

IoT Based Antipoaching Of Trees In Forest Using Wireless Network

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Abstract- *Illegal movement of trees in the woods, acts as a major trouble to forest capital. A serious economic damage and which will ultimately have a terrible effect on the environment. Illegal movement of trees has lead to expand the risk of natural resources getting extinct. Wild animals are losing their natural habitats causing variance in the nature. Advance work based on Anti-Poaching system provide work based on wireless sensor network (WSN's). The purpose was to save the trees in forests and to save the animals. Here a WSN called as WIFI module esp8266 is used along with the sensors like temperature sensor, sound sensor, buzzer, arduino uno. This paper stand out an essential technique for indicating the base station about the poaching activity which will be done by axing of trees. This design is based in the open area. It requires low power consumption and is energy efficient.*

Keywords- Arduino Uno, WIFI esp8266, sound sensor, tilt sensor, temperature sensor, buzzer and flame sensor.

I. INTRODUCTION

Wireless devices networks is the most evolving technology and is employed in numerous applications. WSN consists of nodes integrated with sensors, communication module, powering unit interfaced controlled by a microprocessor. The peculiar characteristics of wireless device networks like low power consumption, compactness, and low price makes it possible technology for type of applications like observance, maintenance, security, and controlling. Wireless device networks square measure wide use for detection of fireside in forest, to find poaching of trees for environmental observance etc. Hence, WSN is employed in varied fields to serve the aim of the application within the globe. During this project a wireless device network is meant to watch the economically valuable trees. Poaching of economically valuable trees like Sandalwood, Teakwood, Rosewood etc have increased staggeringly. Therefore, it is necessary to require measures which might facilitate preserve our natural resources. The recent technological evolutions will help to style up the system to stop the use of these precious trees. The most promising resolution in such a state of affairs are going

to be “Implementation Of Wireless Device Network” to watch the illegal activity and alerting concerning the poacher. The sensor network system designed won't be ready to stop the extralegal poaching of the trees however facilitate catch the poachers before an excessive amount of damage is completed because the signal is instantly routed to the base station permitting to require immediate actions to catch the poacher's guilty. In this, we discuss the prevailing routing protocols for WSN. In a network, a cluster of 15-20 tree nodes can be formed with a master node having additional resources to communicate with base station will be located at the entrance of the forest/farm which will communicate with the control room server.

II. LITERATURE SURVEY

In tropical recent years, poaching of treasured trees which are mostly been hugely increased due to man's self-regarding wishes over the top include Sandalwood, Teakwood, Pine and Rosewood. Trees have been much creativity carry out by different system of government, and in specific government of India, to allay this problem. This holds enlistment of anti- poacher for deployment and training complete forest. Strict penalty for fin guilty criminals and providing superior incentives for anti-poaching (Twelfth five year plan 2012-2017) were as directed for destroying the risk [1].

However, there is many of the actions have remained largely ineffective. There is hopeful solution for the prevention of forest trees is- “the implementation of Wireless Sensor Networks (WSN's)” which is a robust, effective and practicable technology for monitoring and controlling [2]. WSN is a most developing technology, widely used in many applications which can be involved monitoring and controlling. In forest, it is already deployed for fire detection, rearing/ poaching of wild animals. It facilitates preservation and easy conduction [3][4].

They exclude the use of lavish things like cables and decrease the cost. In this extract, the presented design for a portable wireless sensor node which is the part of a Wireless

Sensor Networks. It will be attached on tree trunk of each tree, accomplished to identify theft and also repeatedly start and send signals to Central Base Station[1].

The system is low power design, and it is more successfully work with rechargeable batteries which can charge active by natural solar system. A solar panel is taken in the system to use for recharging node’s batteries[2]. It can avoid regular manual change.

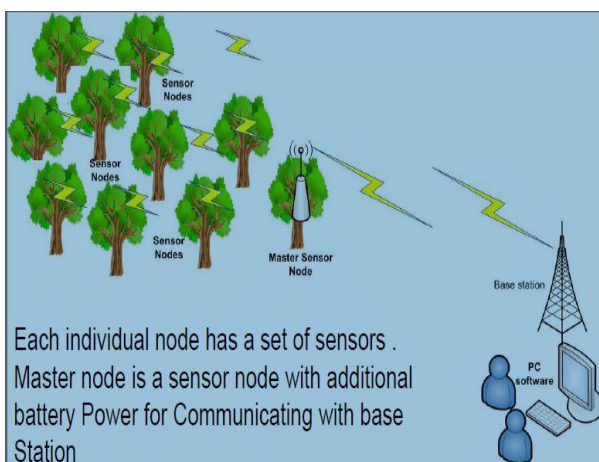
III. PROBLEM STATEMENT

To build an anti-poaching system by using IOT to prevent smuggling activities which are done in the forests by deploying three sensors tilt sensors, sound sensors and temperature sensors. Devices which are contoured on tree server unit base complex which comprises the sub server unit and lastly in the city where we are resident is the master server unit with our personal computer.

