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AIR QUALITY MONITORING BASED ON IOT

VULAVABETI RAGHUNATH REDDY [1], THUPAKULA VENUGOPAL REDDY[2], J NAGESWARA RAO[3]

[1]*M.Tech Student, Department of Electronics and Communication Engineering, JNTUA College of Engineering, Pulivendula, Andhra Pradesh, India*
[2]*MTech Student, Department of Electronics and Communication Engineering, JNTUA College of Engineering, Pulivendula, Andhra Pradesh, India*
[3]*Assistant professor, Department of Electronics and Communication Engineering , JNTUA College of Engineering, Pulivendula, Andhra Pradesh, India*

Abstract— The main objective of the paper to monitoring the quality of the air. Due to increasing in the uses of vehicles, industries and urbanization. Which effecting on human beings. To reduce these effects from the realizing of pollutants from the air the quality of the air can be measured. This paper contains gas sensors (i.e.C02 and N02). An actual application aimed at Internet of Things can be utilize for observing the climate situations of environment, similar to air pollution plus sound pollution. In the explanation, around these can be combined system architecture. Then the linked devices intended for dependable and precise measurement of factors through sensors, then transference of data or information stays through by the benefit of internet. The observed information can be gathered from the access of the internet and take the necessary precautions to avoid the hazards.

Keywords— Co_2 sensor, Humidity&Temparature sensor, NODEMCU,

I. INTRODUCTION

Such as upgrading stays developing fast internet technologies then wireless sensor networks are progressive, a different tendency nowadays the period of Omnipresence is presence recognized. The development in the whole of internet operators and submission on the internetworking tools qualify interacting of ordinary things needing person -to-person or person-to-computer communication. It can be everything such as fridges, watches, fans, air conditioner, automobiles, or all. It remains a communication among person and device or device and device. Owing to litheness then little price Internet of things (IOT) remains receiving now a days. Through the development then by the growth in the automobiles arranged direct the climatic situations essential much concentrated. Else, here ensures remained the advance of industries and infrastructure which requires affected increase popular pollution in atmosphere similar air and sound pollution. Air pollution and sound pollution are main elements aimed at requiring opposing besides dangerous things happening atmosphere by way of glowing on human beings. Toward monitor this greenhouse gasses is a identical problematic assignment. Usually, experts similar records remained recycled to assemble the data of the place to remain considered. They needed to visit the location to be identified and real time they required the information. This was a extensive, time uncontrollable and costly task. Due to the depletion of sensors cooperated over internet can make pollution monitoring fewer difficult, less time uncontrollable and adaptable. The information is achieved from current position without needing to visit the area due the internet. Too, an precise data with indexing abilities resolve be capable to achieve. Monitoring provides quantities of air pollutant and noise pollution considerations, it can before be considered understood plus accessible. The data can before be related to various methods. Exploration of observing data agree to us toward consider in what way bad air pollution and sound pollution is since day to day. Now the IOT project, you can observer the pollution level since everyplace by means of your computer or mobile. We can install this method wherever and can besides activate some device after pollution verves outside around level, like we can control on the Buzzer to the user. From intelligent survey Temperature and Humidity Monitoring in Robo Assembly Using IOT in this monitoring only temperature and humidity, doesn't recognize the Toxic acids or Gases [1]. In this IOT based air quality monitoring system through using this technique implementing through Wire Less Sensor Network(WSN) it has low communication speed ,it keep infrastructure with other wireless device .As we know wireless signals are blocked by some objects, it requires large power. The biggest disadvantage is more complex [2]. In this Air and Sound Pollution Monitoring System Using IOT is implemented by WI-FI Module ,this module consumes more power ,so it required extra voltage regulator with battery and it is temperamental[3].

In this Air quality monitoring system based on arduino micro controller, this method is implemented by ZigBee module, this module is used for short distance communication, and ZigBee can't be used at outdoor communication system.it has low transmission date, maintains cost is high and equipment can also costly [4].in this Sound and Air pollution Monitoring System implemented by GSM module, it was built on burst transmission technology. It affords limited data rate ability that is very limited coverage [5]. In this Pollution Detection System implemented by webserver, that web server requests are higher than request's determined with a protocol .the problems of finished low speed connections really hard connections then the difficult with HTTP and HTTPS the web services that these protocols are stateless ,more costly and system crashes [6].by observing the above literature review they have some de merits present in the existing methods to overcome that drawbacks propose a new novel method by using IOT.

