

Radio Frequency Based Location Data Transmission System in Remote Areas Without Mobile Network Communication

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Abstract- As the technology is growing immensely in recent years, but still now the remote locations has lack of mobile network connectivity. Individuals are going to investigated the remote and neglected areas. Distant regions are far away from urban areas and where the vast majority reside. Individuals can't convey to others because of absence of network connectivity. Along these lines, the reasons for the proposed framework is to foster a GPS gadget that can get to longitude and latitude continuously without the requirement for a web association. The proposed paper comprises of two modules. The primary module as a sending gadget, that has GPS and NRF specialized gadget communicate its present area with the microcontroller to the recipient gadget (second module). The subsequent module is where the data sent from the primary module gadget gets GPS reconciliation through RF correspondence and showcases the outcome. This framework will be continuous reason area without the requirement for a web association with send information in first module.

Keywords- nRF24L01 PA/LNA, Android App, Node MCU, IoT.

I. INTRODUCTION

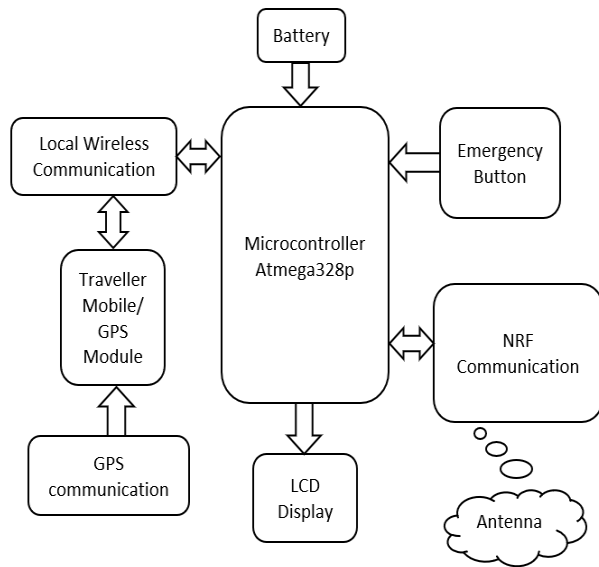
In everyday life, the travel industry is rising vigorously. Individuals go to remote and neglected areas consistently and they can't track down their unique careful area. In the present circumstance, following people groups are done through the manual technique is beyond the realm of possibilities in fast time. To tackle the issue, we build an original remote Global Positioning System (GPS) gadget that can access and show boundaries like time, longitude, latitude progressively without the need of a functioning web association. In this venture, we use Global Positioning System gadget and nRF24L01 PA/LNA module as a first module. The Global Positioning System gadget is communicate with a framework through Local wireless communication. The nRF24L01 PA/LNA module will send encrypted data to collected gadget (receiver device) like GPS latitude, longitude.

And furthermore, we can sent "HELP" order through Vice Versa technique. When the information are sent from module 1 the green LED is blinking each data transmission. The Receiver device is a showcase gadget, which can either be a cell phone or some other presentation gadget like Liquid Crystal Display(LCD) show to get the Global Positioning System organizes through Radio Frequency correspondence and show the outcome. The framework is expected to be a universally useful finder without requiring web association with get information from Transmitter. Whenever the transmitter is sending a signal it is observed through IoT. The information subsequent to being gathered at is transferred to cloud.

II. SYSTEM DESIGN

This is a NRF based, area information transmission framework without network correspondence. nRF24L01+ PA/LNA is a handset module. In sending side, the Global Positioning System(GPS) gadget coordinated inside the framework imparted through nearby remote correspondence. nRF24L01 PA/LNA module is place in a little convenient pack that will send scrambled information like Global Positioning System Latitude, Longitude. And furthermore, we have added a crisis button to sent "HELP" order, and information can likewise be sent in the Vice Versa Strategy.

Traveller Unit



Receiver Unit

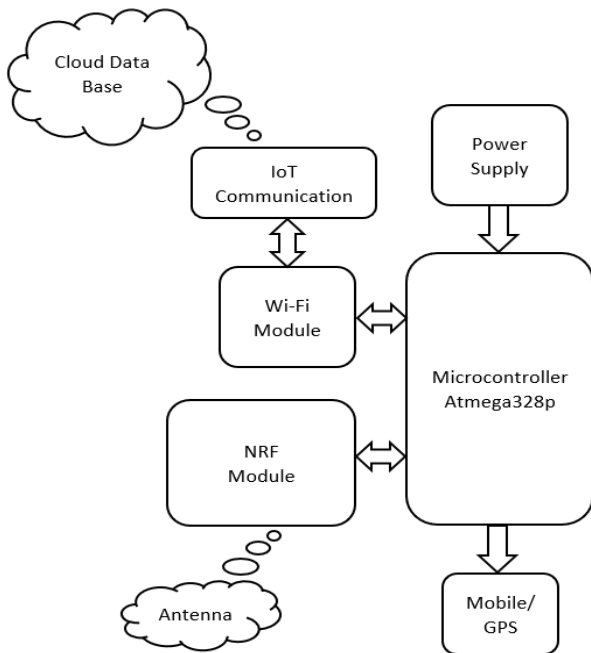


Figure 1 diagram of a RF based location tracking

In the event that NRF as a transmitter, it can supports the signal upto 1000 meters with assistance of Power Amplifier [PA] strategy. In the event that NRF as a receiver, it can immunes the commotion of getting information with assistance of Low Noise Amplifier [LNA] strategy. In getting side, NRF module get the information from transmitter. The getting information are decoded by microcontroller. All information are consistently sent from the Wi-Fi module to Cloud for information storage. IoT helps, clients can screen the information through cell phones and PCs.

