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Object Tracking Devices using Android Application

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Abstract: Millions of smart devices are mushrooming in this digital environment to meet the difficulties posed by innovations and technological advancements in ubiquitous computing. All of these smart gadgets are exposed to everyday objects that are linked to the Internet. Web of Things is a term that defines how various objects are connected to the Internet and communicate with one another using web standards. The emergence of omnipresent systems makes human beings' jobs easier. People were able to live lavish existence in the most comfortable environment because of these inventions. Finally, everyone began to keep their valuables in accordance with their activities inside the house or at work, and they began to hide them under misplaced or lost belongings. Every house has a history of searching for keys, wallets, pen drives, and hand purses, which may be a time-consuming task, especially during times of high demand. A device model is presented to reduce this effort and save time by allowing lost objects to be tracked and traced out. The suggested work serves as a foundational notion for describing how to track items in a practical manner. This is a basic device model that describes how to track an object using an Android mobile device and a Wi-Fi connection with the Blynk app and GPS controllers.

Keywords: Android Mobile Phone, ARDUINO Microcontroller, buzzer, battery, GPS controller

I. INTRODUCTION

The major purpose of this project is to assist those who frequently misplace their belongings as well as to prevent items from being stolen. People are frequently annoyed when they misplace items such as wallets, keys, pen drives, laptops, and other valuables. An object finder can locate a specific object of interest anywhere on the planet. We used a GPS with a NodeMCU and an Android app in this project. Android is used in more than 190 countries and powers hundreds of millions of mobile devices. This project is about systems and technologies that allow people to easily discover and find lost or misplaced objects or items in a home or office environment, and more specifically about a system that uses an Android app and a number of wireless receivers (wifi tags) attached to the objects at various times, an item must be located. The object could be anything from luggage to a car to a bicycle to a person. We used an Android application called Blynk. There are two possible project modes. The first is when the user wants to find an object with an attached tag using the app, he must first start the app. Also, view the object's current location. An object finder is a device that can locate an object of interest within a set range. This project is about systems and devices that allow people to easily discover and find lost or misplaced articles or items in a home or workplace, and more specifically about a system that uses an Android application and a number of wireless transmitters (wifi tags with GPS) that may be attached to an object. or an item that has to be found at different times. The object might be luggage, a car, a bicycle, or even a person. The challenge of finding an object could be locating a specific automobile in a parking lot, luggage on a luggage conveyor in an airport, a certain bike in a schoolyard, or even locating a certain person. This is multiple transmitters and single receiver system i.e several objects can be tracked using a mobile phone.

II. LITERATURE SURVEY

- 1) Anti-Theft System using GSM module: The system developed effectively provides an application of connected devices or the Internet of things in Transportation. The Modules like GPS and GSM are helping us to track the location of an object using the GPS antenna in the object. Since the use of these open source technologies makes the system cost-effective and easy to understand. Mobile network providers provided the security standards and therefore security is very good.
- 2) With the help of Raspberry Pi, monitoring and tracking becomes possible, System plays an important role in monitoring and tracking object live. Whenever there is an object theft situation or objects accident situation occurs, the proposed system provides the object's current location, speed to the object owner's mobile. One of the benefits is live tracking of an object earlier. There is concern that provision is given to a student's safety as per situations.
- 3) Handling of data is done by GPS device: Object tracking is reflecting scenario, System reflecting the tracking scenario of an object by using SPSS. The position of the object in the form of latitude and longitude is not only analyzed through the analysis report table but also tracked by a line graph with respect to time. The movement of the object in the form of speed is not only analyzed through the analysis report table but also tracked by a line graph with respect to time. Various inputs regarding efficiency in tracking tasks have been identified during the data analysis.

- 4) Advance technologies like GPS/GSM/GPRS and android application are possible, this paper has described the design and implementation of our object tracking system. Server and smartphone applications make the tracking system more beneficial. In this work, the in-object device is composed of a microcontroller and GPS/GSM/GPRS module to acquire the object's location information and transmit it to a server through GSM/GPRS network.

