

Design an Antistealing System for Endangered Trees with Solar Power

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ABSTRACT:- Stealing of most crucial trees such as red sandal wood, teak, sag wan.etc. these trees are very precious as well as rare in the world. Huge amount of cash involved in selling of such trees stealing occurs. This paper propose a design a IOT based module for forest trees against stealing.as concerned citizens our ideology is to prevent such stealing activities by using latest technologies.in forest areas ,we can't provide continuous electricity supply .Due to these reason , here we implement system with solar panel.trees are attached with sensor unit ,which can monitor the information about trees such as position of trees,axing sound,temperature,firing possibility.sound sensor ,which is capable of detecting stealing of trees by axing sound of trees.for monitoring position of trees and inclination of trees can be monitored by accelerometer and temperature can be monitored by flame sensor.the forehand information about the trees, avoids theft and also any other damage to trees can be prevented.

Key words-IOT module, sensor units, solar power

1. INTRODUCTION:

Human life could not exist if there were no trees. Purpose of this project is to estimate a design of forest trees against stealing. Now a days stealing of environmentally and economically crucial species of trees in forest region such as teak wood, sandal wood, pine and rose wood has been greatly increased. However the punitive measures have reminded largely ineffective, but still poachers was continue to thrive. These trees are endangered and lot of commercial demand in the world. Stealing of endangered species isn't related to India only, china Australia and African countries are also striving same problem.

1.1. LITERATURE SURVEY:

India has a total area of 9000 sqkm of sandal wood distribution spread across eight states.

1. 2005-2007 year, total 2666 sandal wood trees were illegal. While felled in Kerala while Karnataka reported quantity 35299 kg.
2. Maharashtra reported a loss of 1404, no of sandalwood trees in illegal felling, while there was

total of 253 cases smuggling (20739 tones) in tamilnadu

year	No. of trees felled
2011	36000
2012	42000
2013	84000
2014	36000
2015	6000

3. Endangered red sandalwood seized from smugglers in Berhampur

1.2. WHY THIS PROJECT?

Trees are heart of our world. So, we need to detect illegal logging and stealing of trees. Smuggling of sandalwood has created socio economic and law and order problems in areas bordering the state of Tamil Nadu and other regions in India. Considering this problem in mind, we are designing system which help us to achieve our goal i.e. TO PROTECT ENDANGERED TREES

1.3. TECHNOLOGY:

Here internet of things technology used with multi sensor node network. Internet of things is an advanced automation and analytics system which exploits networking, send artificial intelligence technology to deliver complete systems for a product or service. Physical objects that are being connected will possess one or more sensors. Each sensor will monitor a specific condition such as location, vibration, motion and temperature. In internet of things, this sensor will connect to each other and machine to machine interaction done here.

2. MODULE DESIGN:

The module developed is an integration of hardware and software. Hardware is developed using sensors-sound sensor, tilt sensor, flame sensor and infrared sensor. Solar panel also connected to the module. Sensor continuously

monitor the tree spot and send the information to control unit, which is fixed at forest officer room

