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Iot - Based Environment Monitoring using Blynk

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ABSTRACT

Today‟s computers, and, therefore, the Internet, are almost wholly dependent on human beings for information.. The problem isthat people have limited time, attention, and accuracy. All of which means they are not very good at capturing data about things in the real world. If we had computers that know everything about things, using data, they gathered without any help from us, we would be able to track and count everything and greatly reduce waste, loss, and cost. There are lots of android applications are available into the market which can access the real time data, store the data and also shows the results. If the value sensed crosses the limit or any critical value, a sound is used to send an alert signal to the users. On the other hand end user can monitor the sensed data using a smart phone where it is set with hardware. The project uses the, lm35 sensor, node Mcu board ESP8266 Wi-Fi module. The application accesses the data and the results are observed by the end users.

Keywords: IOT, Real Time Environment, Sensor, Wi-Fi

INTRODUCTION

Now a day, The human population, industrialization, renewable energy growing continuously. The advanced technology development, automatic environment monitoring applications and devices are main components for enhancing the correctnessof reports generated Environment monitoring systems can be programmed to examine irregularities in the minimum ormaximum values and then prompt alerts via email or text, as well as automated systems. Data is collected by the computer bytyping, camera, scanning by barcode or image. But now a days people, as the technology grows peoples has no time to type,take real time pictures, scan barcode and many more. This means that peoples are not able to capture information or data inthe real world. One another big problem or we can say the limitation of human is that human can‟t sense the data which ispresent in the environment such as air pollution level, Toxic Gas Detection, Water level, radiation detection and many more. To solve the above problem there are lots of IoT devices are presents into the market which able to capture the data fromenvironment and sends the data to storage location for further use. By Machine Learning algorithm, we can analysis the datasuch as comparison of previous years same day temperature with current year same day temperature.

DEFINATION

[1] „Things‟ generate information, including the „Things‟ identity, status, location or any business, social or privately relevant information.

[2] **The** „Things‟ offer anywhere/anytime services that exploit the generated information through an intelligent interface with or without human intervention"

Source: IEEE (adapted)

OBJECTIVE OF STUDY

The main objective of environmental monitoring is to manage and minimize the effect on human body and do not harm daily routine activities and also to give proper information to the peoples about the risk of injurious effects on the natural environment and protect the health of human beings.

LITERATURE REVIEW

Nowadays IoT applications are used in our daily routine life. Researchers are using IoT extensively for their work.

[1] Deekshath et al.developed an IoT Based Environmental Monitoring System using Arduino UNO and Thingspeak. Environmental parameters such as temperature, humidity and moisture were monitored and their changes were noted. The data were sensed and sent to cloud platform for analysis. Zafar et. al.,
[2] designed an IoT based Real time environmental monitoring system using cloud. They sensed temperature and humidity of the surrounding area. The data which is sensed using the developed system is uploaded to thecloud storage. The data are accessed and the results are displayed to the end users. A simple and low cost system was developed by authors in.
[3] Kumar et al. [3] have proposed a device which is in a form of a wristwatch and works on the concept of GEOFENCE, which is a virtual boundary that triggers the application when the person is in a particular area. It also has the feature of two-way talk so that the victim may be able to contact her family or friends. The device also allows the woman to trigger a loud buzzer on the receiving side of the message even if their device is in silent mode.
[4] Poonam et al. [5] developed a safety device that uses an ATmega 328 microcontroller without any android application which makes it a stand-alone device. It uses GPS and GSM modules to track the location and then sendit to the family members and friend, alerting them about the current location of the woman

REASONS FOR ENVIRONMENTAL MONITERING

[1] Lifestyle Improvement:- Now days, the pollution level in the atmosphere is increasing and decreasing as per location change. The most important advantage of environment monitoring system is its competence to improve the life quality for society by taking the consideration among the human safety, health and environment.
[2] Data Collection from environment:- Data collection is the key point in the environment monitoring system. The collected data transformed into information and it is communicate with the community for information about the weather.
[3] Remote Controllability: - Its ability to remotely access and control the data received from the environmental parameters. It provides data such as temperature, humidity, toxic gas detection, Air pollution monitoring, sound pollution, radiationdetection, gas sensors.
[4] Notification Alert:- Only collection of the data is not important it should send alerts in the form of sound, beep, lights, SMS or notification when changes of values. The parameters to be followed must be defined at the time of installation of the system.