III. WORKING

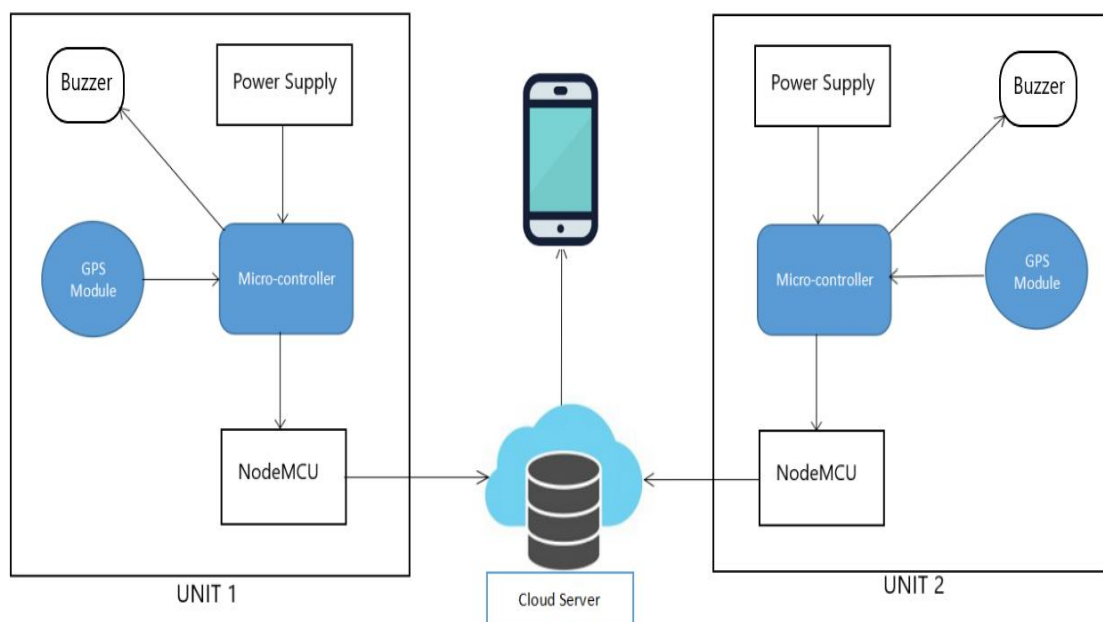


Fig.1 Block Diagram

The software and hardware design used in this linked architecture framework to track an object is described in the following section. Since it is a multiple transmitter and single receiver system, we have considered two units of the same device to demonstrate the working. This initiative was created primarily for persons who lose or misplace their belongings. There are two modules: an object module with a GPS connection that stores the object's location (latitude and longitude). The other is the user module, which is an Android app that allows users to track down misplaced items via the "Blynk" app. The app's initial home page will be displayed after the user activates it. The software then immediately navigates to the login page, where the user must log in.

On the front screen of the Blynk application, a button and a map will emerge, from which the user can trigger the associated object to be located. The user must select the misplaced or lost item. When the object is touched, the Google map page is automatically set. When the Google map is configured and the position of the object is marked on the map, the buzzer in the kit automatically begins to sound. This is also one of the methods for identifying the thing when it is hidden. This buzzer sound can be used to locate an object that has been misplaced at a nearby location. As a result, the user can quickly locate their object using either the map route or the buzzer sound.

The Android phone used in the project can communicate with the GPS via the Arduino board. The GPS module (NEO 6M) will send the latitude and longitude position to the Arduino board. The obtained position will be sent to the smartphone and used as input for the Google map that is already installed in the Android application. The Google map will obtain the position via the Wi-Fi module i.e NodeMCU (ESP8266).

