



DETECTING ILLEGAL SMUGGLING OF TREES USING RFID AND WIFI MODULE

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Abstract: This system proposes an intelligent system to track the detection of illegal smuggling of trees in forest. Existing system makes use of various technologies such as RFID, GPS, GSM etc., RFID based systems lack in rain if passive tax are used or lack in cost effectiveness. Similarly, GSM based system becomes costlier and require constant network connection. Hence this project proposes a wifi based tracking system. The stationary wifi transceiver consist of ESP8266 node MCU development board which detects the mobile transceiver. The mobile transceiver detects mobile transceivers under its vicinity and sends the data to other stationary transceiver and ultimately the data stored in data base

1.INTRODUCTION

Forest constitute approximately 30% of the global land area. They provide habitat for both humans and some species that share the valuable eco systems goods. Managing a forest has become an extremely hard task . Illegal logging represents one of the biggest challenges of forests sustainability.

Smuggling of sandalwood has created socio economic and law and order problems in area bordering in India. Trees which are mostly affected include sandal wood, teakwood and rosewood. The most promising resolution is – “Protection of valuable trees from smuggling using RFID and sensors” which will be a robust, valuable and realistic technology for monitoring.

A SMART automated unit has been thus devised to tackle these issues. The combination of latest wireless communication systems and Embedded solutions offer us such modules. Each tree should have one little Embedded system- unit with: sensors and RFID tags. The nearness of above said parts will send the current state of the tree to the server , utilizing wifi module . The information sent is as information string\outline by means of Internet , henceforth IoT organize is shaped here . The information outline is deciphered by the BLYNK APP which keeps up the data of every such single tree.

2.METHODOLOGY

The proposed system is made up of sensors and RFID along with wifi module technology. Metal sensor, flame sensor, vibration sensor are the primary sensor used in the system. The flame sensor is used in the board to detect the wild fire and intimates the same to the concerned authority through blynk application. The vibration in any tree is detected by vibration sensors and metal detector detects and alerts when the tree is touched by a metal. In all the cases, the position of the tree is sent to the concerned authority through SMS/email. The android app can be developed to display the received data.

3. SYSTEM DESIGN

The system design consist of following which is shown below:

NodeMCU(ESP8266)

NodeMCU is an open source firmware and development kit that helps you to prototype or build IOT products. It includes firmware that runs on the ESP8266 wifi SoC FROM Espressif systems, and hardware which is based on the ESP-12 module.



Flame sensor

Flame sensor is the most sensitive to ordinary light that is why its reaction is generally used as flame alarm purposes . This module can detect flame or wavelength in 760 nm to 1100 nm range of light source. Small plate output interface can directly connected to the microcomputer IO port. The sensor and flame should keep a certain distance to avoid high temperature damage to the sensor.

Vibration sensor

The vibration sensor module based on the vibration sensor SW-420 and Comparator LM393 is used to detect vibration . The threshold can adjust using an on-board potentiometer. During no vibration , the sensor provides logic low and when the vibration is detected , the sensor provides logic high.

Metal detector sensor

The module operates by inducing currents in metal objects and responding when it occurs . A nice on board buzzer signals when it detects something and an onboard potentiometer allow adjustment of sensitivity. The power cables of the metal detector non-contact metal induction detection module will need soldering on for the module to function , positive to the outside of the module and negative between the potentiometer and an electrolytic capacitor.

RFID RC522

The RC522 is a 13.56MHz RFID module that is based on the MFRC522 controller from NXP semiconductors. The module can supports I2C, SPI and UART and normally is shipped with a RFID card and key job . It is commonly used in attendance systems and other person /object identification application.

BYLNK App

Blynk is a new platform that allows you to quickly build interfaces for controlling and monitoring your hardware projects from your IOS and android device.

4.RESULT AND DISCUSSION

The result obtained is shown in bylnk app. The results obtained show fire detection, vibration detection , deforestation and illegal movement in the forest area and display on the users phone. Hence this project will help to over come the problem and protect the forest. The summary of the proposed system is to protect the trees from smuggling and to protect the forest from the fire. By this method the deforestation can be reduced and enable the afforestation. The main goal of the system is to enhance forest management efficiency and decrease trees logging cases. Thus , from implementation of this project eco system is maintained balanced.

5.CONCLUSION

The theory was completed to abstain from carrying of valuable trees in secured zone in woods. There are numerous approaches to secure trees yet here is a brilliant technique for interfacing a few sensors around trees with a iot device was done. Through each tree as a smart tree and bringing numerous such trees under a system. The structure we are making in the backwoods where the tree are exorbitant and their security is basic reality. Here we are given such sort of system.

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