2nd National Conference on Recent Innovation in Engineering, Science, Humanities and Management
REVA University, Yelahanka, Bangalore, (India)
29th-30th March 2019 www.conferenceworld.in ISBN : 978-93-87793-79-8

Anti-smuggling System for Trees In Forest

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ABSTRACT

The day we are developing an embedded system device of hardware parts which can be used to avoid and to restrict the smuggling of sandal wood trees from the smuggler's. So that from the beginning we observed that in the newspapers with an headlines of about smuggling of the trees like Red sandal wood(sagwan) . The trees which was stolen by the smuggler's were very costly and by the way their were less available in the world. So that such trees are used for medical sciences as well as cosmetics for that reason the scandal wood trees may costs high in the world. Where the huge amount of money was involved in selling of Red scandal woods lots of incidents were happening by cutting the trees and stolen by the smuggler's in the forest areas. So that to avoid and to restrict such smuggling of trees and to save the forests and not to prevent the deforestation around the globe for some preventive measures to be like global warming need to be deployed.

Keywords: Anti-smuggling system, GSM module, GPRS, sensors

I. INTRODUCTION

In this introduction of anti smuggling system for trees in forest we are implemented the system to avoid an nature disasters 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 smuggler's 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 their should be need to implement a device to security for the expensive trees which the smuggler's can't 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 the RENESAS microcontroller is the heart of the project which can controls whole operations of the given system. In this project we have used 3 major sensors for tree unit to the betterment of the inputs they are a)accelerometer sensor b)flex sensor c)temperature 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 transmit 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. Accelerometer sensor is used for tree surface where there is tree cutting operations done near it , and it detects and produce an output. Therefore the flex sensor is used while the tree is bend or the tree branches are at the growing time this sensor is used and to send the information to main tree unit. The temperature sensor used for the surrounding's of the tree unit where any fire accidents occurs near the tree and the temperature at above 40 degrees 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.

II. RELATED WORK

2.1 Siddeswary Yadav S.T, Dr.M.Meenakshi

The authors of these paper are defines the project about ANTISMUGGLING for trees using the flex sensor and ZIGBEE module. And the authors are used explain about the restrict the functions of smuggling from the smuggler's activities and is used to be save and protected the trees in the forest environments on the earth by using the important from the preventing measures. So that the given system has developed by using an mini sensor network from an ZIGBEE module technique .The main preventive system for forests are used in main units like tree unit, area/sub server unit. And the authors the project are mainly used to concentrates on the ZIGBEE module and GSM technology for the maintenance of server ,visual basic. Therefore they used an module of Android based Anti-Smuggling system is used in anti smuggling of am alarm system for trees in forest using an android development. They used an ideal attractive of an sensors like accelerometer and the temperature sensor for forming an mini sensor networking has been introduced in this project .And usually uses the MEMS technology for betterment of the given system to be developed easily. In paper the details has been discussed on MEMS accelerometer which is also be referred for the vertical capacitive TORSIONAL accelerometer (TXL).

2.2 Lokhande Harshali, Khalate Vaishnavi,Kapadekar Supriya ,Kamble B.S

In paper they used an main three units of controllers they are, ZIGBEE modules and MAX232 . So that the author of the project concludes that the project gets more complicated and it also contains an flex sensor. The project drawback is using an sensor that gives the accurate reading when it gets bend. So that this drawback can be used by ADXL sensor to avoid which an 3-axis accelerometer for proper corrections. So they used the sensors to minimize the circuit by reducing the tree units into two units are been created successfully.

2.3 Rajender Chintha , Benny Pears , O. Vijaylaxmi, Varsha Devi , Sanjai Prasad Rao

In this objective of project has been designed a smuggling control system for the security of trees by using an LPC2148 Microcontroller to integrate the hardware and software. In such a way the controller is used when an person tries to cut, try and harm the tree it will be gets detected and is fed into the given microcontroller which can process to be get verified and to provide an access to the vehicle by sending an =SMS to the GSM module to get the security for the forest environments.

