

9629-VINS CHRISTIAN COLLEGE OF ENGINEERING

PHASE 1 - AIR QUALITY MONITORING SYSTEM USING IOT

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PROBLEM STATEMENT:

Air quality monitoring refers to continuous measurement of specific air pollutants also known as “criteria air pollutants”. Obtained air pollution data together with natural background/trace gas monitoring and stationary source emission monitoring helps to define what kind of air pollution people are exposed to.

Monitor climate change - changes in weather patterns, such as increased frequency of heat waves and wildfires, can affect the levels of pollutants in the air. By monitoring these changes, air quality monitoring can help to identify the impact of climate change on air quality and take action to mitigate it.

Air quality refers to the degree to which the air is suitable or clean enough for humans or the environment. Good air quality means the air is free of harmful substances

Principle of air quality monitor - When these sensors direct a light source onto particles that are suspended in air, the light scatters. By measuring the degree of scattering and the count of particles, the sensors can accurately determine the concentration of particulate matter

COMPONENTS

SENSORS

MQ-7(Carbon Mono-Oxide Sensor)

MQ-131(Ozone Sensor)

MQ-135(Smoke Sensor/Air Pollution)

MQ-136(Hydrogen Sulphide Sensor)

MICS-2714(Nitrogen Dioxide Sensor)

CONTROLLER

Arduino UNO-R3

GSM Module(Transmitter/Receiver)

SENSORS WORKING

MQ-7

Sensitive material of MQ-7 gas sensor is SnO₂, which with lower conductivity in clean air. It make detection by method of cycle high and low temperature, and detect CO when low temperature (heated by 1.5V). The sensor's conductivity is more higher along with the gas concentration rising

MQ-131

It has lower conductivity in pure air and higher conductivity when there is a high concentration of ozone. The sensor has an acute sensitivity

to ozone and also has a sensitivity to strong oxides like NO₂, CL₂, etc. Moreover, it responses opposite to organic interference gases

MQ-135(Smoke Sensor/Air Pollution)

The MQ-135 Gas sensor can detect gases like Ammonia (NH₃), sulfur (S), Benzene (C₆H₆), CO₂, and other harmful gases and smoke. Similar to other MQ series gas sensor, this sensor also has a digital and analog output pin. When the level of these gases go beyond a threshold limit in the air the digital pin goes high

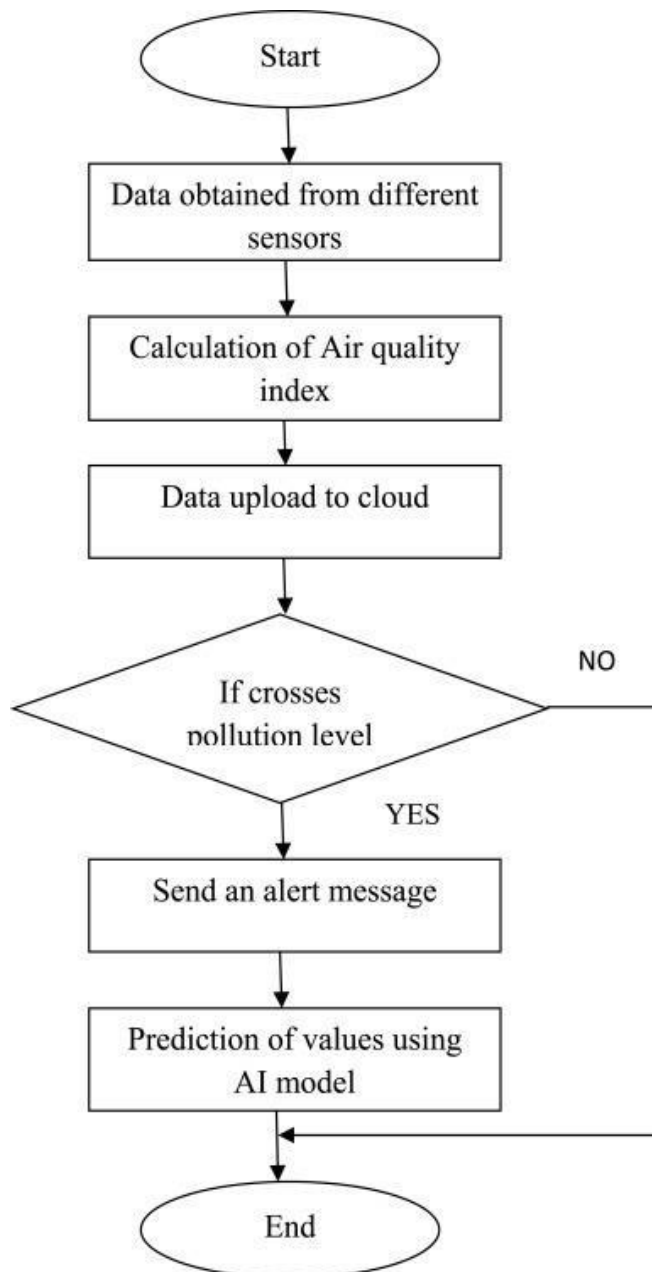
MQ-136(Hydrogen Sulphide Sensor)

The MQ-136 is a Hydrogen Sulfide detection sensor with a sensing range of 1 - 200ppm. The sensing element is SnO₂, which has lower conductivity in clean air. When H₂S gas exists, the sensor's conductivity gets higher along with the gas concentration rising.

MICS-2714(Nitrogen Dioxide Sensor)

The MiCS-2714 is a compact MOS sensor. The MiCS-2714 is a robust MEMS sensor for nitrogen dioxide and leakage detection.

DESIGN THINKING :



BLOCK DIAGRAM:

