WSN (WIRELESS SENSOR NETWORK) BASED MONITORING FOR ILLEGAL CUTTING TREES

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ABSTRACT

We are going to introduce project on prevention of trees and wildlife in forest. Forest prevention is major issue now a day because of the negative activity of human being such as illegal cutting trees. This paper presents Wireless Sensor Network (WSN)which have been emerging as one of the most promising research areas in recent years. The scale of illegal cutting trees in forest is difficult to accurately estimated, but more than half of all logging activity in the most vulnerable forest. WSN includes sensing devices which sense the vibration and temperature, and send them over our Zig-Bee network. It provides effective solution to the problem of illegal cutting trees detection. Main improvement of the system, we proposed: fast reaction when logging occurs & permanent monitoring of critical areas in forest.

KEY WORD*: Sensors, Microcontroller AT89S52, Zig-bee module.*

I.   INTRODUCTION

Our topic is related to trees. Several million acres of forest are getting destroyed because of illegal cutting trees. In forest due to heavy rain trees getting affected and collapse. Also forest include the very valuable trees like sandalwood, medicinal trees. For the prevention of trees and prevent illegal smuggling of trees, we use WSN (Wireless Sensor Network). It includes sensors which senses vibration and temperature in specific areas and send them over Zig-Bee network. The main component of system are different types of sensors, microcontroller, zig-bee module. The transmission of sensor signal is done with the help of wireless network. This system does following work: Interface Zig-Bee module with nodes & Interface LCD to display location of affected specific areas.

WSN: Wireless Sensor Network is useful network for the deployment of the sensors. WSN consisting Node for sending signal and Base Station for the collecting data to display on LCD screen. Node includes some physical parameters like vibration sensor, temperature sensor, tilt sensor, coil sensor. Base Station includes receiver like LCD display to indicate the location of actuated sensor.

II.   LITERATURE SURVEY

WSN: Wireless Sensor Network is also called (WSAN) Wireless Sensor & Actuator Network. Basically many applications can use WSN network for the purpose of WSN network. we use here zig-bee module for transmitting & receiving the information through WSN network.

And also we use here different types of sensors for the purpose of monitoring the environmental conditions such as temperature, vibration and human interferences. WSN network use in many applications such as natural disaster prevention & consumer applications and landside detection to detect the slight movement of changes in various parameter. WSN network is ease to use for built of node and each node is connected to one sensor & each sensor network node has typically several parts.

III.   PROPOSED SYSTEM

In our proposed system, we proposed model of WSN network. which uses the Zig-Bee module which is an IEEE 802.15.4 based for high level communication protocol. In this system we can transmit and receive the signal. There are 4 types of sensors are used in this system. We use microcontroller AT89S52 used as controller which is act as a central node. the information is transmitted over the sensor and information collected by the nodes and send to the base station of the forest office controller unit. This information or data can transmit over long distance communication by using Zig-Bee module.

IV.   SYSTEM ARCHITECTURE
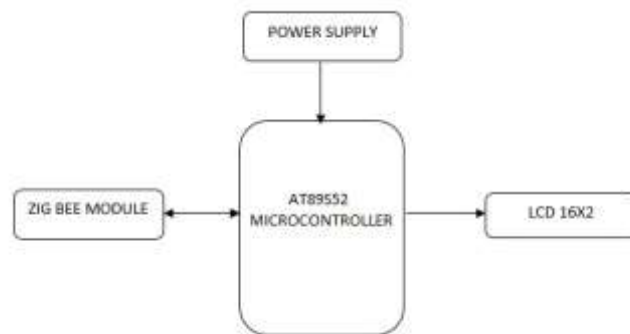### A) NODE:

Fig.1 Block diagram of transmitter
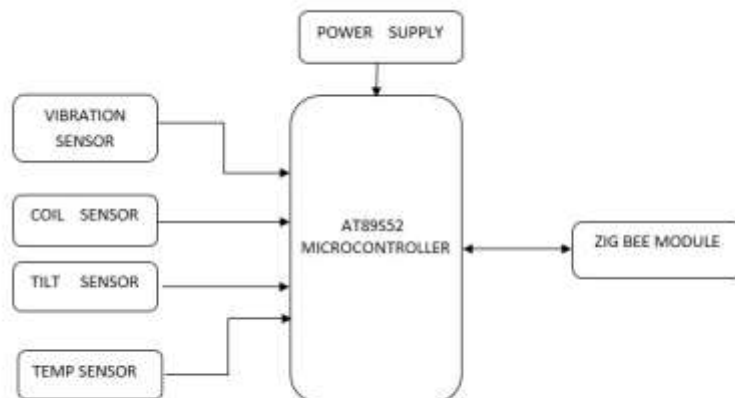
B) BASE STATION:

Fig.2 Block diagram of receiver

This is the block diagram of an WSN based illegal cutting trees. there are different types of sensors are used, namely are as follows:

1.Vibration sensor

2.Coil sensor

3.Tilt sensor

4.Temperature sensor

Sensors are deployed on the trees by the nodes. all sensors are connected to the microcontroller (AT89S52) they are wirelessly connected to the controller.

CONTROLLER: all the sensors node operation is controlled by microcontroller(AT89S52).

ZIG-BEE MODULE: all this information or data can transmit over a long distance communication by using Zig-Bee module and after that this information is send to the base station. which is nothing but the forest station.

LCD DISPLAY: the data can be display on LCD which is indicate or showing the exact location or tree will be getting collapse by the environmental condition or cutting by the human interference. The buzzer also used for the indication of signal location which is displayed on the LCD.

SYSTEM REQUIREMENT SPECIFICATIONS

a) *SOFTWARE REQUIREMENT*:

       i.   Keil
      ii.   Express PCB
    iii.   Ares

b) *HARDWARE REQUIREMENT*

       i.   Sensor/Nodes
      ii.   LCD display
    iii.   Microcontroller(AT89S52)
    iv.   Power supply: 5volts
     v.   Zig-Bee module

c) *TECHNICAL SPECIFICATIONS*

     ADVANTAGES:

       i.   It is a wireless system
      ii.   The network must be high density structure.
    iii.   It can improve the signal noise ratio.
    iv.   Automatic location finds of trees & automatic alert message.
     v.   Reduced man power.
    vi.   It will be more accurate.

     APPLICATIONS:

       i.   Illegal cuttings
      ii.   Deforestation area.
    iii.   Reserve (sandalwood, medicinal trees) plantation protection.

V.   CONCLUSION

In this paper by introducing the concept of wireless network technology to solving the problems on illegal cutting trees. In our work we describe the monitoring system that we believe is capable of solving the problems of early detection and it will be help to prevention of illegal cutting trees. We used Zig-Bee module for signal transmission wirelessly. Base station is used to receive the data and display on the LCD. Now-a-days we can also use this network to other application for the prevention purpose to save the valuable things and illegal cutting trees in forest or reserve area of plants. No need to travel in whole forest. In future, we can use this system anywhere for monitoring multiple units. The system developed here for preventing the smuggling and illegal logging in forest. Such kind of system can be employ in any area of forest which is highly affected by smuggling and illegal cutting. We will continue to do this work and improve it in future scope.

VI.   REFERENCES

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