Problem statement

In previous papers we have observed that they are used LPC2148 Microcontroller, MAX232 microcontroller due to the high features added to that and the low power battery to activate the device .so it gets the working the devices gets very slow and occurs some error in the device system. so that the microcontroller gets heated while adding more features and doesn't shows proper output values for the project. So that we are proposing a new project to implement with an new product to get attractive. So that we used RENESAS microcontroller it will receives the input values and gives the proper values and we also add additional features to it and RENESAS is a 16-bit microcontroller which can gives exact output for the project.

ISBN : 978-93-87793-79-8

III. PROPOSED WORK

3.1 Working of Block Diagram

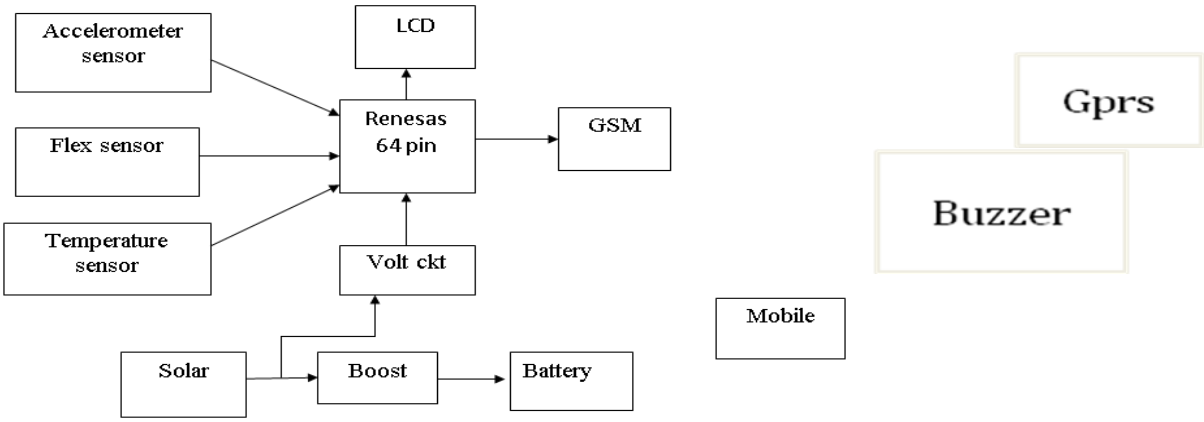


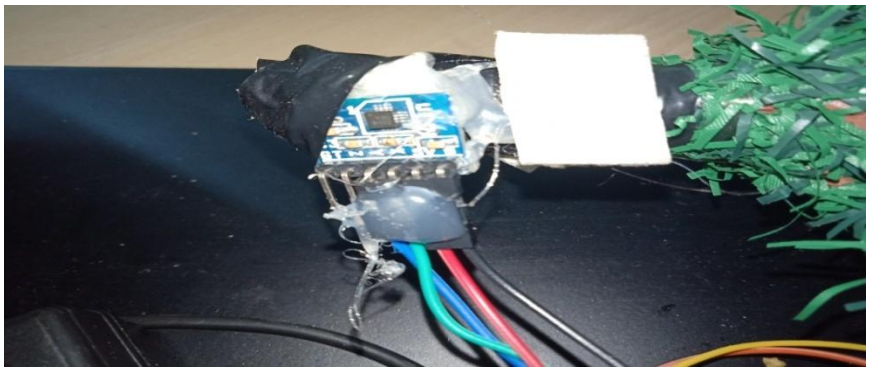
Fig 1. Block diagram

In this Block diagram we considered from previous papers that we have proposed a new features to my project which the can save the trees for deforestation and environmental aspect. In this project an electronic devices is used to the avoid and safety for the smuggling of the trees from the smuggler's for this project the electronic device is developed. And the tree unit and server units of sensors, RENESAS micro controller ,GSM module ,solar power panel are used for an more expensive trees to be developed with an small electronic devices. The area of trees we will be selected are very high in cost. And in order to differ from the that the device of the given system consists of two main major unit there are tree unit and the another is server unit. where tree unit consists of inputs they are sensors and as well as server unit acts as the networking parts for the given device they are GSM, GPRS, RENESAS microcontroller , BUZZER. In this new proposed system we want to expressed about sensors They are accelerometer is used for the measuring of the physical and the measurable acceleration's made by an object near the tree and the accelerometer sensor is also called as vibration sensor .And the vibration sensors are also used for the tree where an external forces obtained by an object near a tree it gets vibrated. Therefore the amount of deflection or bending of an object is measured by an flex sensor. Commonly the sensor is gets stuck to the surface at 90 degrees