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Anti-Smuggling System for Saving the Trees

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ABSTRACT

It is commonly read in the Newspaper about the Smuggling of the Trees such as Sandal, Teak etc. taking place throughout the world. Since the demands for these trees are more, the cost of such trees is also high. By selling the woods of such trees, a huge amount can be earned and hence the smuggling of such trees may take place which is an illegal act. In order to prohibit the illegal smuggling of these trees some measures are to be undertaken. The main objective of this system is to restrict the smuggling and save the valuable trees so to maintain balanced eco-system by preventing deforestation. The system uses the GPS technology from which we can find the location of the tree where the smuggling is done.

I INTRODUCTION

Anti-smuggling system for trees in forest we are implemented the system to avoid a nature disaster and to protect the sandalwood trees from the smugglers and Fire accidents parameter. The trees which are smuggled by smugglers are very huge cost, expensive and they will available less in the Indian markets. The smugglers are used to sell the scandal wood trees with huge amount and they used to cut the most expensive trees which it cost highly in INDIA and for their needs. Therefore, there should be need to implement a device to security for the expensive trees which the smugglers cannot steal the trees. So, we are producing a new device system to security for the scandal wood trees and the safety for the forest environment. And we have developed a new system device which would be used for limiting of smuggling of trees from the smuggler's and removes the deforestation. so that it would be used for the protection of forest environments which will helps us to be solved the problem condition like Global warming. In this project Arduino uno is the heart of the project which can controls whole operations of the given system. In this project we have used 4 major sensors for tree unit to the betterment of the inputs they are a) Temperature sensor b) Fire sensor c) Vibration sensor d) Metal sensor these are used in this project requirements.

These sensors of tree unit are like to responsible for sending the data to the microcontroller and they would be transmitting the tree unit data to the further stages. The tree unit is used a special equipment for the message sending data and to transmit to next stage with helps of an GSM module. the temperature will be active and produce the output and solar panel is used for this project is to produce power and GSM module will be the server for the sending the data. Poaching refers to smuggling. Incidents like smuggling is not related to India only,

various countries like China, Australia and Africa are also struggling with same issue. Indian sandalwood's cost ranges from several lakhs of rupees to crores of rupees. The Indian sandalwood trees had become rare in the past years. In order to control their possible loss, the Indian government is trying to limit the exportation of sandalwood as soon as possible.

The goal of this paper is to develop the system that alarm the smuggling of most valuable trees such as sandal, red sandal, sag wan and other expensive medicinal plants. The proposed system employs techniques to protect the tree from getting Cut Down; Damage with fire, etc. this system transmits the location information to higher authorities to take immediate actions in case of smuggling and fire catch. But even though some corner of newspaper shows us the same title. The problem what observed is there is no system or any medium to detect illegal logging and cutting of trees.

