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Modern Air Purifier Drone for Control Air Pollution

Asst. Prof./HOD Ramya. R, Asst. Prof. Punithavathi. K, Hariharan. M, Karthi. G, Mohamed Al Ameen. H, Vishnuvarthan. U
Department of ECE,
K.S.K College of Engineering and Technology, Darasuram,
Thanjavur, Tamil Nadu, India.
chanmeya.17@gmail.com, punithavathikrishnamoorthy@gmail.com, ameenece20@gmail.com

***Abstract*- The pollution is presently become very burning issue not only in India but also all over the globe and it is various types, therefore, here, we considered only air pollution for depth discussion. Pollution refers to the release of chemicals or inimical substances including particulates and biological molecules into the earth`s environment which has a very insidious effect on human, animal and plant life. It is a significant risk factor for several pollutions cognate diseases and health conditions including lung cancer, heart diseases, etc. and water react very rapidly to pollutants and will abstract.**

***Keywords*- Air purifier for air Pollution, IOT.**

I. INTRODUCTION

Pollution is apresently become very burning issue not only in India but also all over the globe and it is various types, therefore, here, we considered only air pollution for depth discussion. Air pollution is a major global problem. Although breathing related illness and poor air quality are a global problem. Some of the worst air quality in the world exists in major metropolitan areas that include the cities like London, Mexico City and Especially in New Delhi, India is example of major metropolitan areas with exceptionally poor air quality.

In this existing system air pollution level monitoring only, no air pollution control Method. No drone concept based Air Purifier system In this old system used drone for surveying purpose with help of camera. In this old system not attached for climate status monitor sensors.

II. RELATED WORK

- Air pollution level monitoring only, no air pollution control method.
- No drone concept based Air Purifier system.
- In this old system used drone for surveying purpose with help of camera.
- In this old system not attached for climate status monitor sensors.One way communication control only. In this old system we used drone for only spraying methodology.
- Pollution is the constitution of something change due to the doping of extra elements or consumption of its own element, distortion of the composition of the system. Pollution is presently become very burning issue not only in India but also all over the globe and it is various types, therefore, here, we considered only air pollution for depth discussion.
- Air pollution is a major global problem. Although breathing related illness and poor air quality are a global problem
- Some of the worst air quality in the world exists in major metropolitan areas that include the cities like London, Mexico City and Especially in New Delhi, India is example of major metropolitan areas with exceptionally poor air quality.

III. PROPOSED SYSTEM

- Drone will be controlled by remote controller. Wireless camera attached in front side of drone. We used three type of sensor are air pollution monitor sensor, humidity sensor, temperature sensor. All sensors connected to ARDUINO UNO micro controller.
- Micro controller collects sensor value and that information send to wirelessly through Bluetooth device.
- Air pollution has basically two basic physical forms, the first is gaseous form for example-Ozone, Carbon monoxide (CO2) and hydro-carbon vapors Exists in the form of a gas and the second form of air pollution is particulate matter (PM) such as dust, smoke, fly ash and dust mists.
- The air purifier drone will disunite pollutants by spraying water and chemicals into the atmosphere. These pristine water and chemicals such as hydroxyl ions, hydroxyl radical (OH*), an oxygen atom (Negatively charged) and negative ions will be sprayed in the environment.
- The air purifier drone will separate the pollutant from the environment by chemicals and water spraying, Pollutants like- Dust particles, PM10, PM2.5, SOx, NOx and Carbon monoxide (CO).

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IV. ARDUINO MICROCONTROLLER

A microcontroller is a complete microprocessor system built on a single IC. Microcontrollers were developed to meet a need for microprocessors to be put into low cost products. Building a complete microprocessor system on a single chip substantially reduces the cost of building simple products, which use the microprocessor's power to implement their function, because the microprocessor is a natural way to implement many products.

This means the idea of using a microprocessor for low cost products comes up often. But the typical 8-bit micro processor based system, such as one using a Z80 and 8085 is expensive. Both 8085 and Z80 system need some additional circuits to make a microprocessor system. Each part carries costs of money. Even though a product design may require only very simple system, the parts needed to make this system as a low cost product.

V. LCD

The most commonly used Character based LCDs are based on Hitachi's HD44780 controller or other which are compatible with HD44580.

In this tutorial, we will discuss about character based LCDs, their interfacing with various microcontrollers, various interfaces (8-bit/4-bit), programming, special stuff and tricks you can do with these simple looking LCDs which can give a new look to your application.

Fig 1. Character LCD type HD44780 Pin diagram.

VI. RELAY OPERATION

A relay is an electrically operated switch. Current flowing through the coil of the relay creates a magnetic field which attracts a lever and changes the switch contacts. The coil current can be on or off so relays have two switch positions and they are double throw (changeover) switches.

Relays allow one circuit to switch a second circuit which can be completely separate from the first. For example a low voltage battery circuit can use a relay to switch a 230V AC mains circuit. There is no electrical connection inside the relay between the two circuits; the link is magnetic and mechanical.

