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GSM BASED ILLEGAL TREE CUTTING PREVENTION AND MONITORING

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ABSTRACT:

Tree trafficking has been a long-standing and regrettable problem. Cutting trees such as red sanders, teak wood and sandal wood is still a challenging task. Despite many advances in technology, ensuring the protection of trees in a vast region like as a forest is difficult. It is also opulent to put into practice. We are working on a method to prevent tree trafficking in the forest. Arduino is used with a flex sensor humidity sensor , mems sensor and power supply to create the systems. At the point if any malfunction, the tree unit module and that the specifical geographical location will be communicated via GSM.gsm is also being used to restructure real-time data from the tree unit to that the monitoring section. This ensures data security as well as privacy.

KEYWORDS: GSM, sensors, Arduino, wireless network and monitoring

1.INTRODUCTION:

We are emerging such a system which can be used to limit this trafficking. Every tree will be armed with one small electronics unit which consists of Micro Controller, Flex Sensor and GSM modem Interfaced with Arduino module. Tree cutting will be noticed by flex sensors. At server unit cutting trees will be shown in web app. Communication among the trees and server will be done by GSM modem. In case of any variation the App will get updated with location and attentive message. The impartial of the scheme is to shape safe and protected forests to prevent smuggling and anti-social activities against unlawful cutting of the tress for Environment safety and pollution switch. The plan moves a step head to protection the living of birds on Trees and animal defence by checking the cutting of tree. We have intended a system which can be used to avoid the trafficking of the trees which would in turn stop the deforestation and support the

Environmental stability, which would help to solve one of the problems with the Global Warming. Each tree is having with one electronic division, which consists of Arduino, Micro Controller, Flex Sensor, mems sensor, humidity sensor and GSM module. Forest trees cutting will be detected by mems sensor [2]. Message between the trees and server will be done by GSM module

Every tree will be prepared with one small electronics unit which contains of Micro-controller, flex sensor and GSM module. There will be one sub server unit for specific area of forest. The data of different tree units can be collected by this unit. The sub server unit will send the data to main server using GSM modem. At main server GUI using VB will be created to alert about gossamers with exact tree location. This data can be used by forest authorities to take preventive action. The whole process will take maximum of few seconds or a minute. This will surely reduce trafficking and illegal logging to a greater extent

LITERATURE SURVEY:

