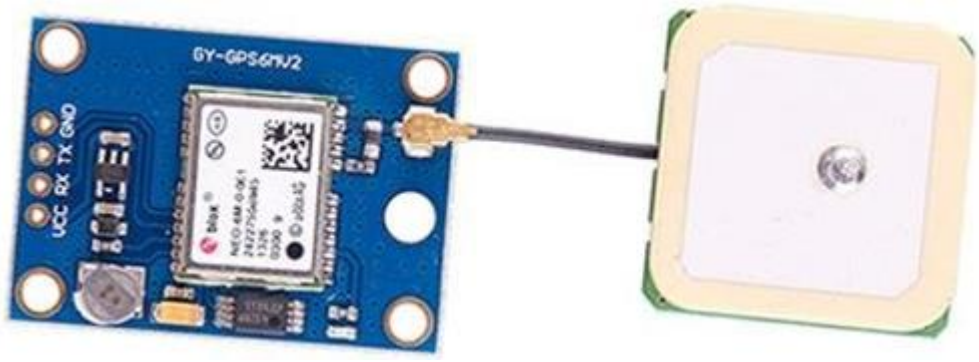
### 2.1 Arduino Uno-

Arduino uno is a micro controller board based on ATmage328P . It has 14 digital input/output pins of which 6 can be used as PWM out put and 6 analog inputs, a 16 MHz quartz crystal, a USB connection a power jack and ICSP reader and a RESET button. It has every things required to support to the micro controller .It needs 12 Volts power in my system.



## 2.2 GPS Module

A GPS navigation device, GPS receiver or simply GPS is a device that capable of receiving information from GPS satellites and calculate the geographical position . GPS satellites circle the earth twice a day in a precise orbit. Each satellite transmit a unique signal. To calculate 2D position (longitude & latitude) and track movement .A GPS receiver must be locked on the signal at least 3satellites.




## 2.3 GSM Module (SIM900A)

A GSM module is a basically a GSM Modem (SIM900). We are using SIM900A and then interface it with Arduino simply. SIM900A GSM means the module support communication in 900MHz bands. We are from India and most of the mobile network providers in this country operate in the 900 MHz .

## 2.4 SOFTWARE SYSTEM DESIGN

**Integrated Development Environment(IDE)-**The open source software(IDE) make it easy to write the code and upload to it on board .IDEs have always popular on the Mac , OS and MacOS , which support the multi language.

## Advantage

1. Application automatically operates location it can be used place where GPS satellites connectivity is not available . At that time it can uses network providers for location service .

2. Message is available without internet .

## Conclusion and Future scope

A child tracking system has been successfully implemented. This system divided into 3 main subsystems GPS, GSM, and Arduino subsystem. GPS is used for describing the position of the children in the form of longitude & latitude and further this longitude & latitude is received by the GSM. And GSM send this information to the trackers mobile number via message. Arduino chip is used software or IDE (Integrated Development Environment) that written in my computer, used to write and upload computer code to physical board. And Google Map is used to improve the accuracy of this system.

The Google Map proves to provide main enhancement firstly, it improves the accuracy of the tracking location of children So it offers the additional functionality which requires high accuracy i.e extract location of the children such functionality requires high , accuracy with GPS module coordinates , validity of the system 72.2% and with Google Map validity of the system 95%. For further work a high scale deployment can accomplished. By such system more achievements can be achieved

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