IV. CIRCUIT DESIGN

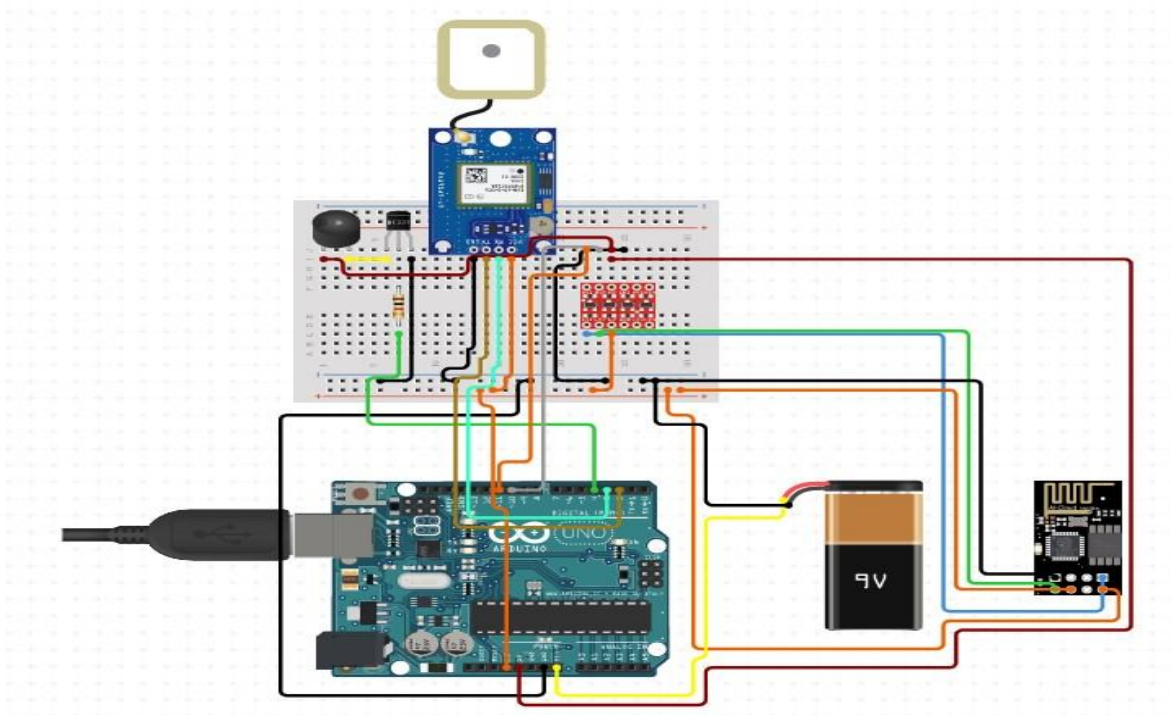


Fig.2 Circuit Design.

- A. The Arduino UNO and NodeMCU(ESP8266) are powered by the 9V battery and the 5V power terminal of Arduino UNO is connected to the GPS module and the buzzer +5V pin.
- B. The ground terminal of the buzzer, GPS module, and NodeMCU is connected to the common ground terminal of Arduino UNO.
- C. The GPS module(NEO 6M) provides coordinates to Arduino UNO using the Tx and Rx pins.
- D. The information obtained by the micro-controller is transmitted to the cloud with the help of NodeMCU which is connected to the Arduino.
- E. The Buzzer is connected with the help of a resistor of value 330 ohms can be triggered whenever required.
- F. The information is transferred to the cloud /Blynk app which can be accessed by the user using a mobile phone.

The user can trigger the buzzer with the help of the Blynk app.

V. ALGORITHM

The following are the main steps in the detection of object:

- A. The Wi-Fi Module/NodeMCU was used to showcase a device model with an Android application. The goal is to create a tracking device that will help people who are frustrated by losing or misplacing items such as wallets, keys, pen drives, laptops, and other items.
- B. This is a basic device model that describes how to track an object and how to use Android mobile devices to find items.
- C. NodeMCU enables communication of the latitude and longitude position given by the GPS and works as an input medium via an android application via Wi-Fi connectivity GPS controllers.
- D. The received signals will be sent to the Android application through input message, and the object will be tracked, with a buzzer sound to show its location.
- E. In this paper we are using two units, i.e two transmitters are used.

