AN AUTOMATIC SYSTEM FOR CONTROLLING DEFORESTATION USING IOT

[1]M. JAGRUTHI, [2]M. SHREYA, [3]N. DIVYA, [4]M. PRATHYSHA

[1]ASSISTANT PROFESSOR IN ECE DEPARTMENT, [2,3,4,5] UNDERGRADUATE STUDENTS OF ECE DEPARTMENT
[1]DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
[1]TKR COLLEGE OF ENGINEERING & TECHNOLOGY, HYDERABAD, INDIA

Abstract: Government particularly in semi-arid regions of the world, designate portions of forests as forest reserves in order to improve rainfall, reduce wind attrition, stop the flow of logging, and lessen the advance of the desert. Because of this, forest reserves are protected by law in many countries, including India. After air and water, forests are the third most important natural resource on the planet. By capturing carbon dioxide and releasing oxygen, they efficiently maintain the atmosphere's gaseous balance, which also helps to complete the hydrological cycle and create rainfall. Forests include a variety of things, including food, medicine, lumber, and many others. They act as defenses against numerous dangers, such as radiation, drought, and soil erosion other uses for woodlands include those relating to recreation, aesthetics, and acting as a habitat for various animals. The six main operations that are essential for forest monitoring include detecting tree cutting (logging), fire, human activity, location, moisture, and temperature using Ph sensors, fire sensors, passive infrared sensors (PIR), GPS sensors, soil moisture sensors, and temperature sensors, respectively. The gathering of sensor data from tree sites is the first phase in the planned IoT-based forest security system. Second, a Python-based system that gathers, examines, and alerts the proper security people, staff, or forest officers of the location of the impacted site. This technology will help the forestry sector with e-governance.

Key words: Anti-logging, Conservation of Forest, Forest security, Wild life, Ecological balance

I. INTRODUCTION:

The forest plays a crucial role in our lives because we are entirely dependent on it for survival. The forest trees absorb carbon dioxide and release oxygen. The most recent change in the climate caused by deforestation demonstrates the significance of wooded areas. This document's goal is to monitor the forest by preventing tree cutting, suppressing fires, figuring out whether contaminated water is safe for animals to drink, and seeing people in the woods. In a forest with priceless trees like sandalwood trees, install the vibrator sensor. In order to facilitate voice conversations, text messages, and photo transmissions, a router is used in this article to connect the sender and the recipient and video streaming, too. A total of 180 samples, including readings of temperature, humidity, and hydrogen gas, were gathered and evaluated using environmental data from in-flight forest monitoring. Systems that track environmental data in forests are located using GPS. In order to effectively connect sensor nodes for continual forest monitoring, a wireless sensor network was used to monitor forest fires. The microcontroller system used to safeguard forest trees like the sandalwood tree connects to a central server from remote places using ZigBee and wireless sensor network technology. A wireless sensor network is used to keep an eye out for forest fires on malfunctioning nodes. Due to human activities, there are fewer forest trees, which creates an unhealthy atmosphere. Animals in forests use GATA technology to survive.

To notify people to a forest fire or tree cutting, the research reported in this paper is focused on the use of a Wi-Fi router between sender and receiver, which allows two devices to communicate even when the network is down. IOT technologies are being used in the development of this idea. The communication between a forest officer and a forest worker is facilitated by this programmer. The Internet of Things (IoT) is a technology that makes it possible for physical items to connect to one another, communicate, and share data. IOT is necessary for monitoring forests and sending out alerts.

II. EXISTING SYSTEM:

The system consists of various IoT devices such as sensors, camera that are installed in forests to monitor the activities taking place. The sensors are used to measure environmental factors such as temperature, humidity and air quality. The camera and are used to capture images and videos of the forest. The sensors detect changes in temperature and humidity, as well as the presence of smoke, and can alert local authorities in real-time. The system can also be used to monitor the spread of deforestation and identify areas where intervention is needed. To optimize forest management and reduce the impact of deforestation. The sensors measure factors such as temperature, humidity, and light levels. In the forest area to monitor different environmental parameters such as temperature, humidity, moisture. If any illegal activities are detected, the system can automatically send alerts to authorities, who can take immediate action to prevent further damage.

III. PROPOSED SYSTEM:

It is necessary to understand how to identify and pinpoint the location of the tree at the time of cutting. The fact that the tree's credentials are unclear at vital moments for the tree at the slice point annoys the trees. The design's main objective is to offer a mechanism for IOT discovery and reporting. By drilling the tree and transmitting the slice or deforestation with the relevant information to forestry officers and his interested parties, the system's ability to instantly give a palladium dimension sets it apart from other solutions. An ESP32 module is needed to implement this feature, and a unique law is programmed in this module. The MQ2 and mems detectors work in tandem with the ESP32 module, which keeps track of vibration and the intensity of falling objects, bank collapses, and fires. The module has a mems threshold that is outside the stress limit. The GPS module is connected to the ESP32 module, which is nested inside the tree with the other components. With the help of the GPS module, the authorities and wood officials can locate the trees.