VII. HUMIDITY SENSOR

Humidity is the measure of the amount of water vapor present in the air. Humidity is calculated as Relative humidity and Absolute humidity. For industrial and medical environments relative humidity becomes important factor. A rise in the values of humidity, beyond threshold levels, can lead to malfunctioning of control systems, errors in weather prediction systems. So, as a security and safety factor, measurement of humidity values is very important. Humidity sensors are used to measure the humidity values. Relative sensors also measure air temperature. But this type of sensor is not useful for temperatures above 100 degree Celsius.

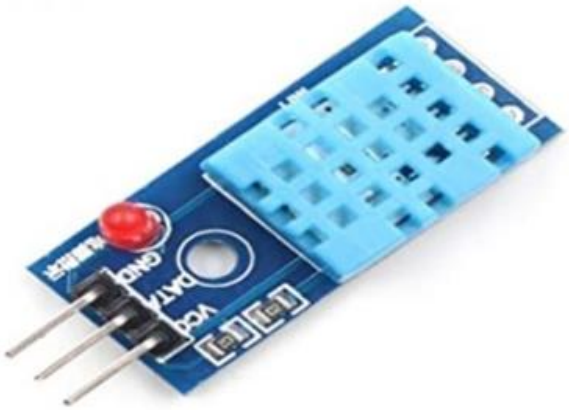

Fig 2. Humidity Sensor.

VIII. AIR SENSOR

Resistance value of AIR SENSOR is difference to various kinds and various concentration gases. So while using this component, sensitivity adjustment is very necessary. It is recommended to calibrate the sensor for 5000ppm of CH4 concentration in air and use value of Load resistance (RL) about 20KΩ (10KΩ to 47KΩ).

When accurately measuring, the proper alarm point for the gas detector should be determined after considering the temperature and humidity influence. For more information, read the AIR SENSOR datasheet attached at the end of this article.

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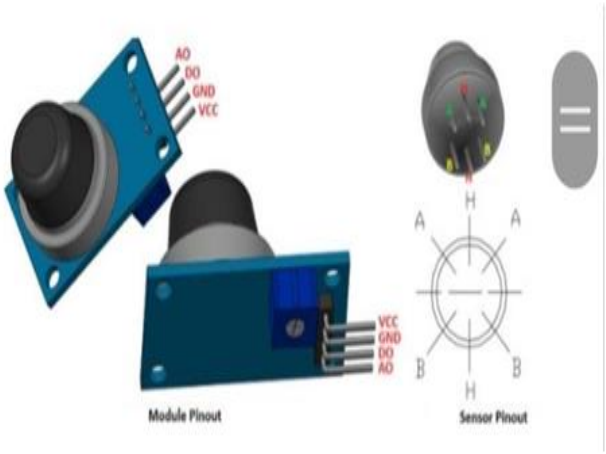

Fig 3. Air Sensor Pin Out Configuration.

IX. NODEMCU

Node MCU is an open-source Lua based firmware and development board specially targeted for IOT based Applications. It includes firmware that runs on the ESP8266 Wi-Fi SoC from Espressif Systems, and hardware which is based on the ESP-12 module.

Fig 4. NODEMCU.

X. BMP 180 SENSOR

BMP 180 atmospheric pressure sensor is a such type of sensor which is mainly used for measuring atmospheric pressure or biometric pressure. If we talk about pressure, then pressure is a force that effect on per unit area .The unit, which is commonly used for pressure is pound per square inch means when one pound force presses one square inch area then pressure is called one psi. The SI unit of pressure is newton per square meter which is called one Pascal.There are many situations when we measure the pressure but here we are only interested in atmospheric pressure.Atmospheric pressure is basically the force, whose effect is existed on all the surrounding things. Means, the weight of gases in atmosphere creates the atmospheric pressure.

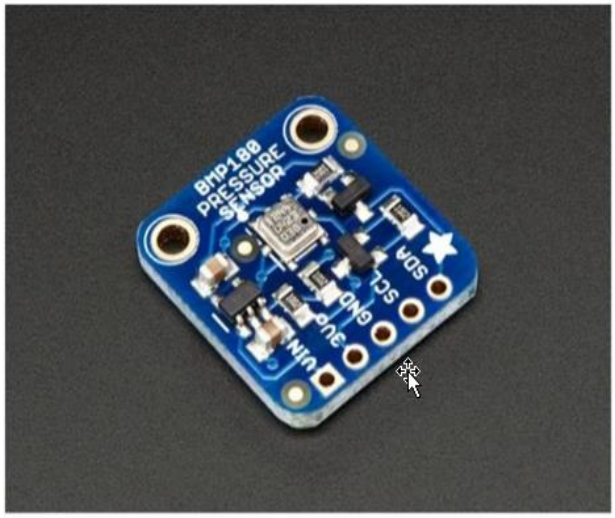

Fig 5. BMP 180 Atmospheric Pressure Sensors.