bend the tree and the value which shows the output of Direction X is Tree-1 fall/cut at 90-120 and Direction Y is Tree-2 Fall/cut the shows at the surface the tree bends at 120 and below , The output produces when if any changes occurs at the surface object like bending. And the temperature sensor is used for the amount of measures in heat energy and also in coldness that can be generated to the or an system and the output for this will be shown as fire detection. And the main heart of this device is RENESAS microcontroller which in the series of RL78 (R5F100LEA), and which is an 16-bit microcontroller to be implemented and is used for this project and it also controls the whole system activities. The RENESAS micro controller contains the Flash ROM of 64 kilo byte, RAM 4 kilobyte and the Data Flash 4 kilobyte and it gets the high speed on the chip oscillator for the self-programmable under software control, 58 general purpose input/output(GPIO), 3UART's simplified 12C, 10-bit resolution Analog to digital conversion,

28 Interrupt sources and also Internet service provider (ISP) Programming is supported to this project. and finally we have implemented the new features of the system is GPRS is to find the tree location where the surface of tree as effected with any external forces And fire accident parameters etc….,and final output of this project will be show in the LCD Display.

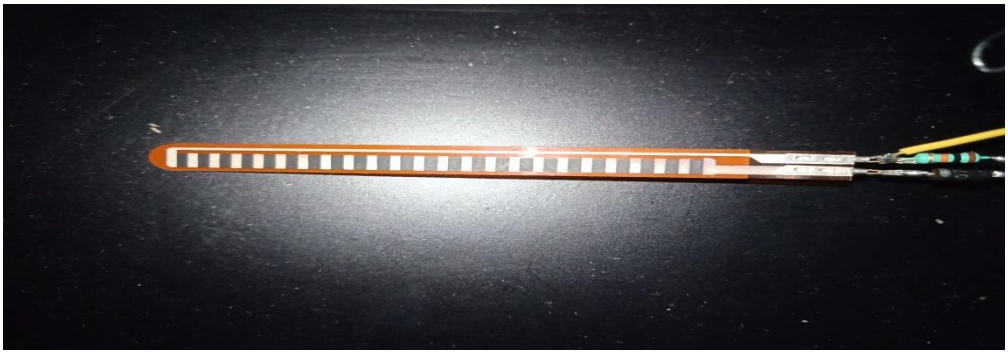
3.2 Working of components

1) Accelerometer sensor



The accelerometer is used for the measuring of the physical and the measurable acceleration's made by an object near the tree and the accelerometer sensor is also called as vibration sensor . Vibration sensors are also used for the measurement of vibrations in the object due to any external forces occurred near the tree. The accelerometer of ADXL335 is an complete of 3-axis acceleration measurement for this new proposed system device. The ADXL335 has a measurement range from ±3 g minimum. And the ADXL335 also contains an poly silicon surface-micro machined sensor and signal conditioning circuitry to be implemented in an open-loop acceleration measurement architecture. Therefore the accelerometer or vibrating sensors can be measured for the given static acceleration in the gravity for the tilt in sensing applications as well as dynamic acceleration by resulting from the shock, vibration and motion.

