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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 ,these 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.

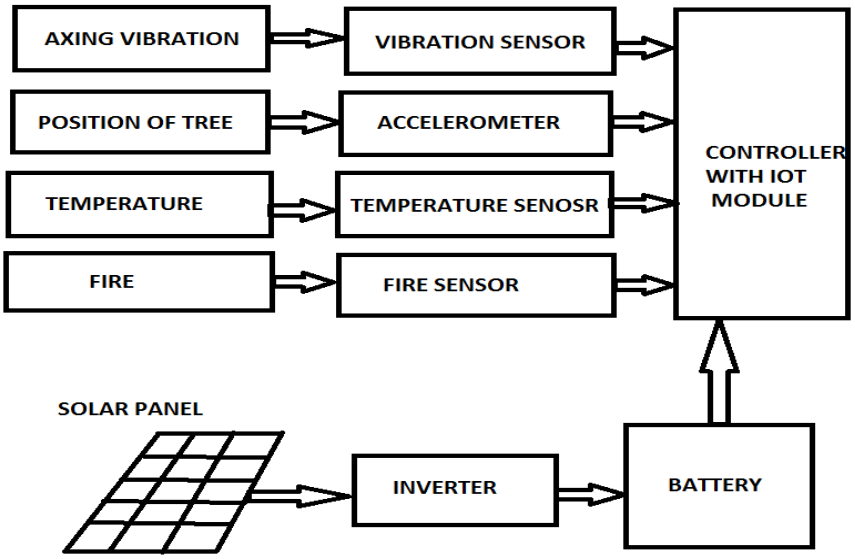

Fig.2.Block Diagram

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 send the information to the master node. master node fixed on the forest officer control room.

2.1. HARDWARE DESCRIPTION:

This project consists of two main units.

1. 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.

2.2.Vibration sensor:

A piezoelectric sensor is a device that uses the piezoelectric effect to measure pressure , acceleration, strain or force by converting them to an electrical signal. This module features an adjustable potentiometer, a vibration sensor, and a LM393 comparator chip to give an adjustable digital output based on the amount of vibration. The potentiometer can be adjusted to both increase and decrease the sensitivity to the desired amount.

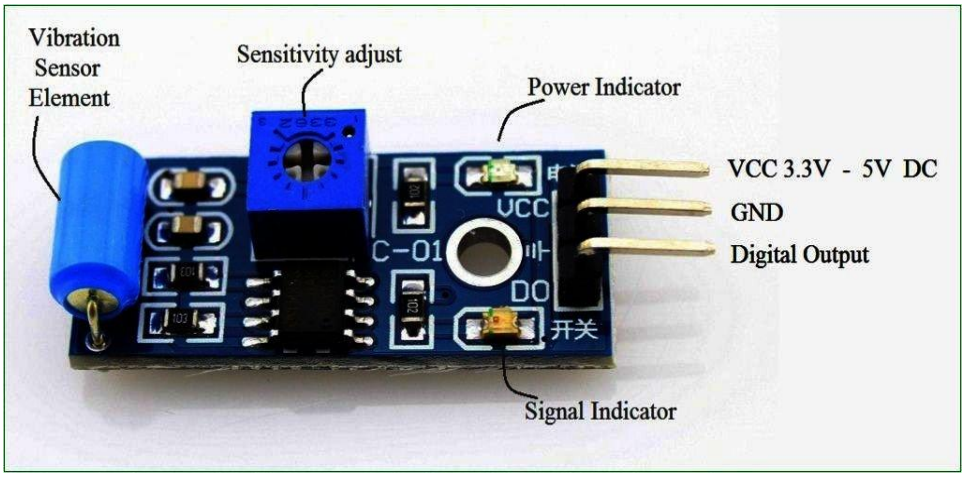

Fig 2.2.Vibration sensor

2.2.1.Features

- The default state of the switch is close
- Digital output Supply voltage:3.3V-5V
- On-board indicator LED to show the results
- Dimension of the board: 3.2cm x 1.4cm

2.3.ACCELEROMETER

Gy-291 Adxl345 3-Axis Accelerometer is a sensor board based on ADXL345 accelerometer integrated circuit. The ADXL345 is a small, thin, ultralow power, 3-axis accelerometer with high resolution (13-bit) measurement at up to ±16 g. Digital output data is formatted as 16-bit twos complement and is accessible through either a SPI (3- or 4-wire) or I2C digital interface.The ADXL345 is well suited for mobile device applications. It measures

the static acceleration of gravity in tilt-sensing applications, as well as dynamic acceleration resulting from motion or shock. Its high resolution (3.9 mg/LSB) enables measurement of inclination changes less than 1.0°.

