Anti-Poaching of Trees in Forest-Based on IoT

Mr.B.C.Subash Niranjan , Yogesh , Hariharasudhan S , Rajkumarrah

SRI KRISHNA COLLEGE OF ENGINEERING AND TECHNOLOGY.
DEPT-Electronics And Communication Engineering

Abstract

Day today life their area unit several incidents concerning importation of trees like shoe, Sagwan etc. These trees area unit terribly pricey and hand-to-mouth. they're employed in the medical sciences, cosmetics. to limit their importation and to avoid wasting forests round the globe some preventive measures must be deployed. we've got developed a system which might be wont to prohibit importation. the planning system uses 3 sensors tilt sensor (to find the inclination of tree once it's being cut), temperature sensor (to find forest fires), sound sensor (for effective detection of embezzled work i.e., even the sounds generated whereas axing the tree also are sensed). Data generated from these sensors is unendingly monitored with the help of Blynk App. With relevancy the sensors, their output devices area unit activated through relay switch. For tilt sensing element and sound sensing element a buzzer is activated and for temperature sensing element a pump is activated. Generated information is hold on in Blynk Server over the Wi-Fi module. Forest officers' area unit notified once any event happens in order that acceptable action is often taken.

Introduction

Forests represent just about half-hour of the world acreage. They offer natural surroundings to the 2 individuals and a number of animal varieties that share the profitable environment's merchandise. Coping with dry land has changed into associate degree surprisingly arduous enterprise. Illicit work speaks to at least one of the best difficulties of woods maintainability. For an extended time, we tend to are reading within the papers concerning pirating of the braid. These trees are all around steep. These are for the foremost half useful within the therapeutic sciences even as beautifying agents. owing to large quantity of cash concerned in commercialism of such tree woods and plenty of incidents are happening of cutting of tree and their importation. This issue is not known with Asian nation simply, in China, Australia and African nations are to boot battling with same problems.

Placing value at the highest of the priority list, Indian wood prices 12000 to 13000 Bureau of Intelligence and Research for each kilo the' in global market Pterocarpus santalinus order a high value of Bureau of Intelligence and Research ten center for each ton. The Indian true sandalwood has cladded to be jeopardized as these days, and making an attempt to manage its conceivable eradication the Indian government is making an attempt For associate degree individual, most extreme passable get limit is not to surpass three.8kg in keeping with Govt. The tree is as of currently government controlled, and evacuation is disallowed whether or not on personal or sanctuary grounds till the tree is thirty years mature.

Existing System

RFID and Sensor based Protection of valuable trees from smuggling

The framework includes 3 sub-areas to be specific unit, sub-server and backwoods officer unit. sensing element that is fitted on tree are going to be tree unit, management space comprising-server unit finally the backwoods officer telephone or laptop is that the woods officer unit. Tree unit contains of vibration module one consisting of sensors and controller module which can be at tree spot and a few alternatives is android phone.

Anti-Poaching Alarm System Using Tilt Sensor

The principal thought is to structure a flexible remote sensing element hub that contains of 2 Modules one together with sensors and controller Module which is able to be at tree spot and another is phone. The Blynk application can systematically get Senor info. this is often associate IOT based mostly venture wherever the sensing element info is systematically transferred to cloud (Blynk server) over a Wi-Fi Module. within the event of tilt sensing element and also the bell activates once tree twists and for temperature sensing element water siphon is turned on if there ought to be an event of woods hearth through hand-off switch.

Proposed System

Proposed system is wise technique to notice the stealing of trees from the smugglers. Here the Arduino microcontroller controlled the entire system connected with 3 sensors specifically temperature sensors, vibration sensing element and acceleration sensing element that sense the fireplace and cutting of trees. Here RF Zigbee act as wireless sensing element network that is employed to send the received info from those sensors to the corresponding authorities through the network. The collected info is received through the Blynk application.

The diagram contains 2 sections. One is transmitter block and another one is receiver block. whenever the trees are unemployed or hamper by the smugglers assist of wireless sensing element network the microcontroller sends the information to the receiver and it's intimated to the corresponding higher authorities. DHT11 temperature sensing element identifies the fireplace and flame and also the knowledge has been helping of RF ZigBee transmitter that transmits additional info to RF ZigBee receiver. measuring system and vibration sensing element helps to spot the importing of trees. helping connected with cup helps to sends info to higher authority's victimization blynk application associate degree conjointly this info is displayed in an LCD as shown in below figure one and a couple of.
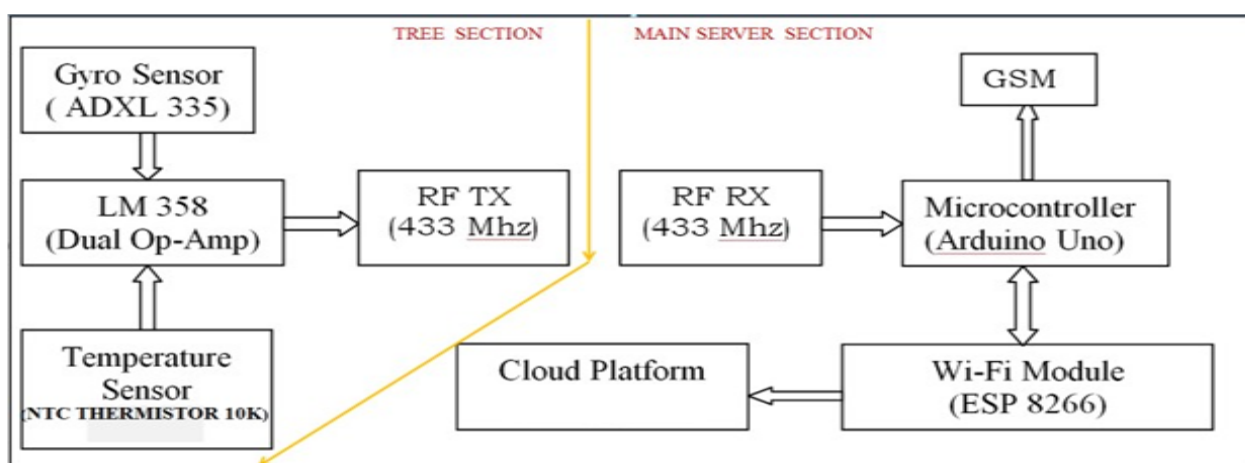
Block Diagram

