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## **Fire detection and controlling using wireless sensor network**

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### **ABSTRACT:**

*India is the fast growing country and preventing forest is the main source for the countries development. Due to leak aging of gas and temperature increasing concept the field is facing hurdles. Now a day's technology plays an important role in forest field. Identifying temperature level any increase or decrease of gas concentration in environment. Identifying forest destroying wrongly lead to huge loss of tree, animal and we lost oxygen which is get from tree to live animal in forest etc. So here we use sensors such as LM35 (temperature sensor), MQ2 (gas sensor) for detection of fire.*

**KEYWORDS:** - Power supply, fire detection sensor, flame detection, ThingSpeak.

### **I. INTRODUCTION**

Forest is important field as it provides wood, fruits for animals, oxygen also for animal. The old and classical approach for detection and recognition of fire is based on forest committee member. Wireless Sensor Networks are a technology that has recently been used popularly. It is a system where gateway nodes and a coordinating node get in contact and exchange data. And the fact that it is wireless, it is a cheap, fast and quality data transmitting technology without the cost and mess of the wires. Forest fires are an indispensable part of forest ecosystems. Where the hectares of forests are burnt down every year causes economic, ecologic and cultural destructions. Even though the temporal progress of the forest fires illustrates a graph with ups and downs, it is seen that the amount and the number of forested lands burnt down in forest fires have increased. This situation can be linked to the fact that the number of factors causing fires increases with increase in the population. In as much as 91% of the forest fires in our country are caused by human activities. Most of these places are impossible to be monitored on-site. For instance it may be sometimes required to remotely monitor forests and take necessary measures to prevent fires. This is exactly where the Wireless Sensor Networks come into the play. In this

Technology can provide the communication everywhere of time and location, with the monitoring of possible temperature increases, forest fires can be prevented.

The object of this paper is to concentrate on the fire detection based on any temperature changes in environment. There are four section 1] Introduction of fire detection, temperature analysis, varies of temperature in enviourment.2] Discussion on recent work carried out in forest area.3] Basic methodology for fire detection.4] Conclude topic along with possible future directions.

## II. LITERATURE SURVEY

[1] The system has been designed to perform different parameter measurements at different tree heights, depending on the forest relief. This paper represents the development of a wireless sensor network useful for monitoring the large areas of forest to detect and prevent forest fire

[2] The article defined the conception of ‘sub-safe area’, putted forward the requirements of fire protection design. The first main aim of setting sub-safe area in building is to ensure security of evacuation of personnel in the building

[3] A method of constructing a wireless fire alarm system based on ZigBee. ZigBee can be used to remove the disadvantages of the cable alarm system.

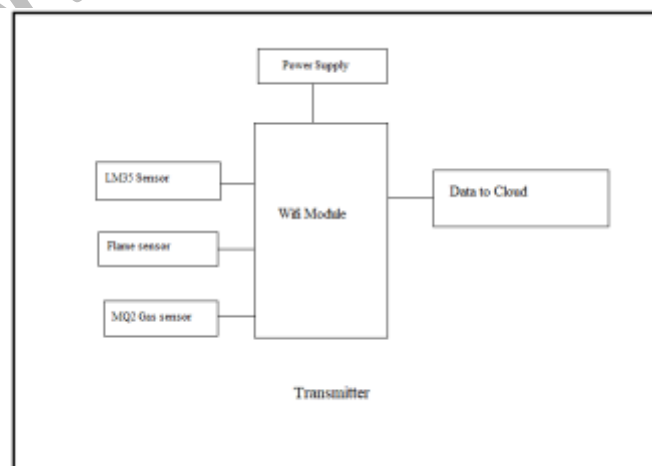
[4] It is proven that WSN can improve the system performance, provide a convenient and efficient method. This paper presents wireless sensor network applications which focus on the environment monitoring system.

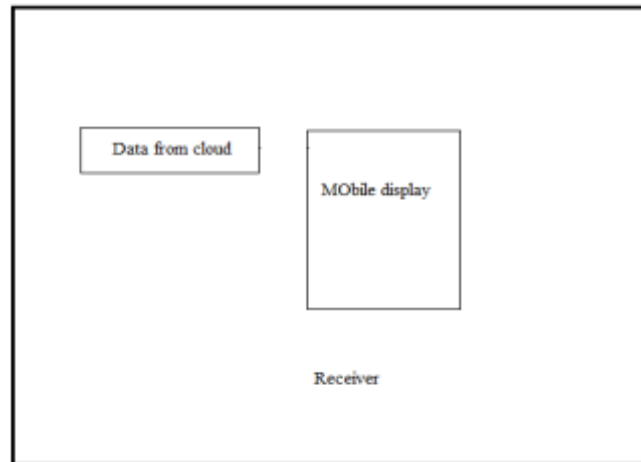
[5] An integrated approach for the early forest fire detection and it is based on an adequate combination of different detection systems. A good interrelation of an early and reliable smoke detection of forest fires, sensing techniques.

[6] This work presents the design of low rate and low power sensor node in wireless based sensor network for early detection of fire in environment. The algorithm based on the comparison method was simpler to implement and showed a good performance.

## III. WORKING METHODOLOGY

The block diagram of proposed methodology is as below:





### **Main operation:**

The operation is done in 3 different stages individually:

First stage is to collect data from various sensors and then communication using the network and to analysis of data collected by various sensors.

### **Data collection Stage:**

The device is a capable to take different conditions of whether need for the calculation of index; this can run sequentially until detection of fire takes place. It consist many sensors which help to collect data from environment.

### **Communication Stage:**

This is used as medium between transmitter and receiver by the collecting data from sensors to the analysis module within certain parameters of quality of service (QoS) such as (the alarm must arrive at sink safely), temporal constraint (alarm must arrive within a reasonable time) and security (the routing path taken by the alarm must be secure reliability against any attack or malicious behavior).

### **Analysis Stage:**

After receiving the data accordingly to the application of parameters of required QoS, the analysis module examines the received alarms. Then, this information is processed by the decision-making center that can judge if it is false alarm by either using the data collected from other sensors nodes or dispatching a team to check the situation locally.

## **RESULTS**

This network can be easily used at areas of special interest or risk. By using this fire can be get protected. A forest fire detection system have capability to monitor a large area, , It can do the present and process the monitored environment data in real time and produce alerts was intended for development during this project.

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## CONCLUSION

This project is very much useful for the regions where forest is present. Where we can easily protect to the destroying of forest. After many tests analysis and result analysis, all the implemented mechanisms were proven to function as expected and the project was concluded with its main objectives fulfilled.

## FUTURE SCOPE

The evolution can be done in this project is that we can connect camera to the device so that exact location can be capture easily.

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