2) Flex sensor



The amount of deflection or bending of an object is measured by an flex sensor. Commonly the sensor is gets stuck to the surface at 90 degrees bend the tree and the value which shows the output of Direction X is Tree-1 fall/cut at 90-120 and Direction Y is Tree-2 Fall/cut the shows at the surface the tree bends at 120 and below , The output produces when if any changes occurs at the surface object like bending. The flex sensor has been

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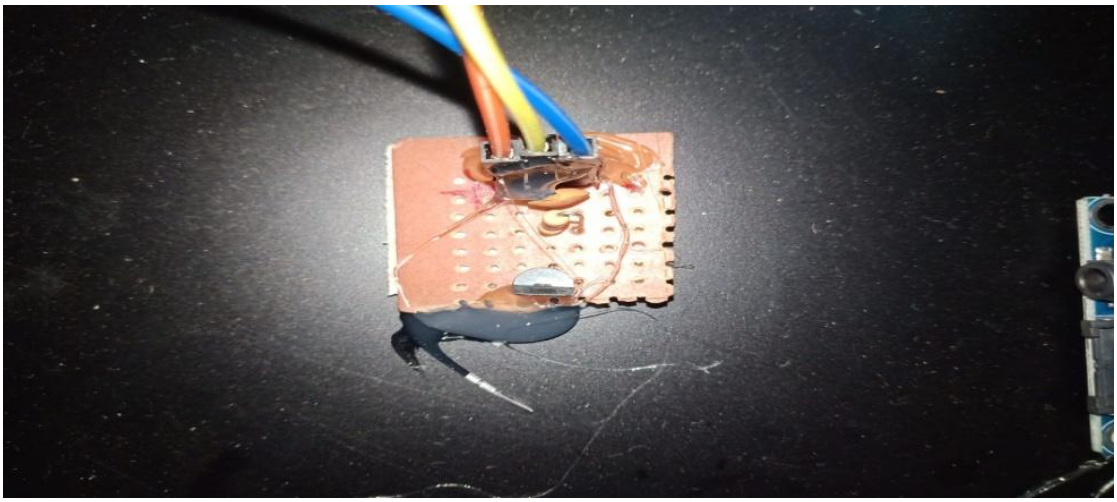
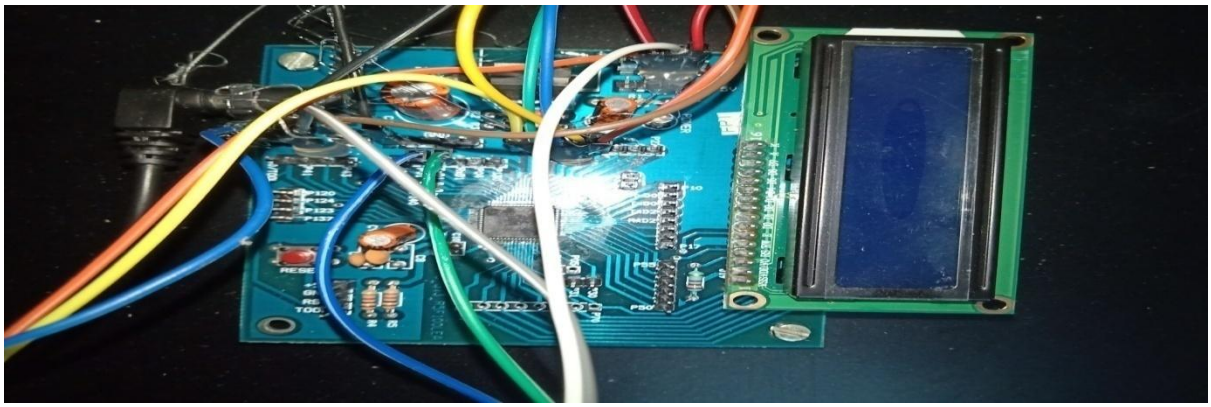
pictured in the below changes of resistance where it gets bent. So that it will only change in the resistance of one direction (where the out of the screen is related to the picture below). The un flexed sensor have a resistance of an 10,000 ohms where the flex sensor is bent, and the value of resistance will be increases to 30-40 kilo ohms at 90 degrees. And the flex sensor measures at length of 1/4 inches wide and 4-1/2 inches long and 0.19 inches thick.