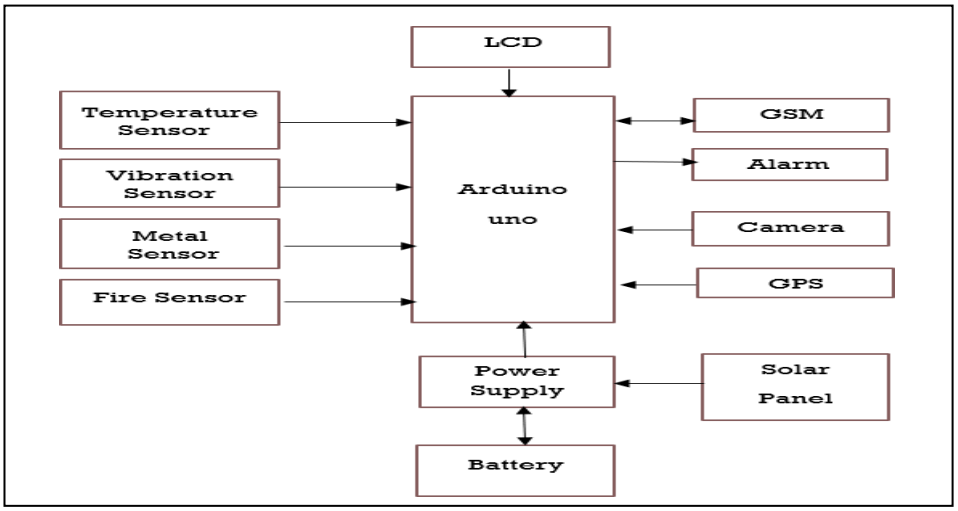

Fig 1: Block diagram of proposed System

II METHODOLOGY

Fig1 shows the block diagram. which consists of metal sensor, temperature sensor, Fire sensor, Vibration sensor, Arduino uno, LCD, alarm, camera, GPS, solar panel, power supply, GSM module and Battery. Whenever there is any movement is the forest or if the tree is being cut or in case of forest fire the sensor sense and send message to the Arduino uno. The message from Arduino uno is displayed on LCD display which just for demo purpose. The message from Arduino uno is sent to the forest official through GSM module. The mobile no. of the forest official who is in charge gets registered in the GSM module. Therefore, that person gets a message. The metal sensor will place at each tree but temperature sensor and Vibration sensor will be placed at just one tree. The metal sensor will send information to the Arduino uno through GSM module. In this project an electronic device is used to the avoid and safety for the smuggling of the trees from the smugglers for this project the electronic device is developed. GSM module and solar panel are used for a more expensive trees to be developed with a small electronic device. Where tree consists of inputs, they are sensors and as well as server unit acts as the networking parts for the given device they are GSM, GPS, Arduino uno, alarm. In this new proposed system, we want to expressed about sensors They are Vibration sensor is used for the measuring of the physical and the measurable vibrates made by an object near the tree and the vibration sensor. And the vibration sensors are also

used for the tree where an external force obtained by an object near a tree it gets vibrated.

III MODELING AND ANALYSIS

Hardware components Description

1 .Metal sensor

The operation of metal sensor is based upon the principles of electromagnetic induction. Metal detectors contain one or more inductor coils that are used to interact with metallic elements. A pulsing current is applied to the coil, which then induces a magnetic field. When the magnetic field of the coil moves across metal, the field induces electric currents. The eddy currents induce their own magnetic field, which generates an opposite current in the coil, which induces a signal indicating the presence of metal.

2. Temperature sensor

The DS18B20 temperature sensor is a one-wire digital temperature sensor. This means that it just requires one data line to communicate with the Arduino. It can be powered by an external power supply or it can derive power from the data line, which eliminates the need for an external power supply. Vibration sensor

They have a transducer that converts mechanical force caused by vibration or a change in motion, into an electrical current using the piezoelectric effect. High impedance accelerometers produce an electrical charge which is connected directly to the measurement instruments. Vibration sensor detects the vibration parameter of objects through its mechanical structure, and converting the vibration parameter into the electrical signal by physical effect to achieve transferring the non-electrical signal to electrical signal.

3. Fire sensor

A fire detector works by detecting smoke and/or heat. These devices respond to the presence of smoke or extremely high temperatures that are present with a fire. After the device has been activated, it will send a signal to the alarm system to perform the programmed response for that zone. Since a fire detector usually works by detecting smoke and/or heat, and not actual fire, these devices are not usually called "fire detectors".

4. Arduino Uno

Arduino Uno is a microcontroller board based on the ATmega328P (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator (CSTCE16M0V53-R0), a USB connection, a power jack, an ICSP header and a reset button.

5. Gsm Module

It is a GSM modem with TTL output. It is a standard for the mobile telephones. This module sends the message to the mobile if there is a sensor value crosses the threshold. A GSM module is a chip or circuit that will be used to establish communication between a mobile device or a computing machine and a GSM.

6. Solar panel

A solar panel is a device that converts sunlight into electricity by using photovoltaic (PV) cells. PV cells are made of materials that generate electrons when exposed to light. The electrons flow through a circuit and produce direct current (DC) electricity, which can be used to power various devices or stored in batteries. Solar panels are also known as solar cell panels, solar electric panels, or PV modules.

7. CCTV CAMERA

A closed-circuit television camera can produce images or recordings for surveillance or other private purposes. Cameras can be either video cameras, or digital stills cameras. Walter Bruch was the inventor of the CCTV camera. The main purpose of a CCTV camera is to capture light and convert it into a video signal. Underpinning a CCTV camera is a CCD sensor (charge-coupled device).

8. GPS

A GPS receiver uses this information to calculate its distance with the satellites. It is possible to find the absolute position of an object if its distance to three fixed points in space is known. Therefore, a GPS receiver can find its geolocation by calculating its distance with three satellites.

9. LCD

A liquid-crystal display (LCD) is a flat-panel display or other electronically modulated optical device that uses the light-modulating properties of liquid crystals combined with polarizers. Liquid crystals do not emit light directly but instead use a backlight or reflector to produce images in colour or monochrome.

10. Battery

A lithium-ion or Li-ion battery is a type of rechargeable battery which are reversible reduction of lithium ions to store energy. The anode of a conventional lithium-ion cell is typically graphite made from carbon. The cathode typically a metal oxide. The electrolyte is typically a lithium salt in an organic solvent.

IV .LITERATURE SURVEY

Mrs. P. Madhavi, SK Razeena, SK Nowshad, Y. Sushmita, M. Sweety have proposed the work on an IOT based Anti-poaching alarm system for trees in forests. Here they have used Tilt sensor, Temperature sensor, Arduino uno, Wi-Fi module. In this they have used Thingspeak server and app to monitor the data generated and send it to forest officials. It consists of two modules one involving the sensors and the other will be the controller module. The Thingspeak application will continuously receive sensor data.

