Gnanamani college of technology

Department of Biomedical engineering

Third year

Topic

Environmental monitoring

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Environmental monitoring problem with solutions using IOT and Arduino

Problem:

Inadequate Air Quality Monitoring in a Workspace

Description:

In a workspace or indoor environment, it's essential to monitor air quality to ensure the health and well-being of occupants. However, traditional monitoring systems can be costly and may not provide real-time data.

Solution:

Create an IOT-based Air Quality Monitoring System using Arduino

Components Needed:

Arduino board (e.g., Arduino Uno

Air quality sensors (e.g., MQ series sensors for detecting gases like CO2, CO, or VOCs)

Temperature and humidity sensor

Wi-Fi module (e.g., ESP8266)

Display (e.g., LCD screen)

Smartphone or computer for data visualization

Steps to Implement:

Sensor Integration:

Connect air quality sensors (e.g., MQ series) and the temperature and humidity sensor to the Arduino.

Program the Arduino to read data from these sensors.

Data Collection:

Collect air quality data, temperature, and humidity data at regular intervals.

Store this data locally on the Arduino or transmit it to a cloud-based platform.

Connect to Wi-Fi:

Use a Wi-Fi module (e.g., ESP8266) to enable internet connectivity.

Send the collected data to a cloud-based server for remote access.

Data Visualization:

Develop a web or mobile app to visualize the air quality data in real-time.

Display the data on a user-friendly interface, including values for various pollutants and comfort parameters.

Alerts and Notifications:

Implement threshold values for air quality parameters.

Send alerts or notifications to users when air quality falls below acceptable levels.

Benefits:

Real-time monitoring: Get up-to-the-minute air quality information for better decision-making.

Cost-effective: Arduino-based solutions are affordable compared to commercial systems.

Remote access: Access data remotely using a smartphone or computer.

Health and safety: Ensure a safe and comfortable environment for occupants.

This IoT-based air quality monitoring system using Arduino helps address the issue of inadequate air quality monitoring in indoor spaces. It provides real-time data, alerts, and remote access for improved environmental health and safety