



# INTERNATIONAL JOURNAL OF ADVANCE RESEARCH, IDEAS AND INNOVATIONS IN TECHNOLOGY

ISSN: 2454-132X

Impact Factor: 6.078

(Volume 7, Issue 3 - V7I3-1860)

Available online at: <https://www.ijariit.com>

## Asset tracking system

Rushyanth Pasupuleti  
[rushyanth11@gmail.com](mailto:rushyanth11@gmail.com)

Vellore Institute of Technology, Vellore, Tamil Nadu

D. Deekshith Reddy  
[deekshithreddy180@gmail.com](mailto:deekshithreddy180@gmail.com)

Vellore Institute of Technology, Vellore, Tamil Nadu

### ABSTRACT

Now-a-days, safety is one of the major issues as crime is rapidly growing across the world. IOT Asset Tracking System is concentrated with the security and safety of girls, children, people with mental disturbance and any valuable things. This system goes to assist people to watch and track the situation of assets.

**Keywords:** *Arduino, GPS, Asset, Tracking System, RF Transmitter, Receiver, Thingspeak, Maps*

### 1. INTRODUCTION

Now-a-days, the development of technology is fast growing and gives all necessary and efficient solutions for all the problems and the requirements. Security is the key feature in the present society.

In this situation here, IOT Asset tracking system is built and being deployed to grow the safety of women, children with young age and adults, also people with disorders and any valuable assets through the technology and devices of RF along with IOT.

Radio Frequency module consists of transmitter and receiver. The transmitter is positioned with the asset to be traced which transmits radio waves to the receiver.

If the asset is being traced goes out of frequency border that is RF module range, an alert SMS and any kind of information data will be sent to particular employees or people through (GSM) Global System for Mobile communication.

Also including that the position of the asset can be traced whenever required through Global Positioning System. In addition, by using Google map API key we can locate the object and for the latitude and longitude values we can use Think speak channel id and API key.

### 2. OBJECTIVE

The Central objective of Asset Tracking System based on IOT is to locate the position of assets. The key goal is to guarantee extreme safety and allow tracing by providing present location.

### 3. LITERATURE REVIEW

[1] Steven Chan, Adam Connell, Eribel Madrid, Dongkuk Park, Ridha Kamoua, "RFID for personal asset tracking" - This paper deals with how Radio Frequency Identification (RFID) keeps track of registered objects that are within range of the user. The aim is to provide latest security features for assets that are carried around. If the valuable things were lost and not robbed, RFID reader and GPS receiver gives the information to the user about the recent location of the object.

[2] Aditi Gupta, Vibhor Harit, "Child Safety and Tracking Management System"- This paper looks to ensure maximum security and live tracking for kids. This project suggested a classic idea for child safety through smart mobiles that delivers the choice to track the position of the children and the child can SMS in case of backup through GPS equipment.

[3] Fatin Balkis Binti Alzahri, Maziani Sabudin, "Vehicle Tracking Device"- This paper Vehicle Tracking Device (VTD) give information of location coordinate to mobile phone whenever there is a request for it over the SMS. Vehicle Tracking Device is an combination of hardware and software models.

[4] Daniel Patricko, Hendry Hendry, Jonathan Adiel Pranoto, Adi kurniawan, "Human tracking in certain indoor and outdoor area by combining the use of RFID and GPS" - In this paper An RFID tag was carried by a user and continuously read whenever he/she access a room while GPS was used mainly when the user was staying outdoors. GPS will be started automatically whenever the employer leaves the area 3 meters away

[5]Pratik Kanan, Dr. Mamta Padole, "Real-time Location Tracker for Critical Health Patient using Arduino, GPS Neo6m and GSM Sim800L in Health Care"- during this paper, an IoT device is formed which locates the exact GPS locations of the patients to the hospital server. Also, by means of the web interface on the server and Google Maps, hospital staff and employees can locate the exact location of the patient and help him. The system is finished using sensors like GPS Neo, Arduino, GSM.

#### 4. IMPLEMENTATION

##### A. Basic System Requirements:

**Arduino:** Arduino is an open-source development that formed microcontroller-based tools for construction of digital devices and communicating objects that can intellect and regulate physical devices.

**Rf Module Transmitter:** An RF source module is a minor PCB sub-assembly skilled of communicating a radio wave and controlling that wave to transmission data. Transmitter modules are usually executed together with a microcontroller which will offer data to the module which can be communicated. RF transmitters are usually issue to supervisory supplies which command the extreme acceptable transmitter power output requirements.

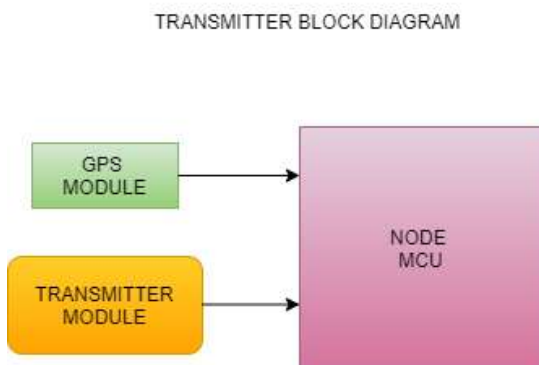
**Rf Module Receiver:** An RF receiver module accepts the modified RF signal and demodulates it. 2 types of RF receiver modules are super heterodyne and super-regenerative receivers. Super regenerative modules are frequently low cost and low power projects. It usages a sequence of amplifiers to abstract modulated data from a carrier wave. Super-regenerative modules are commonly vague as their frequency of procedure differs significantly with temperature and power supply voltage.