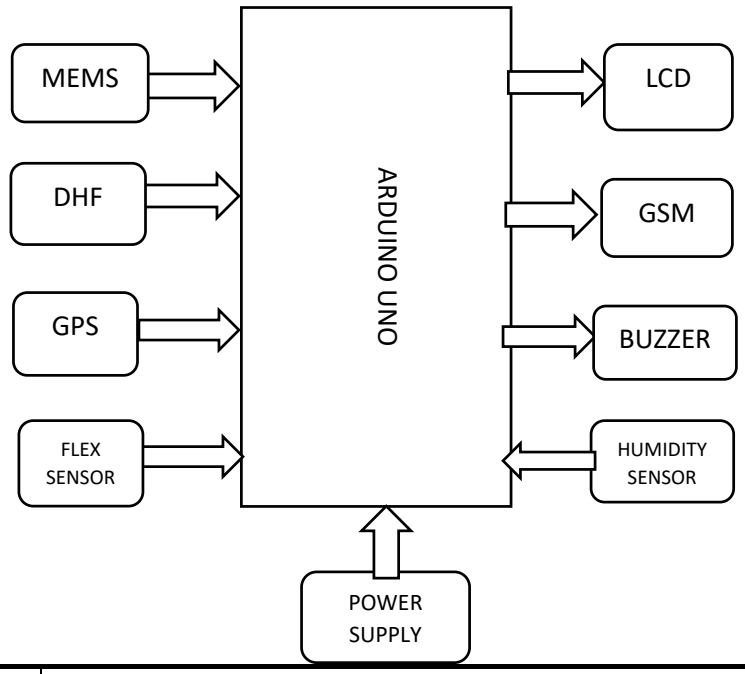
In “Preventive System for Forests”, Prasad R. Khandar, K. Deivanai [1] A very long before, when earth was forming its inner core and environment, it obviously had a very good plan of each area, part of nature should fit in cycle together so it would behave and work like a well kept machine like todays embedded systems are working continuously. But from past few years we have been reading in the newspapers about cutting and smuggling of the trees like sandal, Teak etc. These trees are very costly as well as important in the world. These are used in the medical sciences as well as cosmetics. Because of immense quantity of cash concerned in commercialism of such tree woods, several incidents square measure happening of cutting of trees and their importation.In India also in the forests of Karnataka and Tamilnadu some notorious Smugglers are doing the smuggling of such trees for so many years. The sandalwood trees of India have become endangered in past few years, and in an attempt to save it from outside sources, the Indian government is trying to set a limit the exportation of sandalwood. Three distinct units are placed in proper places for performing experimental test. Fully setup of system is established. Stroke has been given and it is being detected by tree unit. Further processing of signal is done by sub server unit. For understanding purpose LCD display we have attached. At control station where main unit is fixed and detected. In “Real Time Forest Anti-Smuggling Monitoring System based on IOT using GSM”, Mr.Rohan Solarpurkar, Prof.Suvarna L. Kattimani,[2] From many years we are getting news about smuggling of the trees such as sandal, Sagwan etc. These trees are very expensive and less obtainable in the market. To avoid such type of smuggling and to save and monitor the forests, around the globe some preventive systems need to be developed. We are forming a system which may be accustomed prohibit this importing. The suggested system will consist of two modules which are described below, 1) Tree Unit 2) Main Server Unit (base station). Every tree will be having one small electronics division which will consist of Renesas controller, Sensors and Solar power. The data of different tree units is collected by these units. Each tree unit will give the information to base station using GSM module. At main server GUI using one authorized person who received the message and he/she will be taking action to provide security In future the system can be implemented using Wireless Fidelity support which will be extended scalability up to 5 km radius in the Forest Area. This Work can also be extended by new research area as video processing with the help of

Infrared Cameras and Arial Surveillance using UAV. In “Prevention of Illegal logging of Trees using IOT”. Harshita Jain and Abhijith H V [3] Smuggling of the trees such as sandal, Sagwan etc. is one of the major national issue. These trees are very expensive and less obtainable in the market. To avoid such type of smuggling and to save the forests around the globe some preventive systems need to be developed. In this paper we are proposing a system based on Internet of things which can be used to detect the illegal cutting of tree and restrict the tree smuggling. This system can be used by government to protect the trees.

We are developing such a system which can be used to restrict this smuggling. Every tree will be equipped with one small electronics unit which consists of Micro Controller, Flex Sensor and Zigbee module. Tree cutting will be detected by flex sensors. At server unit cutting trees will be shown in VB front end. Communication between the trees and server will be done by Zigbee modules. In this way we are developing the system which able to restrict the smuggling of tree in forest where the human being not able to provide security. Such system we are developing in the forest where the tree are costly and their protection is important fact. In this area we are provide such kind of system In “Forest Monitoring System Based On Gprs and Powered By Iot” Prof. Suma V. Shetty, Ms. Manasa J. Ms. Harshitha R.[5] This project presents the prototype of a system for detection of any uncontrolled anthropogenic activities, smoke or fires in forests using sensors. The data from the sensors is processed in the microcontroller and is transmitted to the receiver unit through Zigbee network. The abnormalities alert the receiver unit and the pictures taken through camera are mailed. This Forest Monitoring system prototype is designed and developed in an effort to improve the security level for valuable trees which have high demand in market like teak, Sandalwood, etc. This prototype is tested and demonstrated successfully for its functionality.

