

Intruder Detection and Forest Alert System Using Internet of Things

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Abstract: From many days we are reading in the newspapers about smuggling of the trees like sandal, "Sagwan" etc. These timber are very costly as well as much less handy in the world. These are use in the scientific sciences as well as cosmetics. Because of massive amount of cash worried in selling of such tree woods loads of incidents are going on of reducing of timber and their smuggling. In India additionally in the jungles of Karnataka and Tamilnadu infamous Smuggler "Virrappan" did the smuggling of such timber for so many years. To restrict such smuggling and to store the forests around the globe some preventive measures need to be deployed. We are developing such a device which can be used to avoid this smuggling. Smuggling of sandalwood has created socio financial and regulation and order problems in areas bordering the country of Tamilnadu and other regions in India. The cause of this project is to retailer precious bushes which have excessive demand in market like teak, Sandalwood, etc. As people superior in technology, artificial and herbal mess ups are growing exponentially. One of the most hazardous is the forest fire. Forest fire destroys trees which supply us oxygen and it is very challenging to stop a woodland fire spreading if it is no longer detected early. Our method is to become aware of the wooded area furnace as early as possible and additionally predict the woodland fireplace in develop so that immediate action can be taken earlier than the furnace destroys and spreads over a large area.

Keywords: Internet of Things.

1. Introduction

Several million acres of woodland are destroyed every year due to wooded area fire. Forest fire no longer solely destroys many treasured trees however additionally destroys the vegetation in that area. Several million acres of woodland are destroyed every year due to wooded area fire. Forest fire no longer solely destroys many treasured trees however additionally destroys the vegetation in that area. The fireplace will burn the timber and also the soil is burnt and so many acres of land become water repellent. Forest fire is one of the main motives of international warming as tones of greenhouse gases are emitted into the atmosphere. Nowadays the detection mechanisms used are looking at towers, satellite tv for pc imaging, lengthy distance video recording, etc. But these do not supply faster response which is most vital in woodland fire detection. Video surveillance is a low value device but it

produces false alarm due to environmental circumstance like fog, clouds, dirt and human activities. From many days we are analyzing in the newspapers about smuggling of the tress. These bushes are very costly. These are more often than not beneficial in the clinical sciences as properly as cosmetics. Because of big quantity of cash worried in promoting of such tree woods and plenty of incidents are going on of cutting of tree and their smuggling. This hassle isn't related to India only, in China, Australia and African international locations are also struggling with equal issues. Putting value in mind, Indian sandalwood expenses 12000 to 13000 INR per kg whereas in worldwide market Red Sanders command an excessive price of INR 10 core per ton. The Indian sandalwood tree has grown to be endangered in latest years, and in a strive to curb its possible extinction the Indian government is making an attempt to restriction the exportation of sandalwood. For an individual, most permissible purchase restriction is now not to exceed 3.8kg as per Govt.

2. Proposed system

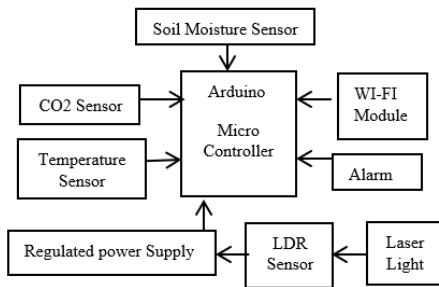
The most important idea introduced in this assignment is to graph a transportable wi-fi sensor node which will be a section of a Wireless Sensor Network. The suggested device will consist of two modules one involving sensors and controller module which will be at tree spot and every other one is Android smartphone or PC. We write an application which will constantly obtain sensor data. Because of intruder detection we can without problems discover the smugglers, by using the usage of the laser light we can discover the man or woman entered in the wooded area place. This is an IOT primarily based assignment where we upload sensor facts constantly to cloud. This gadget is like from somewhere we can monitor.

1. The sensor covers the entire wooded area with minimum number of nodes.
2. The sensors ought to be located such that false alarms are avoided.
3. Early warning and instantaneous response to a fire breakout are the solely ways to avoid first-rate losses and environmental and cultural heritage damages.

- Information about the progress of furnace is additionally exceptionally treasured for managing the furnace all through all its stages.

3. System analysis and design

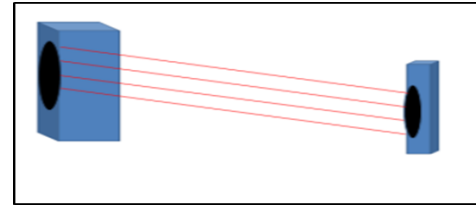
The Fig.1 shows that the Micro Controller connects the electricity grant to the machine controller will get initialize and controller will ship AT commands to initialize the Wi-Fi module that connects to the internet.



