



A Review of RF and IoT based Asset tracking system

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Abstract—The technology industry is expanding quickly today, offering all the required and efficient answers to the needs. Security is one of the key issues at hand. To increase the safety of women, children, persons with mental disorders, and any precious things, an RF and IOT-based asset tracking system is created in this scenario. This project's goal is to keep tabs on the items in a certain room or a building. The most well-known form of position tracking available today is via GPS. These technologies can't pinpoint an entity's precise location within a building or on a certain floor or room, therefore that's a limitation of their ability. So, in this article, we suggest a smart asset monitoring system that enables us to keep track of where people, products, and other objects are located inside of a building or other institution.

Index Terms: RF, IoT, Asset

I. INTRODUCTION

To track the position and movement of assets inside a building or facility, the RF and IoT based Asset Tracking System offers a dependable and affordable solution. To send and receive location data in real-time, the system comprises of a number of RF transmitters, an RF receiver, and an IoT gateway. A crucial component of many applications, including logistics, security, and healthcare, is indoor location tracking.

In this study, we describe an IoT ESP8266-based web browser combined with a radio frequency 433MHz transmitter and receiver-based indoor position tracking system. The suggested system uses a simple technique to enable real-time tracking of objects or persons inside a structure.

A. DEFINITION

Asset tracking systems are a way to keep track of assets by employing tags or scanning barcode labels that are attached to the assets. These technologies can also be utilised to track equipment that is wearing tags indoors. The most well-known form of position tracking in use today is the GPS system.

B. PROBLEM

The main problem with GPS enabled tracking is it will not work inside the buildings accurately. The GPS satellites emit the RF signals that will get deflected inside the building. A dedicated RF receiver receives the signal and sends the location to outside world over IoT network.

C. SOLUTION

Track and Protect Critical Equipment: Asset tracking using RF and IoT makes use of sensors and linked devices to provide remote management and monitoring of an asset's position and movements. Every firm has important assets, including agricultural animals, fleets of cars, and industrial machinery. For your business to succeed, it is essential to safeguard their safety and accessibility.

Create Service Opportunities: For corporate operations to be successful, it is essential to track the location and condition of priceless assets and inventories securely. Asset management is made considerably simpler with IoT-enabled asset tracking. By allowing you to track your assets remotely, these technologies help your company lower risk and develop new revenue sources.

II. OBJECTIVES

Here, each tracking object is equipped with wireless RF-based transmitters. The RF receiver connected to the microcontroller picks up this RF signal. The web application receives the data from the microcontroller and sends it through Wi-Fi. The location of the Items can be tracked by users using a web browser without any external apps.



We can utilise communication technologies like Bluetooth, Wi-Fi, zig-bee, or RF to communicate with tracked objects.

III. RESEARCH METHODOLOGY

Asset tracking systems built on RF and IOT are put into place in two stages: tracking and monitoring.

Tracking:

The tracking asset is put with the transmitter kit. The LCD display, sound sensor, vibration sensor, WIFI module, GSM module, and RF transmitter are all coupled to the main nano micro controller. When the system is ON, the LCD panel shows the gadget to be in good working order.

Furthermore, it shows the asset's condition. The data from the sensors are continuously read by the vibration and sound sensors. Calls and alarm messages indicating that the asset is in trouble are sent to the designated mobile numbers using GSM if the sensed value exceeds the threshold value.

Monitoring phase:

The person watching over the asset has the receiver kit with them. The buzzer, LCD display, and RF receiver module are all connected to the main nano microcontroller.

When the distance between the transmitter and receiver exceeds the maximum threshold frequency range and/or when the transmitter kit is removed, an alert message stating that the asset is lost is displayed on the LCD screen. Additionally, a buzzer sound is produced in such circumstances to signal an alert.

IV. SCOPE OF THE PROJECT

. The integration of machine learning methods to increase the precision of location tracking and the creation of a mobile application for more user-friendly tracking are included in the study's scope.

The project can easily be expanded using a GPRS module that can deliver alert messages directly to a specified weblink. Utilising a speech circuit that can inform the user through voices, the project can potentially be expanded.

V. BENEFITS

- A very user-friendly and efficient design.
- Simple to use.
- Minimal power usage.
- Practical design.
- The suggested method has a number of benefits, including affordability, simplicity of implementation, and realtime tracking. It has a variety of uses, such as in logistics, security, and healthcare.

VI. CONCLUSION

It has been created with features that integrate with all of the hardware used. Each module's presence and placement have been carefully considered and have a positive impact on how well the unit functions. In addition, the project has been implemented effectively using cutting-edge ICs and advancing technology. Consequently, the project has been effectively developed and tested.

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