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Real time forest anti-smuggling monitoring system based on GSM

B.Pravallika[1], K. Venkata Sai Hemanth[2], CH. Sai Pavan[3], K. Tejesh[4],

Dr. K. Venkatachalam[5]

student[1,2,3,4],Associate professor[5]

Electronics And Communication Engineering

Audisankara College of Engineering & Technology, Gudur, A.P, India.

ABSTRACT:

For many days we are reading in newspaper about smuggling of trees like Sandal, Sagwan etc. These trees are very costly as well as less available in the world. In India The jungles of Karnataka and Tamilnadu, the notorious smuggler "Virrappan did the smuggling of such trees for many years. To restrict such smuggling of and save the forests around the globe some preventive measures need to be developed. Because of huge amount of money involved in selling of such trees lot of incidents are happening of cutting of trees. In this context we are supposed to provide a protection to the trees which can be used to restrict this smuggling. The purpose of this project is to save valuable trees which have high demand in market like teak, sandalwood, etc.

Keywords:MEMSSensor,Temperature Sensor,NODE MCU,LCD,Buzzer.

INTRODUCTION

For ages we have been perturbed by illegal activities like smuggling of Precious and commercial trees such as Teakwood, Sandalwood, Sagwan etc., from the protected Forest areas. These trees are very expensive and have a lot of commercial demand in the world market. The trees are generally considered to be protected by marking them some tags manually.This will not be useful and reliable since anyone can hamper it. Also during Natural calamities trees may somehow get damaged. 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. The Module is intended to operate in a particular area and this Module will consist of two Units: 11) Tree Unit 12) Main Server Unit (base station). Each Tree should have one little Embedded System-Unit with: Renesas Microcontroller, Sensors, GPRS and Solar power. The nearness of above said parts will send the current state of the tree to the Base station, utilizing GPRS module. The information sent by GPRS is as information string/outline by means of Internet, henceforth IoT organize is shaped here. The information outline is deciphered by the Server at the Base Station. The Base station has a server which keeps up the database of every single such tree. The correspondence to construct station is situated in light of most recent innovation utilizing Amazon Web Services. DotNet is the product utilized in the Server to interpret the gotten information outline shape the Trees in the woodland. At the principle server just approved individual will approach the database. The database is investigated to check whether the tree is sheltered or being pulled away. Anyway the database keeps constantly refreshing about the current state of trees and crisis circumstances should be gone to by the Forest specialists. For instance if the tree is fallen the "Flex Sensor" information will be an extraordinary incentive than the typical set limit esteem.

LITERATURE SURVEY

The idea of Commercial and Precious tree insurance and keeping their burglary is the prime thought of this proposition and that excessively utilizing most recent advances. The thoughts are obviously characterized in [1] Against Passing on System for Trees in Forest utilizing Flex Sensor and Zigbee. This paper discloses concerning how to confine the carrying exercises and to spare the woods zones on Earth utilizing some preventive measures. The framework that was produced www.iosrjournals.org utilizing a small scale Sensor organize utilizing zigbee module , Flex sensor , GSM Module and GPS utilizing the stage of Visual Basic. The idea has been further strengthned in [2] Preventive System for Forests Volume 4 Issue 1, Jan - Feb 2016, which discusses the primary three units to be utilized in the Module to be structured like Tree Unit , Area/Sub Server Unit and Server Unit. It focuses on Zigbee and GSM advances while keeping up the Server on VisualBasic. Android based Anti-Smuggling Module has been discussed in Anti-Smuggling Alarm System for Trees in Forest Using Android [3]. Using accelerometers and temperature sensors framing a smaller than expected sensor organizing is presented here. Likewise Android based idea is extremely perfect for current situation since every single Mobile handset are Android based. The counter carrying squad can quickly get messages on their handsets amid any interference to the trees. Accelerometers depend on MEMS Technology – Micro Electro Mechanical Systems [4].The paper in subtle elements examines on MEMS accelerometer which is additionally alluded as vertical capacitive torsional accelerometer (TXL).

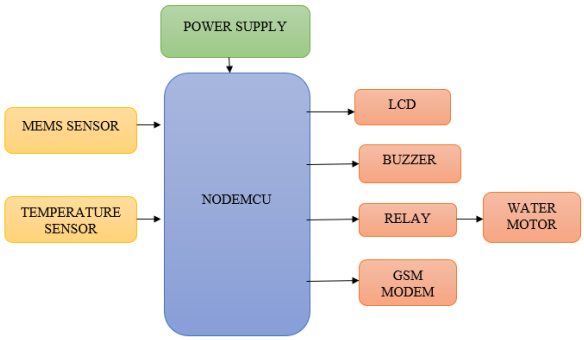
EXISTING SYSTEM:

In existing systems,Bluetooth and RF based anti smuggling system are implemented. But in these systems,the range of communication is very low within a range of 10m.

PROPOSED SYSTEM:

The main idea of the proposed is to design a portable wireless sensor node which will be a part of a Wireless Sensor Network. This system will consist of two modules one involving sensors and controller module which will be at tree spot another one is android phone. This is an GSM based project, in case of tilt sensor and the buzzer turns on when tree bends and for temperature sensor water pump is turned on in case of forest fire through relay switch.Here we are using NODEMCU as microcontroller and GSM Module.This module sends message to the authorities if any abnormal condition occurred.