3) Temperature sensor



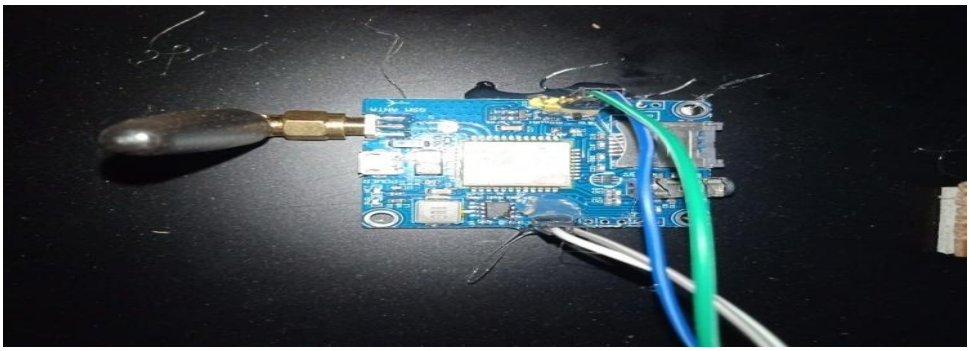
The temperature sensor is used for the amount of measures in heat energy and also in coldness that can be generated to the or an system and the output for this will be shown as fire detection. Due to the typical accuracies of LM35 doesn't required any of the external calibrations or an trimming to be provided at degrees of ±1⁄4˚C degrees at room temperature and ±3⁄4˚C degrees over a full −55 to +150˚C degrees temperature range. Where the LM35 is an low output impedance, linear output, and very precise inherent calibration for making an interfacing to the readout or control circuitry to operates is very especially easy. The temperature sensor used for the surrounding's of the tree unit where any fire accidents occurs near the tree and the temperature at above 40 degrees the temperature will be active and produce the output as FIRE.

4) RENESAS microcontroller(R5F100LEA)



The main heart of this project and device is RENESAS microcontroller which in the series of RL78(R5F100LEA), and which is an 16-bit microcontroller to be implemented and is used for this project and it also controls the whole system activities. The RENESAS micro controller contains the Flash ROM of 64 kilo byte, RAM 4 kilo byte and the Data Flash 4 kilo byte and it gets the high speed on the chip oscillator for the self-programmable under software control, 58 general purpose input/output(GPIO), 3UART's simplified 12C, 10-bit resolution of analog to digital converter(ADC), 28 Interrupt sources and also internet service provider (ISP)Programming is supported to this project.

5) GSM



GSM is an open digital cellular technology used for data transmitting mobile voice and data services operates at the ranges of 850MHz, 900MHz, 1800MHz and 1900MHz frequency bands. And GSM is an technology is used mainly in the data transmitting for the signal with the concerned devices like mobile phones. Therefore the GSM system was developed with an digital system using a time division multiple access (TDMA) technique method for communication purpose towards the network. 800C SIM is a Triple band GSM(global system for mobile)/GPRS (General packet radio service) engine that works on dependent frequencies of extended global system for mobile communications (EGSM) 900 MHz, distributed control system (DCS) 1800 Megahertz(MHz) and personal communications service (PCS) 1900 Megahertz(MHz). Therefore the GSM can be used at the AT Command to get more information into the SIM card.

