**Phase 2 project**

**Project Title: AIR QUALITY MONITORING**

**Project ID:** proj\_223737\_Team\_3

**College:** Gnanamani College of Technology

**College code:** 6208

**Branch:** B.Tech-Information Technology

**Year:** IIIrd year

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**AIR QUALITY MONITORING**

**Definition:**

An IoT-based air pollution monitoring system is an ideal solution that can provide real-time data and insights about the air quality in a particular area. An IoT based air pollution monitoring system consists of several hardware and software components that works together to collect and process data.

**Additional Implemention:**

An IoT-based air pollution monitoring system is implemented using a network of sensors, connectivity technologies, and data analytics platforms. Air quality sensors are deployed in strategic locations to measure pollutant levels such as particulate matter, gases, and volatile organic compounds.

**Components Needed:**

* Arduino Uno R3
* Arduino cable
* 16x2 LCD display
* 10k Potentiometer
* Jumper wires
* Breadboard
* MQ2 sensor
* MQ7sensor
* MQ135 gas sensor
* DHT11
* ESP 8266-01

**PHASE 2**

1. **Real-time Data Visualization:**

Create a user-friendly dashboard or mobile app that displays real-time air quality data in a visually appealing and easy-to-understand format.

Algorithm: Apache Spark,SQL,machine learning

1. **Alerts and Notifications:**

Implement alerting mechanisms to notify users when air quality levels exceed predefined thresholds. These alerts can be sent via SMS, email, or push notifications.

Algorithm: AI Predictive analytics algorithm

1. **Mobile Integration:**

Develop a mobile app that allows users to access air quality information on the go and receive notifications based on their location.

Algorithm: Insertion,selection,merge sorts for Machine Learning algorithm

1. **Air Quality Index (AQI) Calculation:**

Calculate and display the AQI, which provides a standardized way to communicate air quality levels to the public.

Calculation : pollutants- PM2.5,PM10,03,C0,S02,NO2

sub-index= [concentration - I\_low) / (I\_high- I\_low)] \* (BPHI-BPLI) + BPLI

1. **Public Awareness Campaigns:**

Use the data collected to educate the public about air quality issues and promote behavior changes to improve air quality.

1. **Indoor Air Quality Monitoring:**

Extend the system to monitor indoor air quality, which is important for homes, offices, and schools.

Algorithm: Machine Learning for regression-based algorithm

1. **Integration with Smart Home Systems:**

Allow users to integrate air quality monitoring into their smart home automation systems, triggering actions like adjusting HVAC systems when air quality deteriorates.

Algorithm: Random forest machine learning algorithm