

A STUDY ON IOT BASED AIR QUALITY PRAEPOSTOR

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ABSTRACT

The main objective of the project is to build Air quality praepostor. This project proposes the construction of air quality monitor which is capable of measuring LPG, CO₂, CH₄, O₂, as well as temperature and humidity. The brain of this project is a Node MCU. The project mainly aims to detect the molecules in the air as well as hazardous gases that can lead to many negative health effects such as tiredness, headaches, loss of concentration, increased heart rate and so on. Monitoring the air quality is becoming much more important in recent years. Here, we will explain how each air quality parameters affect us and how the sensors work. The brain of the project is a Node MCU board which is the combination with the node MCU which provides a decent user interface. We can see the measurements from the sensors in real time, we will get values from the sensor through phone. The O₂ Used for measuring the particulate matter in the air. The CO₂ Sensor used for measuring the CO₂ gas molecules which are present in the air.

1. INTRODUCTION

Have you ever wondered about the quality of the air you are breathing, or maybe, why you sometimes feel sleepy in the office or tired in the morning even after sleeping all night. Poor air quality can lead to many negative health effects as well as can cause tiredness, headaches, loss of concentration, increased heart rate and so on. Monitoring the quality of the air may actually be more important than you realize. So, in this tutorial we will learn how to build our own Air Quality Monitor which is capable of measuring O₂, CO₂, LPG, CH₄, as well as temperature and humidity. We will explain how each of air quality parameters affect us and how the sensors work. The brain of this project is an Arduino Pro Mini board which in combination with a 2.8" Nextion touch display provides a decent user interface. We can see the measurements from all the sensors in real time, and if we click on a particular sensor, we will get values from that sensor.

2. METHODOLOGY

Node MCU is the base of this project. Connections established with WIFI Module and Node MCU. Each sensors are directly soldered with Arduino UNO ports. Power Adaptor is connected with INPUT port in Arduino which powers up the circuit. When the temperature in the room increases, we will get notified in our phone showing exact temperature in Celsius. Likewise humidity will also be notified. If the gases is poisonous or hazardous, MQ 135 sensor will give us an alert message in our phone. We will explain how each of air quality parameters affect us and how the sensors work. There's also a dimming function through which we can lower the brightness of the display or even turn it off completely. This is convenient, for example, if we want to track the air quality in our bedroom during the night. We can turn off the screen for the night, and the next day we can check the values from each sensor individually. Nevertheless, now I will walk you through the entire process of building it and explain how everything works. At the end of this video, you will be able to build one on your own.

3. MODELING AND ANALYSIS

IoT system architecture, Devices include networked things, such as the sensors and actuators found in IoT equipment, particularly those that use protocols such as Modbus, Bluetooth, Zigbee, or proprietary protocols, to connect to an Edge Gateway. The Edge Gateway layer consists of sensor data aggregation systems called Edge Gateways that provide functionality, such as pre-processing of the data, securing connectivity to cloud, using systems such as Web Sockets, the event hub, and, even in some cases, edge analytics or fog computing. Edge Gateway layer is also required to give a common view of the devices to the upper layers to facilitate in easier management. The final tier includes the cloud application built for IoT using the microservices architecture, which are usually polyglot. It includes various database systems that store sensor data, such as time series databases or asset stores using backend data storage systems. The cloud tier in most cloud-based IoT system features event queuing and messaging system that handles communication that transpires in all tiers. Building on the Internet of things, the web of things is an architecture for the application layer of the Internet of things looking the convergence of data from IoT devices into Web applications to create innovative use cases. Depending upon the application areas of internet of things, it works accordingly as per it has been designed.

4. CONCLUSION

This project is very much useful in the field where we want to avoid the air pollution and save the persons from the health effects, it is useful for hospitals to monitor the air quality. Accordingly, strategies for the implementation of a hospital indoor air quality management system are recommended. This holistic approach turns smart hospital solutions into the answer for mastering the healthcare challenges of today and tomorrow.

5. REFERENCES

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