Jayaram K, Janani K, Jeyaguru R, Kumaresh, Muralidharan N (2019) have proposed the work on forest fire alerting system with GPS coordinates using IOT. This system is designed in such a way that it detects forest fire. In this system the microcontroller is used, its job is to control system activities and also some sensors are used to detect fire in the forest the solar panel is attached with battery is used for supply voltage. Arduino is interconnected with some sensors like smoke Sensors and temperature sensor. Arduino is also connected with WI-FI module and GPS module.

V .RESULTS AND DISCUSSION

The sensors are the main source of input to the Arduino uno. Based on the four sensors' input, Arduino uno sends three different messages respectively. The messages that have been received by the forest official's registered mobile number. The first message “SOMEONE CUTTING THE TREE” indicates that a tree is in the process of that tree detects and notifies the forest officials. The second message whenever cutting the tree that time vibrate will be occur that indicates a tree is in the process of being cut down. This is an output obtained due to the

detectionof the Vibration sensor. The third message "TEMPERATURE HIGH" indicates that surrounding temperature of the trees. This is an output obtained due to detection of the temperature sensor. The fourth detect the smoke due to fire catch in forest. This is an output obtained due to detection of the fire sensor.

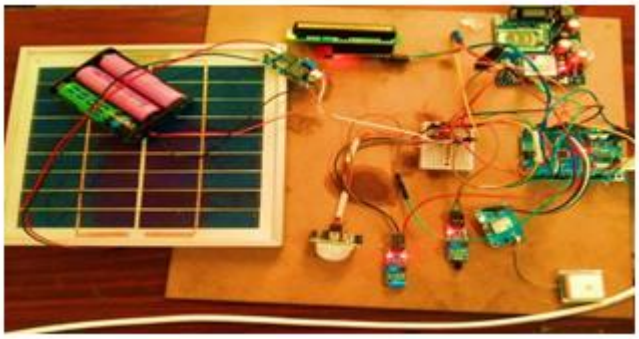

Fig 2: Practically implemented Anti-smuggling output

Fig 3: Display the output

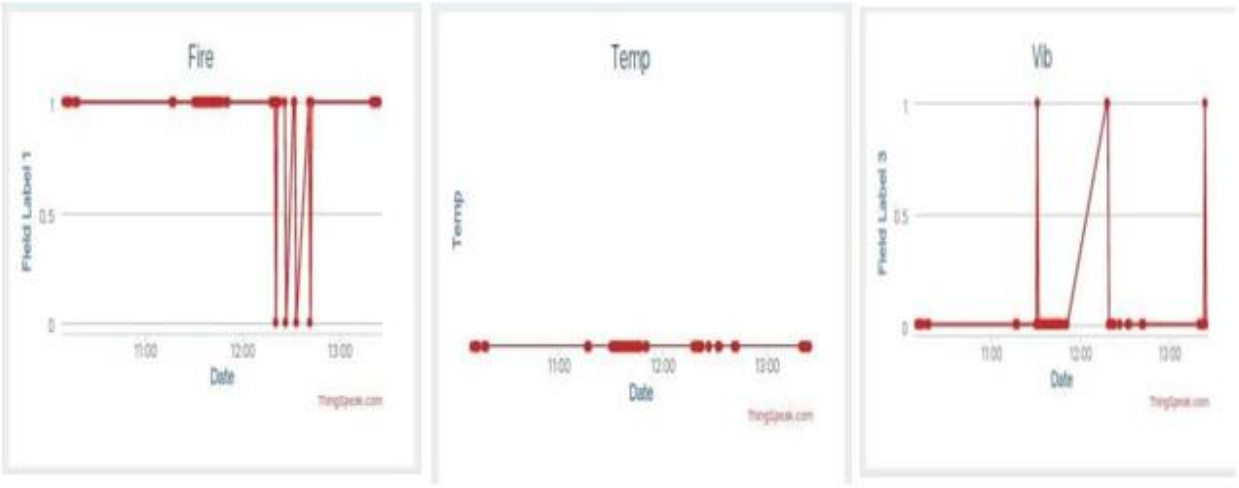

Fig 4,5,6: visualization data of fire, vibration and temperature

VI .CONCLUSION

In this project we want to implement the system with high variance which can able to security to trees and to

control the smuggling of trees in the forest. So that for this we are proposing a system with an electronic device that creates the division in forest because the trees were very costly and as well as they are very less in available on the world. So that we are preventing the device to security for the important scandal wood trees that they cannot steal by the smugglers. So that for the safety of trees in forest we have providing an electronic device. In this way the system is developed which can restrict the smuggling g of trees in forest where the human being is not able to provide security. In this manner we are increasing the system which able to control the smuggling of trees in forestry where the human being not capable to provide security. Such system we are developing in the forest where the tree is costly and their safety is important fact. In this area we are provide such kind of system

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