**GPS Positioning Module:** The module series is a private of stand-alone GPS receivers containing the great presentation positioning engine. Their dense architecture and power and memory options make NEO-6 modules perfect for battery functioned movable devices with very strict cost and space constraints. These elastic and price active receivers offer frequent connectivity selections during a miniature 16 x 12.2 x 2.4 mm package. It is one of the global navigation satellite systems (GNSS) that provides relocation and time information to a GPS receiver anywhere on or near the Earth where there is an unconstrained stroke of vision to more than 4 GPS satellites. Problems such as peaks and houses hunk the comparatively weak GPS signals.

**ESP8266 Nodemcu:** NodeMCU is an open-source firmware and growth kit that assistances you to sample or shapes IoT produces. It comprises firmware that turns on the ESP8266 Wi-Fi and hardware which is based on the ESP-12 module. The firmware customs the Lua scripting language.

##### B. Block diagram:

###### Transmitter:



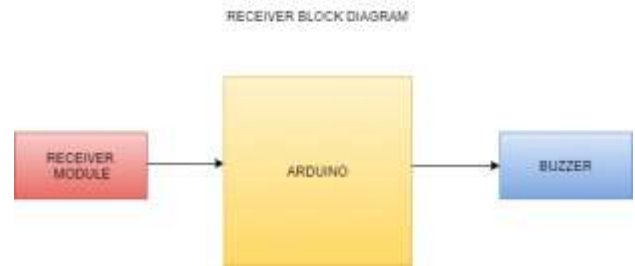
###### Transmitter module with NODEMCU:

- Vdd of transmitter - Vin digital pin of Node MCU
- Gnd of transmitter - Gnd pin of Node MCU
- Data pin of transmitter - D6 digital pin of Node MCU

###### GPS module:

- Vdd of GPS module - Vin digital pin of Node MCU
- Gnd of GPS module - Gnd pin of Node MCU
- Rx pin of GPS module - D0 digital pin of Node MCU
- Tx pin of GPS module - D1 digital pin of Node MCU

###### Receiver:



###### Receiver Module with Arduino:

- Data pin of Receiver - Digital pin 2 of Arduino
- Vdd of Receiver - Vin digital pin of Arduino
- Gnd of Receiver - Gnd pin of Arduino

###### Buzzer with Arduino:

- Buzzer - Digital pin 10 of Arduino
- Gnd of Receiver - Gnd pin of Arduino

##### C. Methodology:

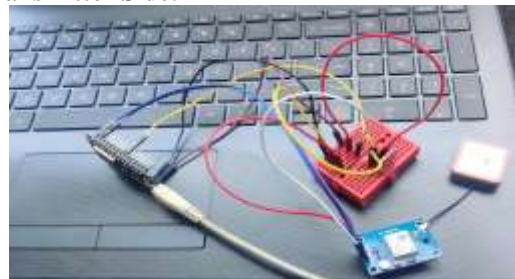
Asset tracking device has two main processors

- 1) Arduino
- 2) NodeMCU.

We have an asset and an observer. Arduino will be present with the observer and NodeMCU is attached to the asset. The asset keeps transmitting the data with the help of the RF transmitter. Arduino will keep receiving the data with the help of the RF receiver, and once the receiver couldn't pick the signal transmitted it means that the asset is out of range. We always keep track of the location of the asset with the help of GPS module noting the values to Thingspeak. Once the asset is out of range, we activate buzzer and we locate the asset on Thingspeak. For locating asset we created a HTML page using google map API key and for longitude and latitude values we used Thingspeak channel id and API key.

##### D. Hardware Implementation:

###### At Transmitter Side:



###### At Receiver Side:



E. Results:

Thingspeak:



Real Time Location:



## 5. CONCLUSION

The proposed IOT Asset Tracking System has been developed to form sure safety and security of assets like people with mental disturbance, women, children and any valuable objects. The main advantage is that the utilization of sensors like sound sensor and vibration sensor that sense and alert. IOT Asset Tracking System is often used for both personal and business purpose. In future, IOT Asset Tracking System goes to play a

serious role in our day to day life. EEPROM are often wont to store the previous navigation position up to 256 locations by increasing its memory. The accuracy of GPS receiver is often increased by increasing its cost. The dimensions of the kit are often reduced by employing GPS and GSM within the equivalent module. The system is often extended to trace vehicle and with the assistance of high sensitivity vibration sensors accidents are often detected and send the situation to the owner, hospital and police.

## 6. FUTURE ENHANCEMENT

The accuracy of GPS receiver is often increased by increasing its cost. The dimensions of the kit are often reduced by employing GPS and GSM within the equivalent module. The system is often extended to trace vehicle and with the assistance of high sensitivity vibration sensors accidents are often detected and send the situation to the owner, hospital and police.

## 7. REFERENCES

- [1] Steven Chan, Adam Connell, Eribel Madrid, Dongkuk Park, Ridha Kamoua, "RFID for private asset tracking".
- [2] Aditi Gupta, Vibhor Harit, "Child Safety and Tracking Management System"-2017
- [3] Fatin Balkis Binti Alzahri, Maziani Sabudin, "Vehicle Tracking Device"-2016
- [4] Daniel Patricko, Hendry Hendry, Jonathan Adiel Pranoto, Adi kurniawan, "Human tracking in certain indoor and outdoor area by combining the utilization of RFID and GPS"-2016
- [5] Pratik Kanan, Dr. Mamta Padole, "Real-time Location Tracker for Critical Health Patient using Arduino, GPS Neo6m and GSM Sim800L in Health Care"-2010