VI. RESULTS

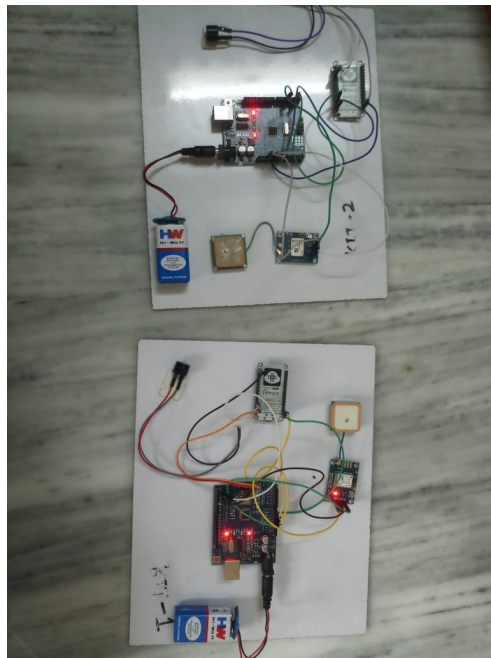


Fig.3 Hardware Equipment

The two units i.e, two transmitters each one has Arduino Uno, NodeMCU, GPS, Buzzer, and a Battery are connected.

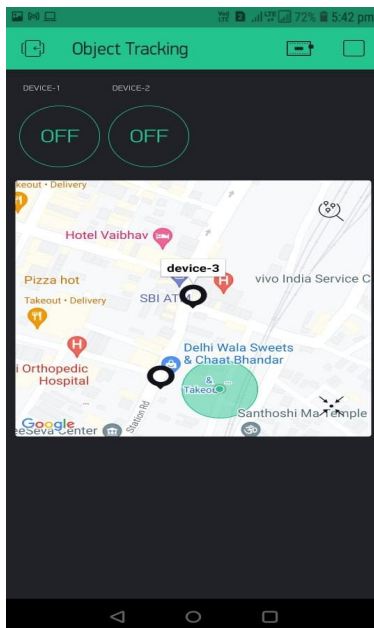


Fig.4 Location of Unit 1

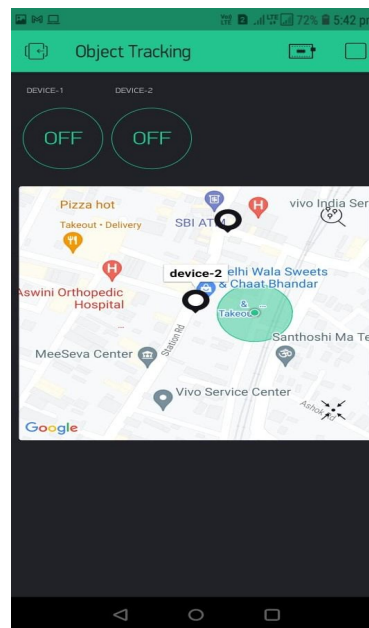


Fig.5 Location of Unit 2

Both Hardware Location and Phone’s Location can be viewed in the same MAP. Here “device-3” is considered as the hardware unit 1 and the “device-2” is considered as the hardware unit 2.

The Android application User Module was created with the help of the Blynk app. Through Wi-Fi connectivity, an Android application is linked to an Object Module. The Object Module’s integrated GPS (Global positioning system) Module will broadcast the latitude and longitude position of the Object, allowing it to be tracked. The notification is received by Google Map, which is included in the application, and it directs the path on which the lost or Lost Object is precisely located.

VII. FUTURE SCOPE

This study demonstrated a device concept that uses a Wi-Fi Module to run an Android application. The goal is to create a tracking device that will help people who are frustrated by losing or misplacing items such as wallets, keys, pen drives, laptops, and other valuables. This is a basic device model that illustrates how to track an object using Android mobile devices. The received signals will be sent to the Android application through an input message, and the object will be tracked, with a light glow and a buzzer sound to show its location. The challenge is to include other user-interface features like voice-input to be responded to when the object is tracked.

VIII. CONCLUSION

Tracking systems are becoming more important in larger cities, and they are more secure than other approaches. It's fully integrated, so it can be tracked at any time and from any location once it's placed in all cars. It has real-time capabilities, and it was created to improve relationships between people, vehicles, and roads by combining modern information technology, allowing it to create a real-time accurate, efficient, and comprehensive transportation system. This system has various advantages in vehicle traffic management, including a large capability, a wide range of applications, low operating costs, effectiveness, strong expandability, and ease of use. This structure is generally simple to upgrade, which makes it more adaptable to future needs and more efficient.

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