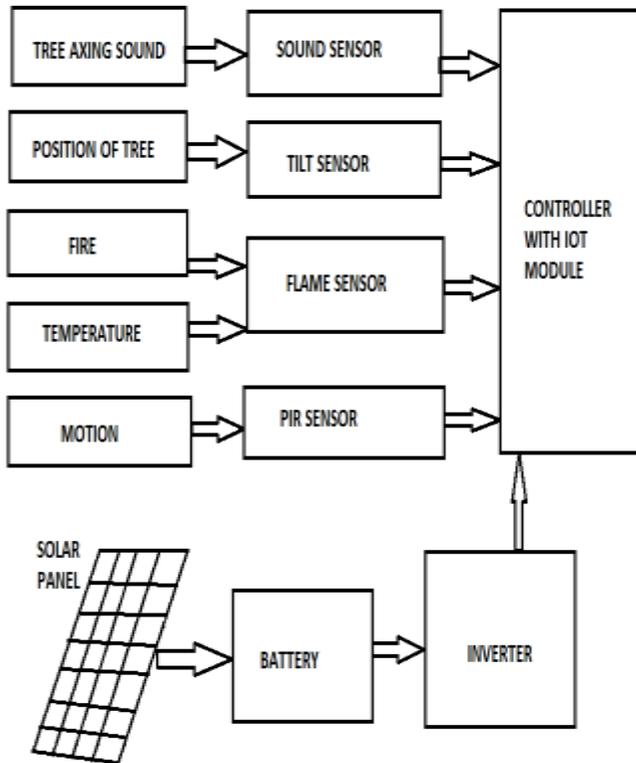


Fig.2.1.block diagram

Proposed system has multi sensor node communicate with master node. Sensor node collect the information about trees such as tree axing sound, position of trees, temperature, fire. These information monitored continuously and send the information to the master node. Master node fixed on the forest officer control room.

2.1. SOUND SENSOR:

The sound sensor module provides an easy way to detect sound and is generally used for detecting sound intensity. This module can be used for security, switch, and monitoring applications. Its accuracy can be easily adjusted for the convenience of usage. It uses a microphone which supplies the input to an amplifier, peak detector and buffer. When the sensor detects a sound, it processes an output signal voltage which is sent to a microcontroller then performs necessary processing.



Fig.2.1.sound sensor

2.2. FLAME SENSOR:

Flame sensor is the most sensitive to ordinary light. This module can detect flame or wavelength in 760 nm to 1100 nm range of light source. Small plate output interface can and single- chip can be directly connected to the microcomputer IO port. The sensor and flame should keep a certain distance to avoid high temperature damage to the sensor. The shortest test distance is 80 cm, if the flame is bigger, test it with farther distance. The detection angle is 60 degrees so the flame spectrum is especially sensitive. The detection angle is 60 degrees so the flame spectrum is especially sensitive.



Fig.2.2.flame sensor

2.3. TILT SENSOR:

The tilt sensor is a component that can detect the tilting of an object. However it is only the equivalent to a pushbutton activated through a different physical mechanism. This type of sensor is the environmental-friendly version of a mercury-switch. It contains a metallic ball inside that will commute the two pins of the device from on to off and vice versa if the sensor reaches a certain angle.

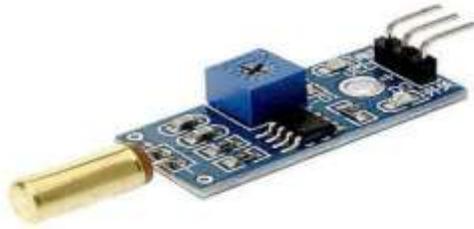


Fig.23.tilt sensor

2.4. PIR SENSOR:

A passive infrared sensor (PIR sensor) is an electronic sensor that measures infrared (IR) light radiating from objects in its field of view



Fig.2.4.passive infrared sensor

2.5. SOLAR PANEL:

Photovoltaic panel absorbs sunlight as a source of energy to generate electricity. Solar cell converts energy of light directly into electricity by the photovoltaic effect. It is made from a monocrystalline silicon wafer, for latest panel manufacture cadmium telluride or crystalline silicon cell are used. Also battery being charged from panel

2.6. HARDWARE DESCRIPTION:

This project consists of two main units.

1. Multi Sensor unit
2. Control room

Multi Sensor unit contains sound sensor, tilt sensor, flame sensor and passive infrared sensor. Control room receives the information about trees and surroundings. If any

changes occur on tree, control units receives the information about that, forest officer can check immediately at tree spot. Even though all information are stored in the cloud storage.

2.7. FEATURES:

- Operating voltage 3.3V-5V for sensor node
- Wide temperature range(-40°to +85°c)
- Detection range of PIR sensor is 5-12m
- Free fall detection
- Embedded memory management

3. CONCLUSION:

This paper carried out to avoid stealing of endangered trees in forest region. Here communication between sensor unit and control unit implemented with multinode system. However trees condition monitored because of sensor units. Due to internet of things, we can monitor and analyze the data through internet. Main objective of this project is to protect endangered trees from ruining situation.

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