IV. PROPOSED SYSTEM

The proposed WSN consists of:-

- Each device consists of 15-20 sensor nodes. These devices will have sensor input as that the data of the accelerometer and microphone.
- The main node will receive the data from all the sensing nodes and will then transfer it to the base station. It processes the message from the sensor nodes and turns on the alarm levels.
- Base station receives the message from one master node.



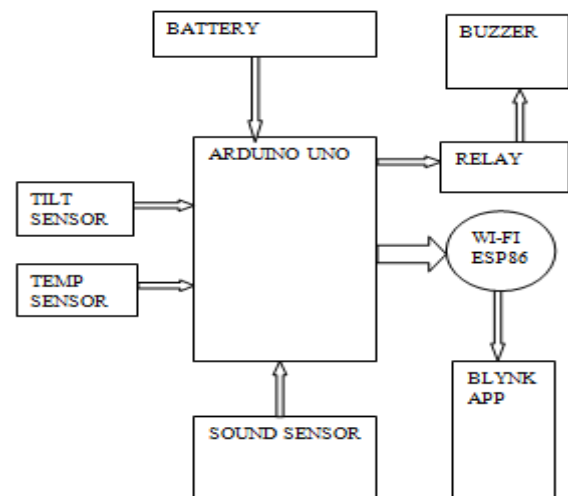
PROPOSED WSN ARCHITECHTURE

Here the sensing node comprises of four basic components 1) A sending unit 2) A processing unit

3) A trans receiver unit and a charging unit. All the components and the sensors that are selected have a low power consumption profile. Apparently, the node designed is an end device of WSN. Sensing node will transfer only alerts messages and only reply back to the query of the major request. The master will always monitor all the sensing device over particular time along with the poaching alert, with respect to some critical conditions, the alarming messages are also transmitted by the node to master. These alarms are like sensors, fails alerts, power down alert etc.

V. IMPLEMENTATION

At this point when the gadget gets fueled and is in its ordinary upstanding position, at that point the moving ball settles at the base of the sensor to shape the electrical conduction between two ends of the terminals of the sensor. The circuit tends to be short and the LED gets adequate current. The input is fetched from the base station which has the whole information and details of the trees in the forest. This consists of three major sensors such as tilt sensor, sound sensor, and temperature sensor. These sensors plays an important role in this project. Whenever there is a situation of bending of tree due to storm or adverse environmental conditions, the sensor helps in detecting it. And whenever the situation, such as high temperature, temperature sensor plays an major role. Sound sensor plays an important role which is also important. These are all maintained using an app called as BLYNK app which stores all the information and details of the sensors. All the sensors and the controller be set up at the tree. When logging occurs, the sound generated due to axing the tree is sensed by the sound sensor. Arduino through the relay switch activities the buzzer notifying the security personnel. Also, if there and tree bends beyond the threshold angle, the buzzer is activated.



VI. DIFFERENT COMPONENTS FOR PROPOSED SYSTEM

For implementing the poaching design there is a need of essential parts that are unit appropriate and manipulate poaching activities. These parts mainly include temperature sensor, sound sensor, tilt sensor, WIFI module esp2866, aduino uno.

TEMPERATURE SENSOR



The most commonly used type of all the sensors are those types of sensors which detect temperature or heat. It provides temperature measurement through an electrical signature. It is used to detect or sense any physical change to that temperature producing either an analogue or digital output.

SOUND SENSOR



It will detect the sound waves through the intensity and converting it to signals if the tree is being axed.

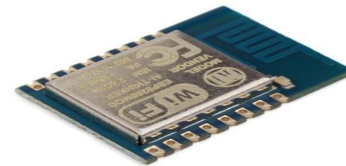
TILT SENSOR



A simple tilt sensor with a length of 4.5” indicates the tilt sensor. This sensor is adjustable and the resistance

across the sensor hikes. The ability of the tilt sensor changes when the metal pads are on the outside of the bend.

WIFI MODULE ESP2866



WIFI MODULE ESP2866 is a wireless network which is a free standing SOC unified TCP/IP arrangement that any microcontroller access to your WIFI network.

ARDUINO UNO



Arduino uno is an open platform used for building electronic projects. It consists of both physical programmable board and a software, here you can write and upload the code to the physical board.

FLAME SENSOR



Flame sensor is connected with a BLYNK app and will show the notifications if a tree is under fire.

VII. FUTURE ENHANCEMENT

- Protecting the trees like sandalwood etc.
- Deforestation can be prevented.
- The system ensures protecting wildlife and nature.
- We can see the visuals of the considerable number of happenings in the backwoods at the base station.
- Accurate area of tree cutting can be found effectively as well.

VIII. CONCLUSION

The main aim of this project is to save the beneficial trees. Using this system, we can easily track the illegal activity which reduces deforestation and helps in sustaining the ecological balance and also protects the wildlife and their habitat. It uses various sensors such as vibration sensor to check the vibration and angle of a tree while it is being cut. When an abnormal condition is noticed, GSM immediately sends a message to the base station. The sound sensor helps in distinguish sneaking.

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