

# Air quality Monitoring system - 4

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# Introduction

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- An air quality monitoring system using the Internet of Things (IoT) is a network of sensors and devices that collect data on various air pollutants and transmit it to a central system for analysis and monitoring.
- These sensors can measure parameters such as particulate matter (PM), carbon dioxide (CO<sub>2</sub>), ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>), and other harmful gases.
- The IoT-based system allows for real-time monitoring of air quality in different locations, providing valuable insights into pollution levels and potential health risks.



# Objectives

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- The primary goals of an air quality monitoring system are:
  1. Measurement and Data Collection: The system should be able to collect real-time data on air pollutants from various locations.
  2. Analysis and Reporting: The collected data should be analyzed to identify trends, patterns, and sources of pollution. This analysis can help in understanding the impact of pollution on public health and the environment.

# Objectives

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3.Public Awareness and Education: The system should contribute to raising public awareness about air pollution and its potential health risks.

4.Environmental Management and Policy: The data collected by the system can be used by policymakers and environmental agencies to develop effective strategies and policies for air quality improvement

- Overall, the objective of an air quality monitoring system is to provide accurate and timely information about air pollution levels, enabling proactive measures to protect public health, promote environmental sustainability, and drive policy changes for cleaner air.

# IOT DEVICE DEPLOYMENT

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- The deployment of an IoT-based air quality monitoring system involves several key steps:

1.Planning: Identify the locations where air quality monitoring devices need to be deployed. Consider factors such as high pollution areas, proximity to emission sources, and areas with high population density.

2.Sensor Selection: Choose appropriate air quality sensors based on the pollutants you want to monitor



# IOT DEVICE DEPLOYMENT

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3.Connectivity: Ensure that the monitoring devices have a reliable and secure network connection to transmit data.

4.Data Transmission: Set up a data transmission infrastructure to securely transmit the collected air quality data from the monitoring devices to a central server or cloud platform.

5.Data Storage and Analysis: Establish a centralized system or cloud platform to store and analyze the collected air quality data

# PROPOSED CONCEPTS

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## A.design ideas

- Air quality sensors are installed in the targeted area on top of buildings, industrial areas, traffic and residential areas. These sensors are connected to a microcontroller to control the sensors network. The data collected by the microcontroller is transmitted to the cloud for analysis. The analyzed data is shared to the public through a smartphone app.

# PROPOSED CONCEPTS

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## B.How it works

- Wireless sensors placed at strategic locations sense the level of dust particles, carbon dioxide, carbon monoxide, nitrogen dioxide and sulfur dioxide in the air.
- This information is transmitted to a gateway which forwards it to a cloud database by means of cellular or WiFi communication. In the cloud, the data are analyzed to provide information on the air quality.
- The information on the air quality is shared through a smartphone app. This allows the relevant authority to take remedial action and the community to take precautionary measures.



# Proposed concepts

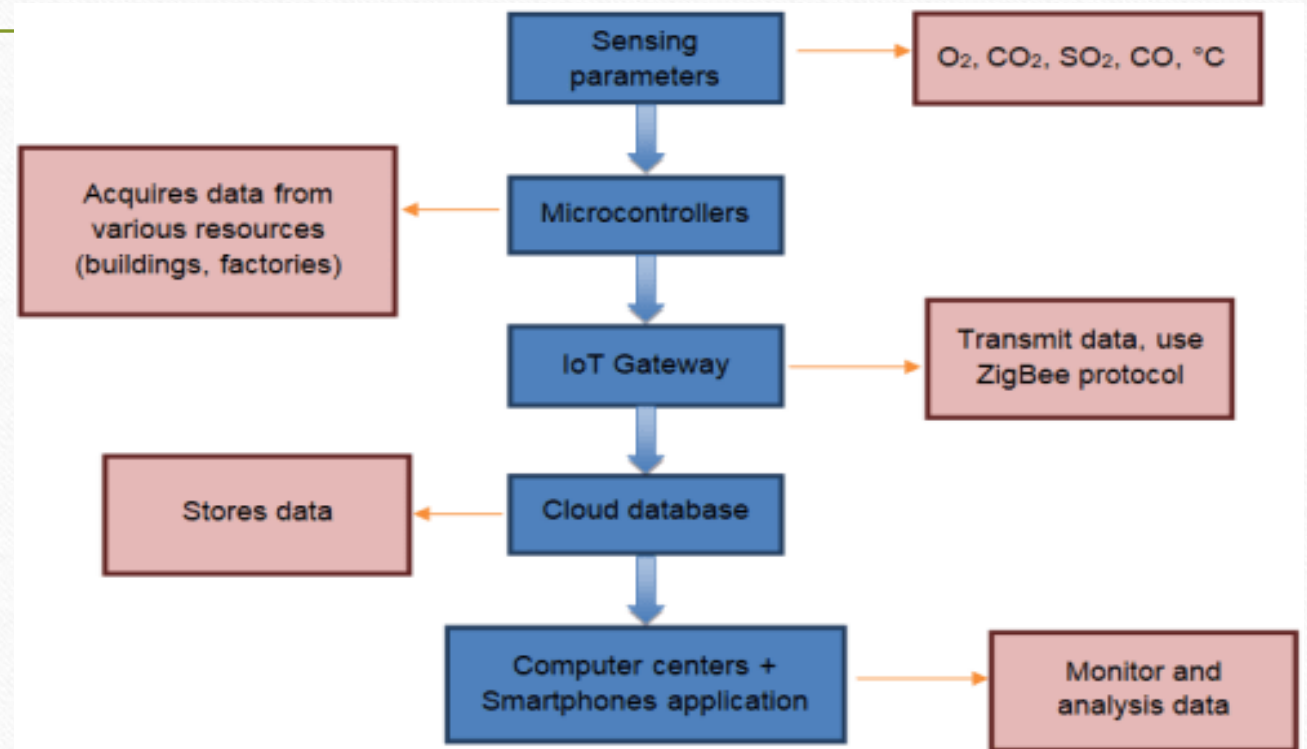
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C.What makes it innovative?

- This project proposes an idea to install monitoring applications on smartphones. It is innovative because it provides easy access to the public to monitor real time air quality in their area.
- It uses low cost and readily available devices such as a dust sensor, carbon monoxide gas sensor, carbon dioxide gas sensor, and nitrogen dioxide gas sensor.
- For controlling these sensors, microcontrollers are used and the microcontrollers also act as transmitter to transmit the data to the cloud database. The information on air quality can be accessed through a smartphone app in real time.

# FLOW DIAGRAM

- Sensors will be installed on top of buildings, industrial areas, traffic and residential areas.
- Smartphone app for monitoring is installed in individual smartphone.





# WORKING

- The IoT based air pollution monitoring system can be produced by using sensors and microcontrollers available in the market.
- The microcontrollers are programmed to take the sensors as input and transmit the data to the cloud.