IV. BLOCK DIAGRAM:
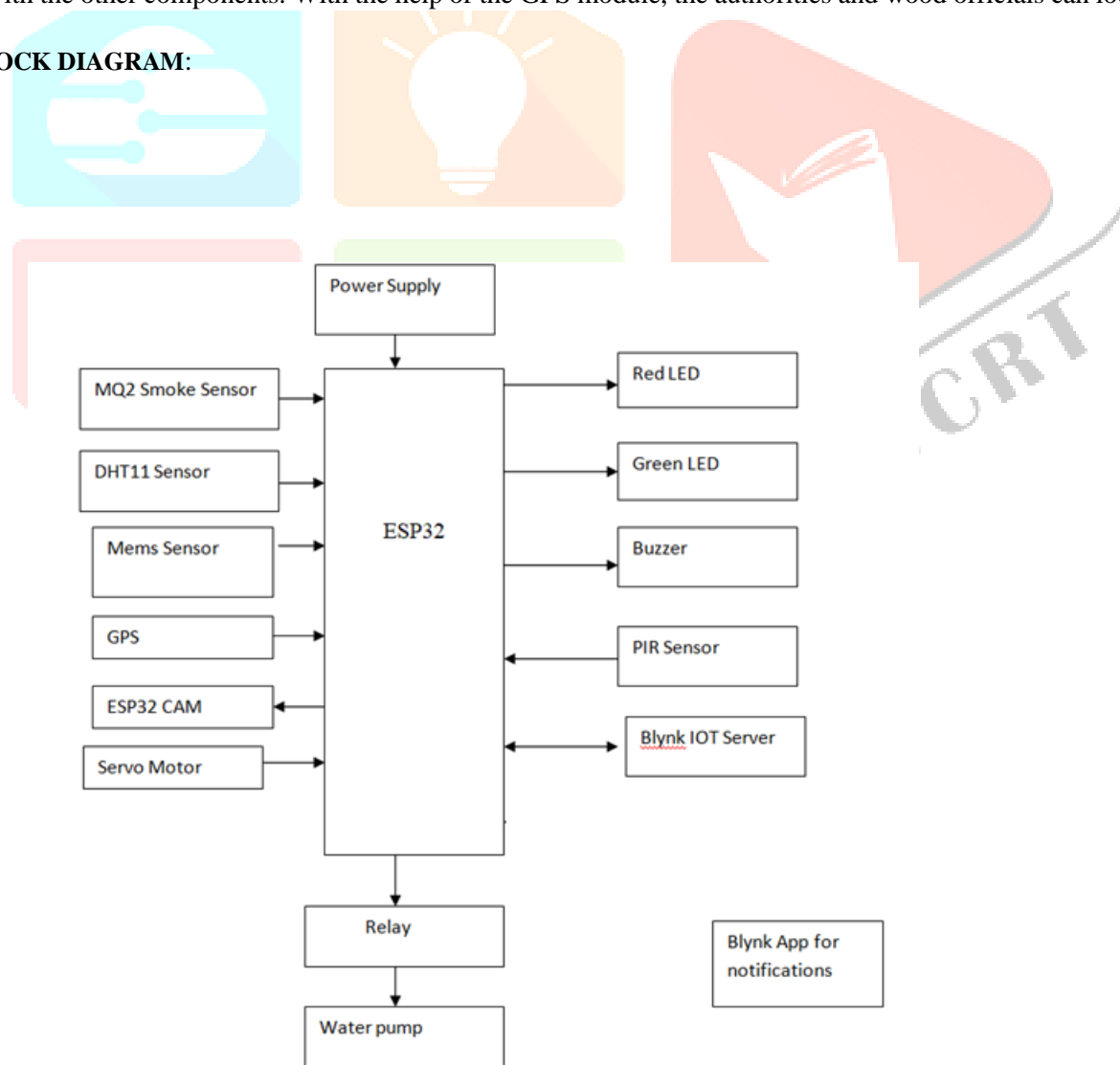
V. WORKING:

System is to analysis and prevent the deforestation and prevent the fire accidents in the forest using IoT and updating the environmental changes via IoT. Prevention of fire accidents via water sprinkling system and alerting the abnormal activity in the sensor data. Here's how it works:

1.ESP32:

ESP32 is a low-cost system on chip microcontroller from Expressive systems, the developers of the famous ESP8266.It is a dual-core variations of the Ten silica's 32-bit Extensa LX6

Microprocessor with integrated Wi-Fi and Bluetooth.

2.MQ2 sensor:

Smoke sensor is an electrical device which detects the smoke. This sensor is a photoelectric device its sensors smoke when a sudden scattering light enter the chamber and smoke alarm   are highly sensitive to small smoke particles and typically respond.

3.DHT11 sensor:

The DHT11 is a basic ultra low-cost digital temperature and humidity sensor. A composite DHT11 digital temperature and humidity sensor a calibrated digital signal output of temperature and humidity would be delivered by that of the sensor.

4.(PIR) Passive infrared sensor:

PIR based on motion detector. PIR sensor is commonly used in security alarms and automatic lighting applications.

5.MEMS sensor:

The ADXL335 is a triple axis mems accelerometer with extremely low noise and power consumption.

6.Relay sensor:

Relay is also a switch that connects or disconnects two circuits. But instead of manual operation a relay is applied with electrical signal, which in turn connects or disconnects another circuit.

7.GPS:

GPS navigation device, GPS receiver, or simply GPS is a device that is a capable of receiving information from GPS satellites and then to calculate the device's geographical position.

8.ESP32 CAM:

ESP32-CAM is an advance development board with WI-FI camera. It allows creating IP camera projects for video streaming with different resolutions.

VI. ADVANTAGES:

- This system can be used in real time
- This system is easy to operate
- This is low cost
- Fast and accurate

VII. APPLICATIONS:

- This system can be used in industries
- This system can be used in labs

VIII.CONCLUSION:

The proposed technique seeks to lessen deforestation by attempting to identify four illegal activities using IOT technology in contrast to earlier research and noticed favourable findings for all types of detection carried out in this study. Another novel idea in the proposed system is the addition of a Wi-Fi router between the worker and the forest officer. This Wi-Fi router facilitates communication between the employee and the forest officer even if the network is down.

IX.RESULT:

X.REFERENCES:

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