This paper is organized divided into five sections following below, section 1 contains introduction, section 2 related work, section 3 contain methodology , section 4 contains results and discussion, section 5 contains conclusion and future scope.

II. RELATED WORK

In this Air and Sound Pollution Monitoring System Using IOT is implemented by WI-FI Module ,this module consumes more power ,so it required extra voltage regulator with battery and it is temperamental[3].

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III. PROPOSED METHOD

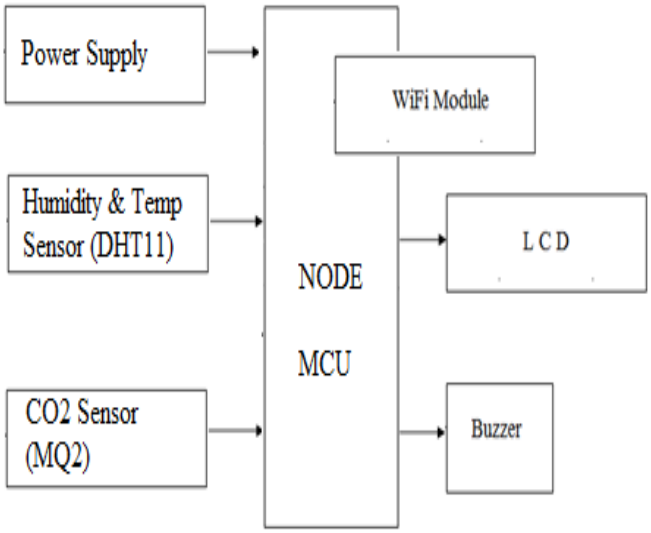


Fig.1Block diagram of proposed system

NODE MICROCONTROLLER UNIT

The Arduino is a minor improvement board through a intelligence (similarly identified such as a microcontroller) that you can program. It interacts with the real world through LEDs, sensors, motors, LCDs, buzzers, Node MCU is an exposed basis IOT platform it includes firmware which runs on the ESP8266 WIFI system and hardware which is based on the ESP-12 and the firmware uses the LUA scripting language. It was the latest version of the board has following parameters .it has 10 digital and analog pins ,it uses 802.11wi-fi standards ,the operating voltage is 3.3-6v and operating frequency is 2.4-2.6Ghz Designed in both Android & IOS devices Open-source and it is Interactive, Programmable and it was Low cost.in this module has in built Wi-Fi module .

FIG.2 NODE MCU UNIT

CO2 SENSOR

Fig.3 Co2 sensor

This (MQ2) component stays supportive aimed at gas leakage situation (in home-based and manufacturing). The situation is suitable for identifying H2, LPG, CH4, CO Alcohol, Smoke or Propane. Since of the situation high significant and fast response period, estimates can continue occupied by the modern opportunity. The significant of the sensor can stay stable through emerging the potentiometer. A smoke detector is a tool that identifies smoke, normally as a indicator of blaze. Commercial safety appliances matter a flag to a fire carefulness device boarding by way of a element of a spirit alert structure, though domestic component pointers, recognized such as smoke attentions, via and big problem a adjacent accomplished of presence got or visual attention since the sensor herself.

DHT 11 (Humidity & Temperature Sensor)

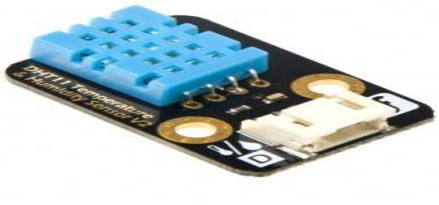


Fig.4 Humidity & Temperature Sensor

This DHT11 Temperature and Humidity Sensor topographies a identical digital indication production through the temperature and humidity sensor testing. Its equipment warrants the great consistency then outstanding durable strength. A high-performance 8-bit microcontroller is attached. This sensor contains a resistive component and a sense of damp NTC temperature measuring elements. It requires tremendous quality, fast answer, anti-interference capability and high cost, to respectively DHT11 sensors specifications extremely precise standardization of humidity correction cavity.

AIR QUALITY PARAMETERS

Carbon Dioxide (CO2) – CO2 is colourless, odourless gas and non-combustible gas. Additionally, it is careless below the group of strangulate vapours which is ability of intrusive the obtainability of oxygen for matters. Carbon Dioxide is a gas necessary to lifetime in the sphere, since the situation is unique of the maximum significant basics developing photosynthesis manner, which changes solar into chemical energy. The absorption of CO2 needs improved owing generally to substantial relic gases boiling. This growth creates plant life cultivate quickly. The swift improvement of objectionable plants mains the growth procedures of substances by remove them.