SYSTEM ARCHITECTURE:

Symbolically (figure.1) represents about the system architecture using GSM(global system for mobile communication) connected with mems sensor, flex sensor, humidity sensor and temperature sensor, LCD etc.,



EMBEDDED SYSTEM:

Embedded systems are devices used to control, monitor, or assist the operation of equipment, machinery, or plant. Embedded chips are nonprogrammable microcircuits hardwired into other pieces of equipment, many of which include date calculations in their programming logic.

Embedded systems are at the heart of many different products, machines and intelligent operations, such as machine learning and artificial intelligence applications. As embedded systems applications appear in every industry and sector today, embedded devices and software play a crucial role in the functioning of cars, home appliances, medical devices, interactive kiosks, and other equipment we use in our daily lives. While real life embedded systems have become a significant part of our lives, they are engineered to operate with minimal human intervention. Characteristics like compact size, simple design, and low cost make them a useful technology in industries like aerospace, automotive, healthcare, and even smart cities. Thus, they are one of the driving forces behind today's digital, connected, and automated world.

Embedded systems can be divided 4 types based on performance as well as functional requirements they are real time standed alone networked mobile.

2.PROPOSED SCHEME:

The manual monitoring of the forest to prevent unauthorized activities is practically difficult job. The four major operations that are essential in monitoring the forest are developed in this work, namely tree cutting detection, fire detection, human detection and contaminated water detection using vibration sensor, fire sensor, Passive Infrared Sensor (PIR) and PH sensor respectively. A micro controller is used along with GSM to communicate to central server from remote place. The sensed data from sensors is collected and sent to the authorized person via GSM. IOT is widely used technology in forest monitoring application. In addition this paper uses Wi-Fi router module through which employee and forest officer can communicate with each other in case if network is disabled.

For ages we have been disturbed by illegal activities like smuggling of Precious and commercial trees such as Teakwood, Sandalwood, Sagwan etc., from the protected Forest areas. These trees are very expensive as well as have a lot of commercial demand in the world market. The trees are protected by marking them some tags manually in certain places. Logging can be cutting trees, sliding trees, nearby preparing, and stacking trees or logs onto trucks. The fare of wood materials is begun from illicitly removing timber which is a multi-million dollar industry. Illegal logging not only leaves a mark of deforestation also making void where old trees once stood – it strips the financial livelihood of local communities. There's additionally lost and cost income that may has been created just from legitimate logging of woodlands. At the point when trees are cut without the licenses and are pirated abroad, the administrations miss out fiscally in a few ways, including lost income from assessments and obligations likewise the expenses for the endeavors to deal with the unlawful logging. Trees that are cut without paying the assessments and obligations diminishes the market cost of that timber, which additionally influences different lumberjacks to take after similar practices. This further expands misfortunes to governments and begins an endless loop in the market. Illegal logging of trees is also called as timber theft by the timber mafia. It can likewise be alluded to as the gathering, transportation, buy, or offer of timber disregarding laws. The harvesting procedure might be unlawful which incorporates utilizing degenerate approaches to access the timberlands; extraction of wood without the lawful consent; the cutting of ensured and imperiled species; or the extraction of timber than from as far as possible. Due to increase in demand for the forests products, it has brought some financial benefits to the poor people living around the forest areas. But usually, poor communities who are totally reliant on woodlands miss out of interests as the logging

organizations and vagrant specialists receive a large portion of the rewards. Clearcut logging is harvesting or silviculture method, and which is also known as clearcutting or block cutting. In the wood products industry logging organizations are alluded to as logging temporary workers, and the non-association teams alluded to as "gyppo loggers." Cutting trees with the most noteworthy esteem and leaving those with less esteem which is either ailing or deformed trees, is alluded to as high evaluating. It is additionally called selective logging. As a preventive measure to the above problem, we have come up with a system based on Internet of things that can be utilized to keep the pirating of the trees which would thus stop the de-forestation and keep up the Environmental strength, which would tackle one of the issues of the Global Warming. Each tree unit is having an electronic unit, which comprises of various sensors, tranceivers and micro Controller.