Fig.1 Block diagram of the project

SOFTWARE REQUIREMENTS

The Arduino is open-source Integrated Development Environment or Arduino Software (IDE). It contains a text editor for writing code, a message area, a text console, a toolbar with buttons for common functions and a series of menus.

HARDWARE DESCRIPTION

Power supply: As per the power requirement of the hardware of the efficient traffic light control system, supply of +5V with respect to GND is developed. The complete circuit is operated with TTL logic level of 0V to 5V. It comprises of 0V to 9V transformer to step down the voltage of 220V AC supply to 9V AC. Further a bridge rectifier converts the 9V AC into 9V DC. It is further filtered through a 1000uF capacitor and then regulated using 7805 regulators to get +5V. To isolate the output voltage of +5V from noise further filtering 220uF capacitor is used.

Arduino

This microcontroller which can be easily programmed, erased and reprogrammed at any time. Introduced in 2005 the Arduino technology was manufactured to provide an inexpensive and easy way for students and professionals to create devices that interact with their environment using different sensors and actuators. Based on Arduino microcontroller boards, it is an open-source computing and developing platform that is used for constructing and programming electronic components. It is also capable of acting as a small computer just like other microcontrollers by receiving inputs and controlling the outputs for a variety of electronics devices and components. It is also capable of receiving and sending data over the internet with the help of various Arduino versions, which are discussed in this paper.

DHT11 Sensor
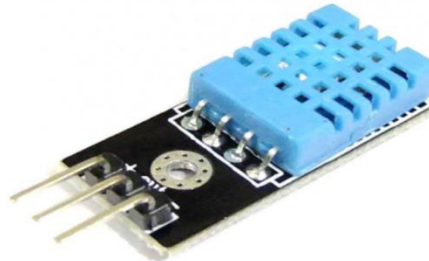
The DHT11 is a temperature and humidity sensor. It is calibrated against a digital signal output. The DHT11 ensures reliability, high efficiency and stability for a long time which is present with the help of this digital-signal-acquisition exclusive technique. This temperature and humidity sensor have an NTC temperature component for measuring the temperature and a very high-performance 8-bit microcontroller connected for humidity, which is cost effective and provides an excellent quality and fast response ability with anti-interference. It consists of 4 pins from left to right Vcc, Data, NC (not connected) and GND. There are mainly three (Vcc, Data and GND) pins which are used. Features: Full range temperature compensated. Relative measuring of humidity and temperature. Calibrated digital signal. Outstanding long-term stability. Extra components not needed. Long transmission distance. Low power consumption. 4 pins packaged and fully interchangeable.

GSM Module

GSM/GPRS Modem-RS232 is built with Dual Band GSM/GPRS engine-SIM900A, works on frequencies 900/1800 MHz. The Modem is coming with RS232 interface, which allows for connecting PC as well as microcontroller with RS232 Chip (MAX232). The baud rate is configurable from 9600-115200 through AT command. The GSM/GPRS Modem is having internal TCP/IP stack to connect with internet via GPRS. It is suitable for SMS, Voice as well as DATA transfer application in M2M interface.

The onboard regulated power supply allows the wide range unregulated power supply. Using this modem, audio calls, SMS, Read SMS (attend the incoming calls and internet etc.) is made through simple AT commands. Features: Dual band GSM/GPRS 900/1800MHz. Configurable baud rate. SIM card holder. Built in network status LED. Inbuilt powerful TCP/IP protocol stacks for internet data transfer over GPRS. Control via AT commands. Low power consumption: 1.5mA (sleep mode).

Advantages of the Proposed System

- Data captures at source of origin

- Reliability & Easy to maintain

- Scalability to encompass information of all key

- Stakeholders Secure access and rights-based access to stakeholders Standardization and integration of applications & data Business intelligence for analysis & decision making

FUTURE SCOPE

This project is IOT based and uses RF technology. It can be further extended by adding mini solar chips at tree section so that transmitter part can work on rechargeable power. Moreover, a solar panel can also be installed at receiver part. IoT is the current trend in Government and corporate sector. Many big companies and industries are willing to move towards promoting of IoT.
Similarly, many organizations are planning to digitalize valuable trees. In that case this project gives the best results by using LoRa technology, so that signals can be transmitted in kilometers range, typically 10km.

CONCLUSION

Thus, aim of our project is to protect the trees from smugglers. In existing this project work, we got exposed to many practical problems and difficulties, facing such situation and solving the problems as given us a confident and courage, which are very essential for a successful engineer. It will be no doubt that microcontroller will be a critical section of any system in industry, in the close to future and we have utilized the microcontroller for completion of this project. Once obtain we categorical our honest thanks to our guides and staff members.

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