3.3 THE HARDWARE SETUP

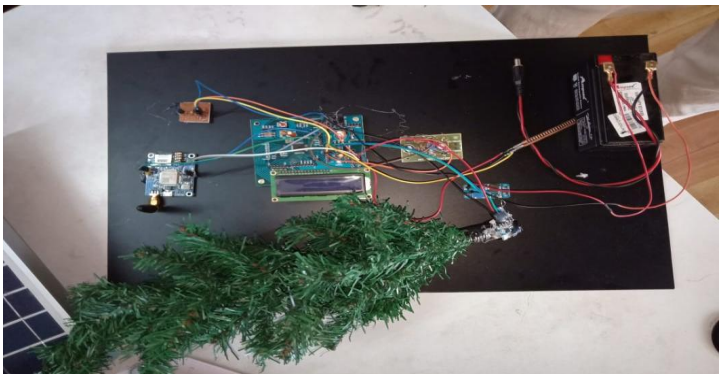


Fig 3. Hardware setup

In this hardware of electronic device is implemented with sensors of tree unit inputs and GSM ,GPRS , Buzzer are used to server unit of the given system which gets more expensive and attractive. And the RENESAS microcontroller is heart of the project with can operates whole system .Solar panel is used for external source for the power consumption for the this project to be booted with and input of the source battery.

IV. HARDWARE AND SOFTWARE REQUIREMENTS

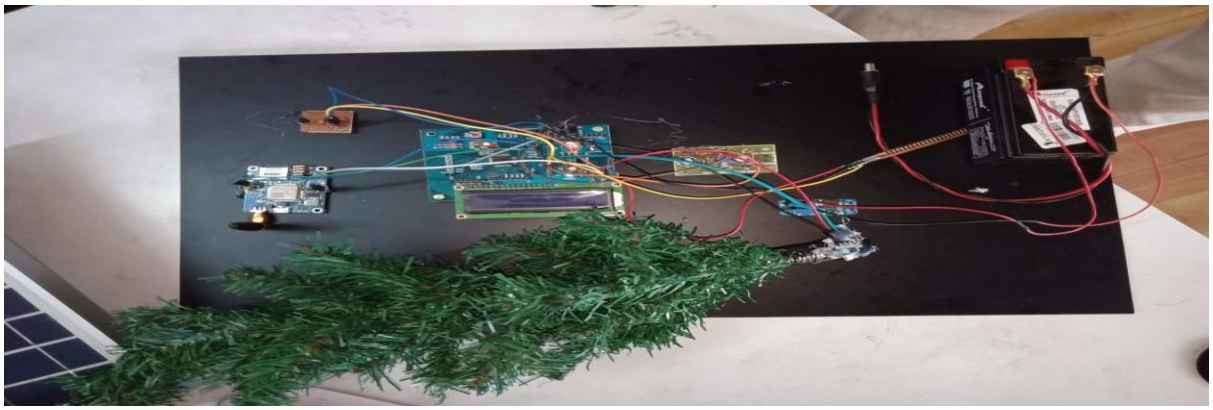
Table:4.1

HARDWARE REQUIREMENT	SOFTWARE REQUIREMENT
1. RENESAS Microcontroller 2. LCD 3. Accelerometer 4. Flex sensor 5. Temperature sensor 6. GSM 7. Solar panel 8. Battery 9. Charging circuit 10. GPRS 11. Buzzer	1. Embedded C 2. Cube Suite+ 3. RENESAS Flash Programmer

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 can't steal by the smuggler's. So that for the safety of trees in forest we have providing an electronic device.

V.OUTPUT RESULTS



The electronic device of this project shows to be displayed an output messages that are sending from the tree unit to the server of mobile phone by using an GSM module. Therefore these voltage values of the three sensors of tree unit and solar panel of server unit has been displayed at the beginning of the tree when it is in normal condition. And at the surface of tree if there is any changes like firing, cutting and bending that result which shows any change in the voltage values. Where the actual value varies in the tree unit conditions that they will provide an actual proper activity status of the trees in the forests. Therefore, the X&Y directions are denotes the accelerometer output, where F denotes the flex sensor output and T denotes the temperature sensor output that would be displayed in the LCD. Where the X&Y direction value changes in the tree unit at degrees of 90-120 at Direction X AND 120 and below at Direction Y then it will gives message as TREE 1-2 FALL/CUT and if any changes in the temperature of surroundings at tree at above 40 degrees and above then it will sends message as HIGH TEMPERATURE or FIRE.

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