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SMART FOREST SYSTEM USING IoT

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Abstract*: *For many days we are aware about looting of the trees like sandal, teak etc. These varieties are expensive and less available world-wide.They are using it in the medicine field as well as commercial. Because of huge amount of budget involved in exporting these logs, many incidents happens such as deforestation and looting. To minimize such activities and to save forests some preventive steps must be employed. We are developing such a system which can reduce these drawbacks. These activities has created economic and law and order problems in areas bordering Tamil Nadu and other regions in India. The purpose of this prototype is to safe-gaurd high demanding tree.Thinking about the future of our well-being we have adopted this system. The system which we are developing will serve well to many living organisms and our environment.

***Keywords*: Global Positioning System, Global System for Mobile communication module, flex sensor, Arduino.**

I. INTRODUCTION

Poaching isn't identified only with our country, China, Australia and African nations are additionally battling similar issue. Indian teak costs 12000 to 13000 INR for every kg though in worldwide stake. Sanders costs INR 10 centre for each ton. The Indian teak has emerged to be very seldom, trying to control its conceivable disaster; the Indian government is attempting to restrict the exportation of rare varieties. For an individual, most extreme advisable buy limit should not be more than 3.8 kilo according to goverment. Assuming the fact that the tree is, as of now government controlled, at that point its evacuation is denied whether on private until it is 30 years of age. Sneaking of teak has made financial and peace issues in different regions in India. The fundamental goal is to build up a prototype which can be utilized to confine looting of trees.

II. LITERATURE SURVEY

Smart environments, wireless sensor networks will play a vast role in sensing, collecting, and disseminating information about environmental phenomena in upcoming days. Sensing applications displays a new paradigm for network operation, one which it has different goals from more traditional wireless networks. This paper tell about the emerging field to classify wireless micro-sensor networks according to different communication functions, data delivery models, and network dynamics. Appropriate communication infrastructures for different sensor network application subspaces, allowing network designers to choose the protocol architecture that best matches the goals of their application was helped out by this taxonomy. In addition, this taxonomy will enable new sensor network models to be assured for use in further research in this area.

While the applications requires high performance from net, they suffer from source constraints that dont appear in conventional wire computing environments. In demanding, wireless spectrum is limited, often limiting the bandwidth available to applications and making the channel error-prone, and the nodes are battery-operating, often limiting available energy.

III. INTERNET OF THINGS(IOT)

Our lives are simpler and happier because of an advanced technology called Internet of things (IOT). With the rapid increase in the number of users of the internet over the past decade has made the Internet a part and parcel in our life, and the most new and emerging internet technology is the IOT. We can connect, interact and command any device in the world by using the Internet is IOT. It is a massive network of connecting people and things. We can make many incredible projects to control any electronic devices by using this simple and powerful technology at home or in industries.

The internet of things offers many benefits to organizations, enabling them to monitor their business processes.

- Improvisation of customer experience;
- Save time and money;
- Enhance employee productivity;
- Integrate and adapt business models;

Fig 3.1 Internet of Things

IV. GSM AND GPS MODULE

Fig 4.1 GSM Module

GPS states for **G**lobal **P**ositioning **S**ystem. It is a space-based satellite navigation system which provides location and time details in all weather conditions, anywhere in the Earth. GPS receivers are popularly used for navigation, positioning and for other research purposes.

GSM stands for **G**lobal **S**ystem for **M**obile Communication. GSM is a digital cellular technology that helps us to transmit mobile voice and data services. Each 200 kHz channel is divided into eight 25 kHz by using a circuit-switched system. It operates for phone communication bands 900 MHz and 1800 MHz in major parts of our world.

The features of SIM900A of the GSM module have the features such as:

- **Single supply voltage**: 3.4V – 4.5V
- **Power saving mode**: Typical power consumption in SLEEP mode is 1.5mA
- **Frequency bands**:SIM900A is a Dual-band: EGSM900, DCS1800. Automatically the two frequency bands was searched by SIM900A .
- **GSM class**: Small MS
- **GPRS connectivity**:GPRS multi-slot class 10 (default),GPRS multi-slot class 8 (option)
- **DATA GPRS**: download transfer max is 85.6KBps, Upload transfer max 42.8KBps

V. FLEX SENSOR

There are two sizes in **Flex sensors. They** are **2.2** inch and 4.5 inch. Although the size is different the basic function remains similar. Based on resistance also it is divided as LOW resistance, MEDIUM resistance and HIGH resistance types. Choose the appropriate type. Here the discussion is about FS-L-0055 which is 2.2inch Flex sensor.