Controller will hold monitoring the battery voltage and sends battery voltage statistics to the aspect talk cloud and we can see battery facts somewhere in the world. Battery is charged with the help of photo voltaic panel. Temperature Sensor is one of the major adjustments that happen when a fireplace occurs is the amplify in temperature of the environment. This would possibly be the reason of forest fire or due to exchange in temperature for the duration of summer. The exchange in temperature due to woodland hearth can be differentiated from different environmental elements as the fee of alternate of temperature due to furnace will be rapid. Here LM35 is used as furnace sensor and this can measure the temperature in the range of -55°C to 150°C. In LCD display is a digital grandstand module and finds a vast extent of employments. A 16x2 LCD show is outstandingly central module, which is used in more than a few gadgets and circuits. These are supported in extra of seven components and different multi segment in LEDs. The motives which being: LCDs are judicious; properly programmable it has no requirement of acting and even customized characters (not underneath any circumstance like in seven areas), liveliness. A bearing is used to point out the route that is given to LCD to end a predefined mission like offering it, clearing its screen. The facts displayed on the LCD will be in ASCII estimation of the character. Snap to think about inner shape of a LCD.

A. Use of laser beam for intruder detection

The intruder detection is executed the use of the laser beams. The other strategies for the intruder detection mechanism are the usage of video and picture processing the usage of cameras but the downside in this method is that false alarms are prompted due to horrific weather conditions like fog, rain, etc. As lasers can penetrate fog this technique does now not produce any false alarm. But any small birds or particles due to air will reason false warning signs but this trouble can be eradicated with the aid of thinking about the size of the objects.



This network is deployed at the boundary of the forest only as the detection desires to be finished solely at the edges of the forest. We can discover each the entry of humans into the restricted areas of the forest and also exit of wild animals from the forest. The areas of unwanted detection can be blanked to avoid pointless alarm. The fundamental gain of this detection mechanism is it is contactless and can define the goal measurement and other parameters for activation of the alert.

4. Results and discussion

For the implementation of a number scenarios as mentioned in earlier section, we have carried out our proposed approach and have been able to get the favored results. We are constructing up the gadget which is geared up to restriction the pirating of tree and fireplace in the woodland where the individual is no longer able to furnish security. We are developing in the wooded area where the tree is exorbitant and their security is essential actuality. There by lowering the smuggling, wooded area fires and most necessary making the environment eco-friendly. Hence all the sensors work desirable and send the values to Arduino board. Arduino board is embedded inner the earth so that invader cannot even pick out and additionally it Arduino board will be included with water resistant and fire resistant material.

In our framework Authorized officer present at any region can get a message and can take essential actions. Since we have purchased AWS clouds which supply offerings at all time with zero downtime. Hence we can protect valuable trees like sandal, teak which has excessive demand in world market. By defending two valuable trees, we can make bigger the economy of our country.

- Monitoring the sensor data and display in LCD and update in AWS cloud.
- Monitor the battery voltage and update to the cloud so that we can see battery voltage anywhere in the world.
- Alarm will be activated if any sensor data goes behind set threshold value

5. Conclusion

Early warning and immediate response to a fire breakout are the only ways to avoid great losses and environmental and cultural heritage damages. Hence, the most important goals in fire surveillance are quick and reliable detection and localization of the fire. It is much easier to suppress a fire when the starting location is known, and while it is in its early stages. Information about the progress of fire is highly valuable for

managing the fire during all its stages. Based on this information, the firefighting staff can be guided on target to block the fire before it reaches cultural heritage sites and to suppress it quickly by utilizing the required firefighting equipment and vehicles.

References

- [1] Jorge Granda Cantuna, Dennis Bastidas, Santiago Solorzano - Design and Implementation of a Wireless Sensor Network to Detect Forest Fires.
- [2] M. Gor, J. Vora, S. Tanwar, S. Tyagi, N. Kumar, M. S. Obaidat - Wildlife and forest departments are facing the problem of movement of animals from forest area to residential area.
- [3] D. Jayashree, Pavithra. S, Vaishali. G, Vidhya. J - To prevent catastrophes that occurring industries, buildings, and forest areas, image based fire detection.
- [4] Wang Shidong, Zhang Hebing – The research progress of forest fire detection based on forest fire detection algorithm.