

# TREE CUTTING AND FIRE, MONITORING & CONTROLLING IN BOTANICAL RESEARCH FIELD

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**Abstract**—This paper present the system for tree cutting and fire, monitoring and controlling for the botanical research field. Basically it is agriculture base. In this system we use the solar plate use as power supply. Two sensors are use for monitoring purpose one of the tree falling and another is smoke sensor. Working of those sensors is very simple and fast. We also use ARM microcontroller. Sprinklers are use because of controlling the fire. Zigbee use for the wireless communication and the GSM is use for the when the sensors sense the signal then send the text and the location of that place to that officers. Alarm is also used when sensor sense the signal then alarm is on.

**Keywords:-** LPC2148, GSM module, ZIGBEE module, smoke sensor, tree falling sensor.

## I. INTRODUCTION:-

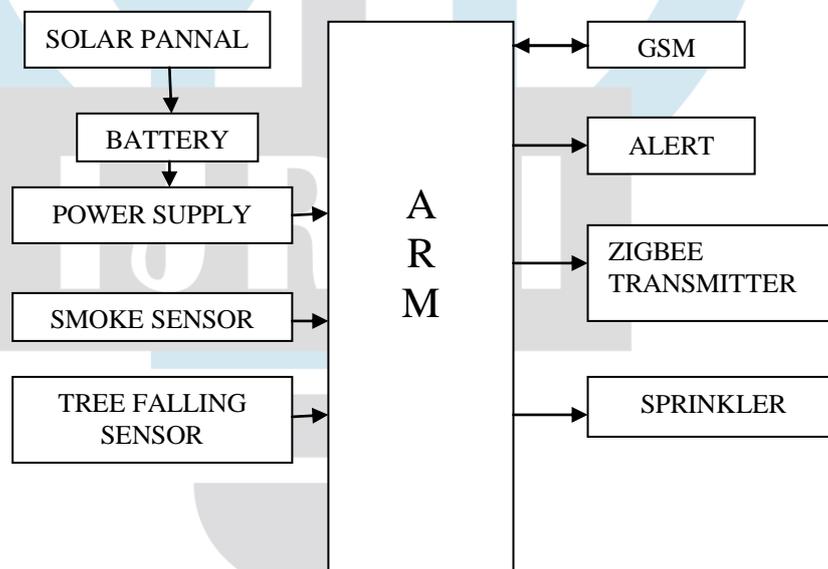
Tree and fire monitoring and controlling in botanical research field based on different sensors, zigbee, GSM, Alarm, Sprinklers. in that first part data monitoring contain the sensor. Second part base station means controlling office in botanical research field. third part data controlling contain the zigbee, GSM, alarm, sprinklers etc.

Sensors are used for detecting part .this system useful for large scale botanical research field environment monitoring and controlling for save the different tree present in botanical research field .solar panel will be used for power supply to the circuit.

Botanical research field are on the way of totally vanish .botanical research field the tree cut for many purpose or many reason are related to money

## II. BLOCK DIAGRAM :-

TRANSMITTER SECTION:-



RECEIVER SECTION :-



**BLOCK DIAGRAM DESCRIPTION :-****SOLAR PLATE:-**

Solar plate is depend on number of photovoltaic cell present in one solar plate and photovoltaic cells are connected in series.when sunlight falls on solar plate part of light is absorb and convert into electrical energy by means of electron moment depending on construction photovoltaic cell can produce electricity from range of frequency of light.

Electron and holes are combine with each other and current is flow in one direction produce current in the form of DC.this system requires 12v and 1amp current output of solar plate connected to battery and battery is used for storing purpose of electricity. Battery is depending on time taken to charge and discharge time.

**SMOKE SENSOR:-**

The sensor is an object used purpose is to detect and response to some type of input from physical environment such a one type of sensor that is smoke sensor is used in our project to detect the smoke when fire is created

Highly sensitive smoke sensor is used .this sensor is 4 pin sensor.inside the sensor which becomes at 5v.when the smoke coming near to the sensor get ionized and are absorbed by the sensor this changes the resistance of a sensor .

**TREE FALLING SENSOR:-**

Tree falling sensor is use to detect the tree was falling after cutting. Accelerometer is used as tree falling sensor in this system .this sensor detect the direction of tree in three dimensions XYZ.

**GSM:-**

The global system for Mobile communication usually called GSM. the GSM modem works on frequency900/1800Mhz. the modem is connecting with RS232 connector and interface which allows connect pc as well as controller with RS232 chip(MAX232) .Using this modem we can make audio calls ,SMS, Read SMS attened the incoming calls and interact etc. through simple AT commands.

i.e. to send new message

AT+CMGS="MOBILE NUMBER"

<MESSAGE

{CTRL+Z}

TO Receive SMS

AT+CMGD=1

AT+CMGR=1

**TO MAKE A VOICE CALL:-**

The GSM does not have a keypad and display to interact with it just accept certain command through a serial interface these commands are called as AT commands. Every command start with "AT". AT stands for attention

In our peroject mobile number enter through the keypad when a 10 digit mobile number is provides the programinstruct the modem to sends the text message using sequence of AT command.

**.MAX232-**

RS232 is the name of serial communication in this standard logic 1 and logic 0 is denoted by voltage range MAX232 is the name of IC which is used for TTL to RS232 or serial communication the communication between two devices that devices must be TTL compatible. TTL compatibility means TTL logic level logic 1 or logic 0 must be same for both devices.

**ZIGBEE-**

Data rate of zigbee 240kbps,50kbps,20kbps and communication is wireless the feature of zigbee is automatic network established made by coordinator.

Zigbee IEEE standard is 802.15.4. network range of zigbee upto 75m.and in this project we used the zigbee as carrirer or medium to information is send.

**BUZZER:-**

In this project we used buzzer as alert when sensor is sense or detect that unauthorized activities in botanical research field before send msg to the main office buzzer is automatically on .

### **SPRINKLERS:-**

Sprinklers is used in this project when smoke sensor detect the smoke then sprinklers is automatically on means before sending message to the main office sprinklers is on and control the fire before it going to out off control.

### **ALGORITHM:-**

- 1 .START
2. GSM, ZIGBEE initializations.
3. Check the sensor MQ6 and accelerometer.
4. If the sensor senses the signal then buzzer is on and text is sent using zigbee and GSM.
- 5 .MQ6 sensor sense smoke at that time sprinklers is on,buzzer is on and text also send .
6. This process is continuous
7. STOP

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### **CONCLUSION:-**

We design this system and practically learn many of things for example working of zigbee,GSM module,microcontroller and MAX232 and different type of sensors also.

This system is useful for not only botanical research field ,gardens but also in farms and forest als.cost of this system is also lo.This system is design for small area coverage but in future we design this system for large area coverage area also.

### **REFERENCES:-**

We have refer the generals and IEEE papers.

- 1."International journal of engineering and computer science ISSN.2319-7242".

In this paper we refer block diagram .

- 2."International journal of engineering trends and technology(IJETI)"

Zigbee base location system for forest research and rescue machine in this paper we refer working of GSM module and ZIGBEE .

- 3."Forest fire modeling and early detection using wireless sensor networks"

In this paper we refer the how to fire monitoring and controlling of many places like forest farms botanical garden etc.

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