XI. OVERALL DIAGRAM

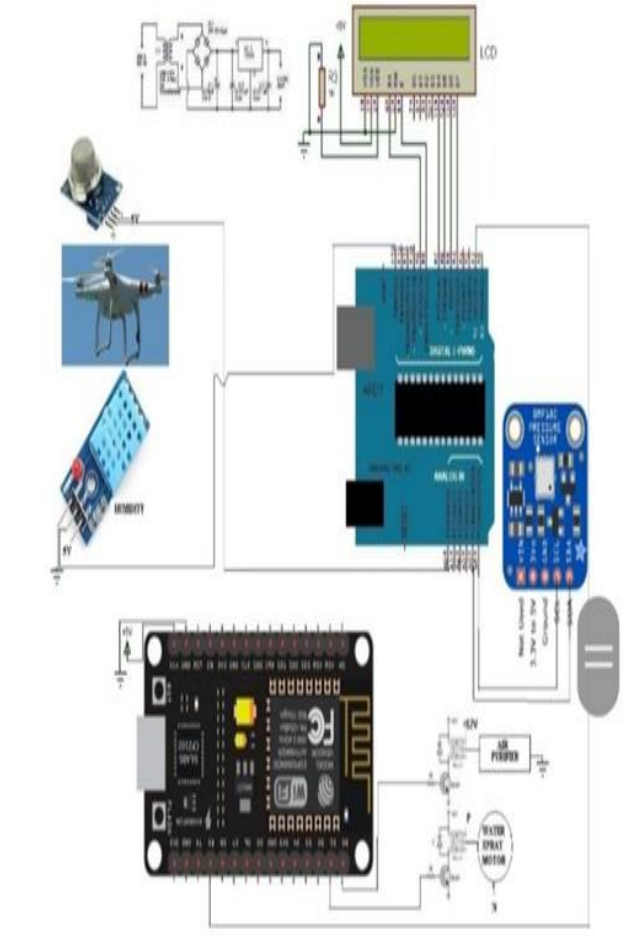

Fig 6. Overall Diagram.

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XII. MONITOR AND CONTROL SECTION

Fig 7. Controlling Section.

XIII. SIMULATION OUTPUT

Fig 8. Output of blinking mobile app.

XIV. HARDWARE OUTPUT

Fig 9. Modern air purifier drone for control air pollution.

XV. CONCLUSION

The smoke, particulate matter, virus, VOCs, odor can be abstracted from the environment through this suggested process of air purifier drone system. Pollution that causes a deleterious effect on the life of human being and inimical gases that damage lungs causes eye irritation and respiratory problem are solved by using air purifier drone.

As per survey, nearly 18 Lac peoples died in India because of air pollution. By using this developed system air pollution- based disease patients can be reduced by a large extent. Reducing pollution by using drone can reduce forest Damage, It also control loss of farming near Industrial areas less and per capita health invested by the government can be reduced this will act as a puissant weapon in the fight with pollution

REFERENCES

[1] J. A. Malaver Rojas, N. Motta, L. F. Gonzalez, P. Corke, and A. Depari, “Towards the development of a gas sensor system for monitoring pollutant gases in the low troposphere using small unmanned aerial vehicles,” In Smith, Ryan N. (Ed.) Workshop on Robotics for Environmental Monitoring, 11 July 2012, Sydney university, N. S. W., 2012.

[2] C. A. V. Romero, “Acople de sensors en la medici´on de variables ambientales usando tecnolog´ıa zigbee,” Scientia et technica, vol. 19, no. 4, pp. 419–424, 2014.

[3] Evangelatos and J. Rolim, “An airborne wireless sensor system for nearreal time air pollution monitoring,” Sensors & Transducers, vol. 189, no. 6, p. 12, 2015.

[4] A. Carrasquilla-Batista, A. Chac´on-Rodr´ıguez, M. Solorzano Quintana, “Using iot resources to enhance the accuracy of over drain measurements in green house horticulture,” in Central American and Panama Convention (CONCAPAN XXXVI), 2016 IEEE 36th, pp. 1–5, IEEE, 2016.

[5] Tripolitsiotis, N. Prokas, S. Kyritsis, A. Dollas, I. Papaefstathiou, and P. Partsinevelos, “Dronesourcing: a modular, expandable multisensor uav platform for combined, real-time environmental monitoring,” International journal of remote sensing, vol. 38, no. 8-10, pp.2757– 2770, 2017.

[6] R. A. Bernabeo, H. A. Khalifeh, A. Andretta, I. T. Al Khatib, and M. H. Ghori, “The impact of climate change and weather on air transport in the uae: Reduction of co2 emissions,” in 2018 Advances in Science and Engineering Technology International Conferences (ASET), pp. 1–7, Feb 2018.

[7] B. Bert, and Stephen T. Holgate, “Air pollution and health”, the lancet, vol.360, no. 9341, pp. 1233-1242, 2002

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