TYPES OF ENVIRONMENTAL MONITERING

[1] Air monitoring system: - Air pollutants are one of the biggest factors affecting human health. Air quality testing can monitor environmental pollutants using sensors and software. The sensors measure things like nitrogen dioxide, carbon monoxide, and ozone. Air quality is also monitored with stations that collect air particle samples for testing.
[2] Water monitoring system:- Water sample testing connects sensors deep into oceans, lakes, and ponds to communicate when thresholds are reached. Levels of nitrates, pH, and chemical contamination cannot exceed a limit or else they will belabeled as hazardous to the environment.
[3] Noise monitoring system: - Noise is monitored on both land and sea. Too much noise can even have negative effects on wildlife. For example, whales cannot communicate with each other if there"s too much noise in their habitat, which could pose a threat to their migration patterns. Software has been developed to measure real-time noise levels by decibels. Anything that exceeds a certain threshold will have to go through further monitoring to try and determine a solution.
[4] Toxic gas monitoring system:- There are lots of toxic gas presents into the environment. Toxic gas monitoring system uses sensors and components are used to detect the presence of various gases in a sample or in the environment.

The IoT sensors can also detect dangerous chemicals which are presents in the air, such as methane, hydrogen, and carbon monoxide.

COMPONENTS FOR IoT BASED ENVIRONMENT MONITERING

There are four essential components for IoT-based environmental monitoring to support critical insights and decision making:

[1] Monitor the Environment: Installation or use of sensors is first step towards taking data from environment to monitor the data and data will stored in small memory for further use. Environmental conditions changing day by day and to monitor the data, the sensors must be active to sense the data from environment, store the data and use it for further analysis. There are various devices used for gathering and delivering the sensed information such as Digi XBee wirelesscommunication modules and sensor connectivity gateways.

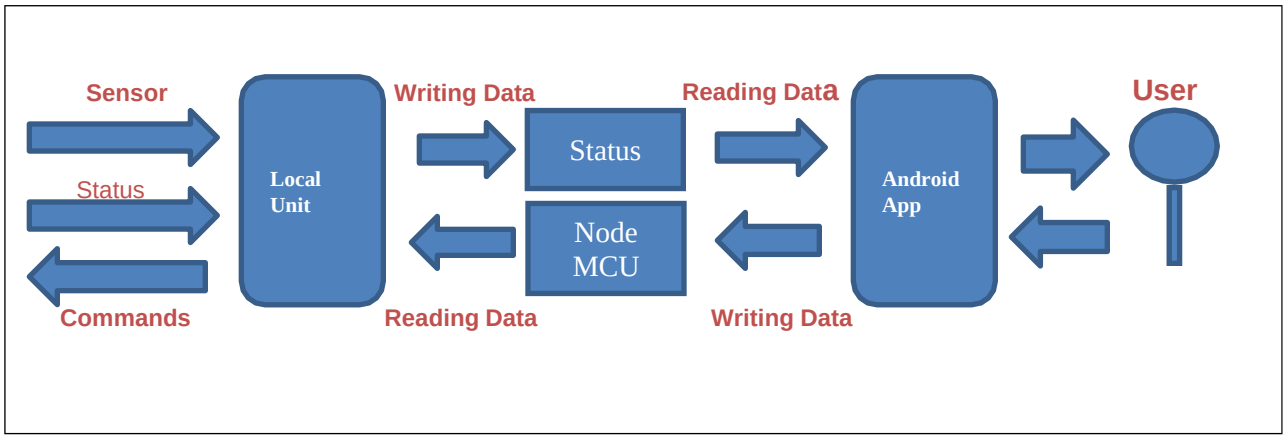
[2] Data Measurement: Data measurement means calculation of data based on the sensed data and set the minimum and maximum level of that data. All the levels suggested by the WHO which are harmful to the human body should be examined and take the necessary actions according to this.

[3] Data Catalog: The huge amount of data collected in real time from the environment by various monitoring stations. There are lots of databases presents that catalog an enormous range of environmental data.
The collected data then stored on cloud or various storage locations and utilized for past and future references.

[4] Actions on Data:- There are lots of cloud applications are available into the market such as Microsoft Azure and Amazon web Services which deliver and convert data into complex software tables. With the help of this we can get alerts whichenable us to take necessary actions.

IMPLEMENTATIONS

Blynk application: Blynk is a mobile application it can be available on PlayStore which can be downloaded. Login your emailto that application. Create a new Project in a blynk application. An Authentication code will be generated and an email is sent. After that import a header



CONCLUSION

Here a real time environmental monitoring system is developed to monitor temperature and humidity of environment. The data are recorded and sensed from the system. This data is sent to the Blynk application via Wi-Fi where both real- time data and its graphical analysis are viewed. The end user can monitor the container environment changes using a smart phone. This work can be reached out to implement a home mechanization system where the sensed values can be utilized to trigger some action and control the gadgets for heating or cooling via the mobile application. This system is a crucial step in understanding the IoT applications development and implementation and serves as a building block for a number of useful innovations in this direction.Blynk application receives the data via Wi-Fi in real time. The end user observes the changes using smart device.

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