GSM MODULE:

GSM is an international standard for mobile telephones. It is an acronym that stands for Global System for Mobile Communications. It is also sometimes referred to as 2G, as it is a second-generation cellular network.

Among other things, GSM supports outgoing and incoming voice calls, Simple Message System (SMS or text messaging), and data communication (via GPRS).

The Arduino GSM shield is a a GSM modem. From the mobile operator perspective, the Arduino GSM shield looks just like a mobile phone. From the Arduino perspective, the Arduino GSM shield looks just like a modem.

A GSM modem is a wireless modem that works with a GSM wireless network. A wireless modem behaves like a dial-up modem. The main difference between them is that a dial-up modem sends and receives data through a fixed telephone line while a wireless modem sends and receives data through radio waves.

A GSM modem can be an external device or a PC Card / PCMCIA Card. Typically, an external GSM modem is connected to a computer through a serial cable or a USB cable. A GSM modem in the form of a PC Card / PCMCIA Card is designed for use with a laptop computer. It should be inserted into one of the PC Card / PCMCIA Card slots of a laptop computer.

Like a GSM mobile phone, a GSM modem requires a SIM card from a wireless carrier in order to operate.

As mentioned in earlier sections of this SMS tutorial, computers use AT commands to control modems. Both GSM modems and dial-up modems support a common set of standard AT commands. You can use a GSM modem just like a dial-up modem.

In addition to the standard AT commands, GSM modems support an extended set of AT commands. These extended AT commands are defined in the GSM standards. With the extended AT commands, you can do things like:

- Reading, writing and deleting SMS messages.
- Sending SMS messages.
- Monitoring the signal strength.
- Monitoring the charging status and charge level of the battery.
- Reading, writing and searching phone book entries.

The number of SMS messages that can be processed by a GSM modem per minute is very low -- only about six to ten SMS messages per minute.

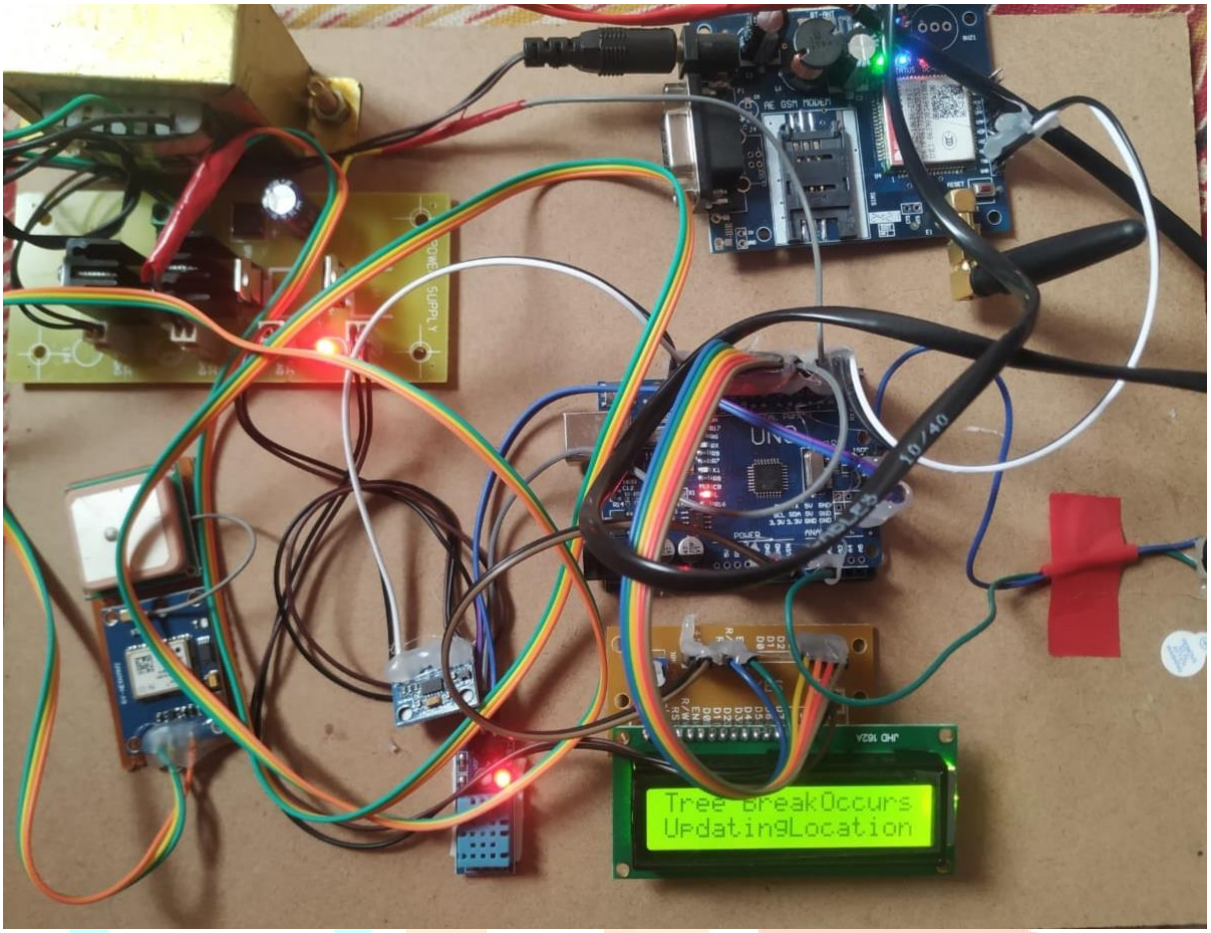
LCD:

A 16x2 LCD means it can display 16 characters per line and there are 2 such lines. In this LCD each character is displayed in 5x7 pixel matrix. This LCD has two registers, namely, Command and Data. The command register stores the command instructions given to the LCD. A command is an instruction given to LCD to do a predefined task like initializing it, clearing its screen, setting the cursor position, controlling display etc. The data register stores the data to be displayed on the LCD. The data is the ASCII value of the character to be displayed on the LCD.

CIRCUIT DIAGRAM:

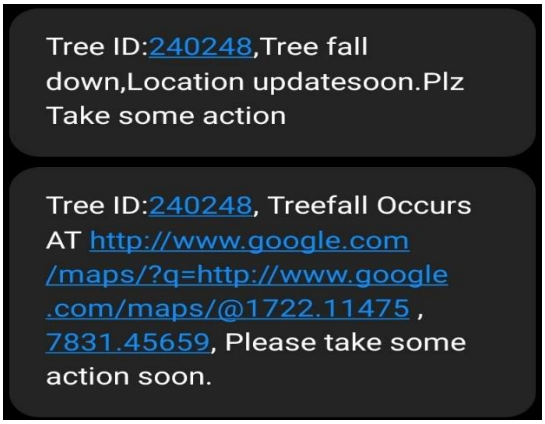
It represents that the block diagram (figure 2) consists of GSM module, temperature sensor, humidity sensor, GPS, micro controller, power supply and mems sensor. Intilally we are arranging device to the tree which consists of Arduino, mem sensor, temperature sensor, GPS, GSM module and humidity sensor.

While in forest if any malfunction or any illegal tree cutting activities can be detucted by this sensors and information from the tree is send authorized government



CONCLUSION:

Through this framework we can stop the tree cutting in timberland and control the dealing of trees in backwoods where the person not talented to offer security. This is additionally serving the public authority or the approved individual concern where the dealing is going on and who possesses that the ranger service or tree and the way things are occurring like cutting of tree, fire or on account of the great temperature around the environmental elements of the backwoods. Forestalling sneaking of trees is a significant test. This thought additionally helps the public authority or the approved concerned individual to know where the Smuggling is occurring with the assistance of GPS and the way things are going on like cutting of tree, by fire or due to the high temperature around the environmental factors of the woodland.



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