Sulphur Dioxide (SO2) - Sulphur Dioxide is a colourless gas, measureable through different odour and discrimination. Similar CO2, it is essentially outstanding to relic gasses burning and to manufacturing procedures. In great absorptions could reason breathing difficulties, particularly in delicate individuals.

Nitrogen Dioxide (NO2) – Nitrogen Dioxide is a brownish gas, simply demonstrable aimed at the situation .It is created as the effect of relic petroleum boiling. Naturally NO horrible to the sky is improved in NO2 by organic developments. In high absorptions, NO2 may lead to respiratory difficulties. Like SO2, it subsidizes to acid rains.

Temperature and humidity- Amount of high temperature is significant for protection of society and touches our being services. Greenhouse effect can stand observed by determining hotness and matching temperature vicissitudes since old to current while particularly later the developed revolt by weather information. Humidity is a nature of gas that defends since UV rays after the sun besides supports setup temperature on Ground, thus creation the weather scheduled Earth, a agreeable unique for existing. Then as moisture growths, the heat on Earth too raises which creates our existence painful. Moisture is necessary for several storing then food treating abilities.

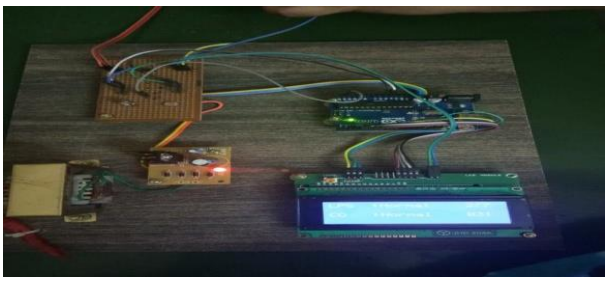
THINGSPEAK WEBSITE

Thing Speak is a stand for several facilities exclusively absorbed for creating IOT proposals. It deals the abilities of real-time information collected; visualization the composed information in the system of graphs, the fundamental part of Thing Speak is a ‘Thing Speak Channel’. A channel necessities the information that we refer to Thing Speak and involves of the under fundamentals: 8 fields for storing information of at all type - These can stay used to store the information since a sensor or through an embedded device.

Position fields - Can be present used to collection the latitude, longitude and the elevation. These are precise valuable in place of tracking a moving device. Location field - A short communication to refer to the information stored in the channel. To procedure Thing Speak, we must to sign up then create a channel. After we must a channel, we can guide the information, agree Thing Speak to process the situation and similarly recover the identical. Let us start the Thing Speak by authentication up and setting up a channel.

IV. RESULTS AND DISCUSSION

The IOT based thing speak method is to monitor the different hazards contaminated by environment.by using the thing speak updated the information each and every second. The project **“AIR QUALITY MONITORING BASED ON IOT”** needs remained successfully considered and verified.



V. CONCLUSION AND FUTURE SCOPE

It has stayed advanced by adding specifications of all the hardware modules and software used. Occurrence of each unit has been consistent on show and positioned judiciously so causal to the greatest functioning of the division. Then, by means of extremely progressive Arduino UNO board and with the service of rising knowledge the project has been effectively executed. In addition to that the objective of the development to monitor the air pollution monitoring digitally and remotely. Air pollution checkers with fast communication among industry /vehicle and weather monitoring station. Important upcoming scope is implement of real time application for the monitoring the air pollution in future it can implement a smart air pollution meters.

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AUTHOR PROFILES

VULAVABETI RAGHUNATH REDDY completed B.TECH from SITAMS College of Engineering and Technology, Chittoor. Currently pursing Master of technology in Digital Electronics and Communication Systems from JNTUA College of Engineering Pulivendula.

THUPAKULA VENU GOPAL REDDY completed B.TECH from G Pullaiah College of Engineering and Technology, Kurnool. Currently pursing Master of technology in Digital Electronics and Communication Systems from JNTUA College of Engineering Pulivendula

J NAGESWARA RAO completed M.TECH from MITS College of Engineering and Technology, Chittoor. Currently working as Assistant Professor in JNTUA College of Engineering Pulivendula.