2.3.1General Specifications

- Single tap/double tap detection
- Activity/inactivity monitoring
- Free-fall detection
- 10,000 g shock survival
- SPI (3- and 4-wire) and I2C digital interfaces
- Flexible interrupt modes mappable to either interrupt pin
- Measurement ranges selectable via serial command
- Bandwidth selectable via serial command

2.4.FIRE SENSOR:

The Flame Sensor can detect flames in the 760 - 1100 nano meter wavelength range. Small flames like a lighter flame can be detected at roughly 0.8m. Detection angle is roughly 60 degrees and the sensor is particularly sensitive to the flame spectrum. An on board LM393 op amp is used as a comparator to adjust the sensitivity level. The sensor has a digital and analog output and sensitivity can be adjusted via the blue potentiometer.

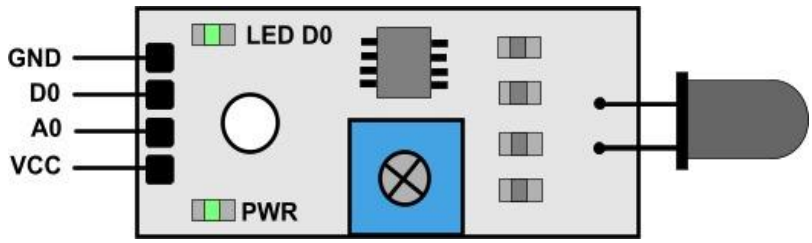

Fig .2.4.Fire Sensor

2.4.1.MODULE FEATURES:

- Supply Voltage: 3.3-5V
- Spectrum range: 760nm ~ 1100nm
- Detection angle: 0 - 60 degree
- Dual Output: Analog & Digital
- Sensitivity: Adjustable: Yes
- Operating temperature: -25 degrees Celsius ~ 85 degrees Celsius
- Size: 32 x 19mm
- Mounting hole: 2.0mm

2.5.TEMPERATURE SENSOR:

LM35 is a precision IC temperature sensor with its output proportional to the temperature (in ºC). The sensor circuitry is sealed and therefore it is not subjected to oxidation and other processes. With **LM35**, temperature can be measured more accurately than with a thermistor. It also possess low self heating and does not cause more than 0.1 ºC temperature rise in still air. The operating temperature range is from -55°C to 150°C. The output voltage varies by 10mV in response to every °Crise/fall in ambient temperature, *i.e.*, its scale factor is 0.01V/ºC.

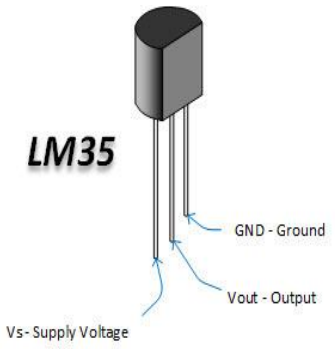

Fig.2.5.temperature sensor

2.5.1.Features:

- Minimum and Maximum Input Voltage is 35V and -2V respectively. Typically 5V.
- Can measure temperature ranging from -55°C to 150°C
- Output voltage is directly proportional (Linear) to temperature (i.e.) there will be a rise of 10mV (0.01V) for every 1°C rise in temperature.
- ±0.5°C Accuracy
- Drain current is less than 60uA

2.6.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 monocrystaline silicon wafer, for latest panel manufacture cadmium telluride or crystalline silicon cell are used. Also battery being charged from panel

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 .

REFERENCES:

[1]. Anti-smuggling system for trees in forest using flex sensor and zigbee international journal of advanced research in computer engineering &technology(IJARCET)volume 3,issue 9,September 2014 narhari R.kotkar M.E(ESD and VLSI)

[2]. Preventive systems for forests –international journal of computer science trends and technology(IJCST) volume 4 issue1,jan-feb 2016 Prasad R. Khandar, K. Deivanai, M.Tech, Assistant Professor, School of Computer Science and Engineering VIT University, Chennai Campus -Tamil Nadu -India

[3]. Anti-Smuggling Alarm System for Trees in Forest Using Android, International Journal of Emerging Technology and Advanced Engineering Website: www.ijetae.com (ISSN2250-2459, ISO 9001:2008 Certified Journal, Volume 4, Issue 10, and October 2014)HarshaPuranik, B. N. Bansode, S. S. Kataria, Electronics Department, Amrutvahini College of Engineering, Sangamner, India. smuggled/article show/16804707.cms