Flex sensor is same as that of variable resistor, when the sensor bents its terminal resistance will increase. Hence depends on surface linearity this sensor resistance increases. So changes in linearity were sensed by this sensor. When the base of flex sensor is completely linear it will have nominal resistance.

VI. ARDUINO UNO

Arduino Mega is used as a controller in this paper. Arduino is an well equipped Open-SourcePrototype Platform based on easy-to-use hardware and software. To read inputs – light sensor, or a Twitter message - and turn it

Fig 6.1 Arduino UNO

into an output - activating a motor, publishing anything online were done with the help of Arduino boards. Beginners can also able to use this Arduino software easily.

VII. PROPOSED METHOD

In this method, three sensors are used. They are tilt sensor, temperature sensors and mems sensors. To find the shape of trees tilt sensor are used. Forest fires and smokes are sensed by temperature sensors. Illegal loggings are detected by mems sensor. Indebted to the sensors, the relay switches will activate the output devices. A buzzer is activated for mems sensor and a water pump is activated for temperature sensors.

Forest employers are notified whenever disaster happens. And also SMS will send to the forest officer if any one above anomalous activities are occurred with the location by using GSM and GPS.

VIII. WORL FLOW

At the point when the gadget gets fuelled and is in its ordinary upstanding position, at that point the moving ball settles at the base of the sensor to shape an electrical conduction between the two end terminals of the sensor. On the off chance that the circuit takes care of business ball doesn't settle at the base of the sensor with the electrical conduction way, at that point the circuit winds up open.

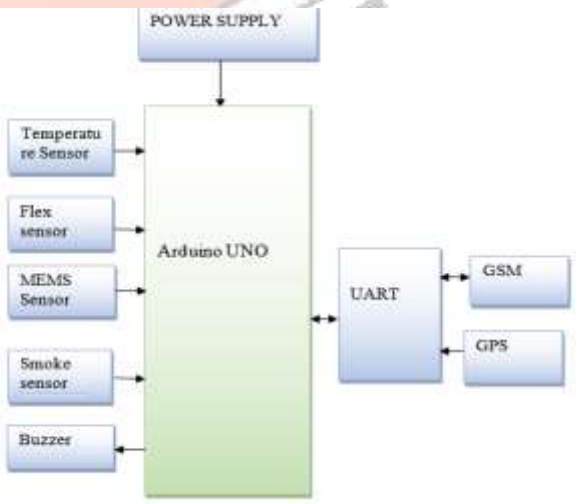

Fig 7.1 Block Diagram

When someone is trying to cut the tree the mems sensor placed in the tree which contains the magnetic needle in it gets changed from its initial position. When there is a change or tilt in its position it is understood that the tree is being chopped. When this happens the admin receives the message or an alarm saying the tree is being chopped. This communication is possible through WSN and a local or global database.

The admin can either be the forest ranger or the person in charge of control room or both. When there is a wildfire a message or an alarm will be sent to the admin as mentioned above. Now the

wildfire can be prevented through some measures taken by the officials. This proposed method is used in

- Forests
- Restricted Areas
- House Hold purpose

IX. Conclusion

Deforestation can happen quickly until we stop tree smuggling in our forest area we want to increase our security area. As a result of ongoing forest degradation, the temperature is getting rise due to climate change cause by human activity. The better living of humans and animals purely depend on this system. The factors like global warming, natural erosions etc. can be stopped by adopting this system. All the forests must adopt this system to prevent Deforestation. This act must be initiated by all government across the globe. We cannot imagine a world without trees and water. Our future generation are in the verge of seeing such a calamity. To avoid this disaster awareness must be created among people. Factors like wildfire can also be prevented by this system. The proposed system must be approved by the government and implemented instantly. To
save our future we need to save ourselves that can be done only by saving our environment.

The environment degradation can be stopped and a healthy atmosphere can be built through this environmental based SMART FOREST SYSTEM.

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