Android App

MIT App Inventor 2 is a tool which permits simple production of android Apps through intuitive square programming. This venture, we creat a Geo Location_Traveller App utilizing MIT App Inventor 2.



Figure 2 Geo Location_Traveller App

First As a matter of first importance, the user turn ON the Bluetooth and Location in our cell phone. User can easily configure the mobile default Bluetooth to Travelling unit HC-05 Bluetooth. The longitude and latitude information are sent to travelling unit via Local Wireless Communication. If user press a START button the information are sent to receiving unit via RF communication. The information are view by control room and stored in cloud storage. IoT helps, clients can screen the information through cell phones and PCs.



Figure 3 Bluetooth configuration

nRF24L01+ PA/LNA Module

The nRF24L01+ transceiver module is designed to operate in 2.4GHz worldwide ISM frequency band and uses GFSK modulation for data transmission. The data transfer rate can be one of 250kbps, 1Mbps and 2Mbps. The nRF24L01+ transceiver module communicates over a 4-pin Serial Peripheral Interface (SPI) with a maximum data rate of 10Mbps. All parameters such as frequency channel (125 selectable channels), data rate (250kbps, 1Mbps or 2Mbps)

can be configured through SPI interface. The PA stands for Power Amplifier. It merely boosts the power of the signal being transmitted from the nRF24L01+ chip. Whereas, LNA stands for Low-Noise Amplifier.

Node MCU

Node MCU is an open-source Lua based firmware and improvement board uncommonly focused on for IoT based Application. It remembers firmware that runs for the ESP8266 Wi-Fi SoC from Espressif Systems, and equipment which depends on the ESP-12 module. The working voltage is +3.3v dc. It has 16 broadly useful I/O pins on its load up, 4 pins accessible for SPI correspondence, 2 UART interfaces, 4MB glimmer memory, 64KB SRAM and 80 MHz Clock Speed. It utilized in Prototyping of IoT gadgets, Low power batter worked applications and Network projects.

Internet Of Things

IoT is the application of internet connectivity with physical devices and everyday objects. The interconnection using the internet of computing devices embedded in everyday objects, enables them to transmit or receive the data. The efficient IoT platforms can identify exactly what information is advantageous and what can safely be rejected. This information can be used to detect patterns, makes recommendations and identify possible problems in advance. The information gathered by the connected mobile devices, based on real-time data enables them to decide for rescuing people which saves time and money.

III. PROPOSED SYSTEM



Figure 6 Traveller Kit (On/Off Condition)

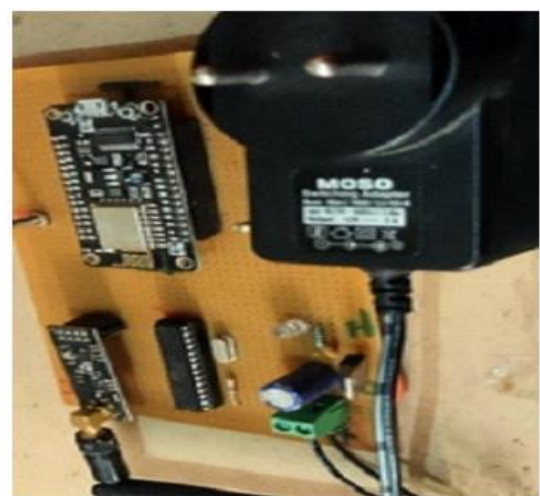
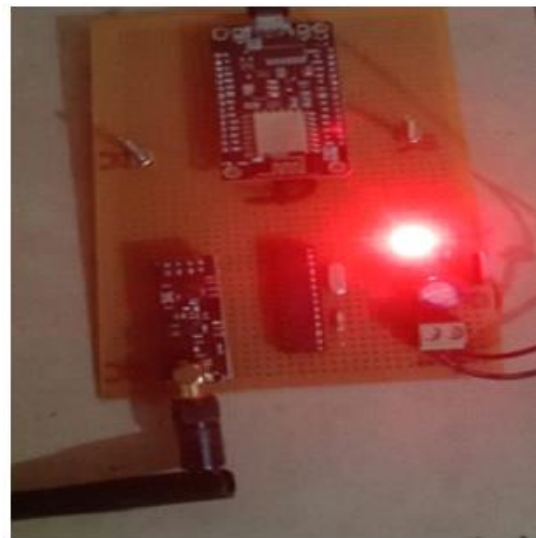


Figure 5 Receiver Kit (On/Off Condition)

IV. RESULT

This paper is intended to implement a Location Tracking system without passive internet connectivity to avoid loss of time, money and man power. The user can easily identify their current location with help of transmitting device. The transmitting device sent longitude and latitude with safe or emergency condition (11.24,77.82,0 or 1) to the receiver. The receiving device receive the data through RF communication. The longitude and latitude data are stored in real time database(cloud) and view by any display device like PCs or mobile phone.

The IoT and cloud computing plays a very important role for monitoring and analysis of Location Tracking in real time. The radio control innovation these days is an arising and quick creating innovation. There is a gigantic extension in this area to work.

V. CONCLUSION

In this paper we examined the significant reasons for Rescuing individuals through manual technique is taking long time and man power. By utilizing this gadget, the observing and examination process has become viable, effective and is effectively available by commoners. History of the information are put away in cloud which can be utilized at any later time. The saving of individuals was effectively finished by utilizing this gadget and it additionally turns out to be more proficient and powerful and effectively open to the client. Also, the result was carefully observed with the assistance of IoT.

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