BLOCK DIAGRAM:



MODULE DESCRIPTION:

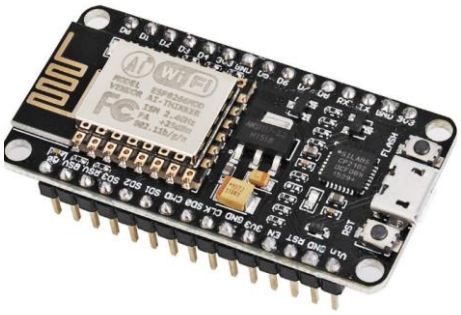
HARDWARE DESCRIPTION:

NODE MCU:

NodeMCU is an open-source Lua-based firmware and development board designed specifically for IoT applications. It includes firmware based on Espressif Systems' ESP8266 Wi-Fi SoC and hardware based on the ESP-12 module.The NodeMCU Development Board can be easily programmed with Arduino IDE since it is easy to use.Programming NodeMCU with the Arduino IDE will hardly take 5-10 minutes. All you need is the Arduino IDE, a USB cable and the NodeMCU board itself.

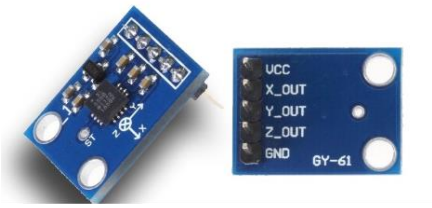
NodeMCU ESP8266 Specifications & Features

- Microcontroller: Tensilica 32-bit RISC CPU Xtensa LX106
- Operating Voltage: 3.3V
- Input Voltage: 7-12V
- Digital I/O Pins (DIO): 16
- Analog Input Pins (ADC): 1
- UARTs: 1
- SPIs: 1
- I2Cs: 1
- Flash Memory: 4 MB



ADLX335 Accelerometer

An accelerometer is an electromechanical device that will measure acceleration force. It shows acceleration, only due to cause of gravity i.e. g force. It measures acceleration in g unit. On the earth, 1g means acceleration of 9.8 m/s2 is present. On moon, it is 1/6th of earth and on mars it is 1/3rd of earth.Accelerometer can be used for tilt-sensing applications as well as dynamic acceleration resulting from motion, shock, or vibration.



DS18B20 Temperature sensor

This is a waterproofed version of the DS18B20 Temperature sensor. Handy for when you need to measure something far away, or in wet conditions. While the sensor is good up to 125°C the cable is jacketed in PVC so we suggest keeping it under 100°C. Because they are digital, you don't get any signal degradation even over long distances! The DS18B20 provides 9 to 12-bit (configurable) temperature readings over a 1-Wire interface so that only one wire (and ground) needs to be connected from a central microprocessor. Usable with 3.0-5.5V systems.

Because each DS18B20 contains a unique silicon serial number, multiple DS18B20s can exist on the same 1-Wire bus. This allows for placing temperature sensors in many different places. Applications where this feature is useful include HVAC environmental controls, sensing temperatures inside buildings, equipment or machinery, and process monitoring and control.

RESULTS:

CONCLUSION:

Thus, this effective and reliable system helps in controlling and stopping the smuggling activities. Apart from the main objective, the system also helps in reducing the global warming to a great extent. The natural habitat of the animals is preserved indirectly. The trees can also be protected from forest fire by using this system. This in turn helps in reducing deforestation. Thereby, the ecological balance is maintained.

REFERNCES:

[1] Ghousia, S.B., Jagadish, R., Syed, N.N. and Nagashree, C., 2018. IOT BASED ANTI-POACHING ALARM SYSTEM FOR TREES IN FOREST USING WIRELESS SENSOR NETWORKS. International Journal of Advanced Research in Computer Science, 9(Special Issue 3), p.193.

[2] Kumar, S.J., Suman, A., Jayashree, M., Ashwin, R. and Abhijith, H.V., 2018. IOT BASED SYSTEM TO PREVENT ILLEGAL LOGGING OF TREES. International Journal of Advanced Research in Computer Science, 9(Special Issue 3), p.211.

[3] KR, V., 2019. Anti-Smuggling System for Trees in Forest Using Vibration Sensor and NRF..

[4] Varpe, S.B., Shingote, V.M., Avhad, R.R. and Ohol, R.D., Anti-Smuggling System for Trees in Forest Using Flex Sensor and Zigbee..

[5] P Madhavi,Sk Razeena ,Sk nowshad,

Y Sushmitha,M Sweety"IOT based Anti-Poaching Alaram System for trees in Forests",International journal of Emerging Technologies and innovative Research(JE-TIR),2019.

[6] Mhaske, D, Bhabad Vishnu, S. and PathareSagar, A., Antismuggling System for Trees in Forest using Flex Sensor with GSM & Zigbee Network.

[7]Akhil Gunda,Shreya Lokray,Vaishnavi

Suthram,"implementation of a forest monitoring&Alerting system",international Research Journal of Engineering and Technology(IRJET)Vol07,issue 08 Aug 2020.