AIR QUALITY ANALYSIS in Tamilnadu

PROBLEM STATEMENT:

Develop an advanced air quality monitoring system to address the growing concerns regarding air pollution. The system should be capable of accurately measuring and analyzing various air pollutants to provide real-time, location-specific data that can be easily accessed and understood by the public.

MACHINE LEARNING ALGORITHMS:

Machine learning algorithms can be used for various purposes, including monitoring and controlling the AIR sorce functions, optimizing polution less usage of AIR, and enhancing public health. Some of the machine learning algorithms that might be applied in such aproject include:

Anomaly Detection: Anomaly detection algorithms can be used to identify unusual patterns in AIR pollution rate, pressure, or other sensor data. This can help detect pollutat rate orother irregularities in the Environment.

Reinforcement Learning: Reinforcement learning can optimize the AIR flow and Geogrphical coverge based on AIR statistics and environmental factors.

WEB DEVELOPMENT TECHNOLOGIES USED TO IMPLEMENT:

Front-End Development:

HTML,CSS uses :

HTML/CSS can be used to integrate maps and interactive charts (e.g., bar charts, line graphs, heatmaps) to represent air quality data spatially and temporally. Libraries like D3.js or Chart.js can be useful for creating dynamic visualizations.

Javascript :

JavaScript enables user interactions such as filtering data, zooming in on maps, and selecting specific timeframes for data analysis.

Back-end Development :

Database Management :

Design a database schema that can efficiently store and retrieve air quality data. Consider relational databases (e.g., PostgreSQL) or NoSQL databases (e.g., MongoDB) based on the specific requirements.

API Development:

RESTful APIs:

Create APIs that allow the frontend and other applications to retrieve air quality data and submit new data for analysis.

Security:

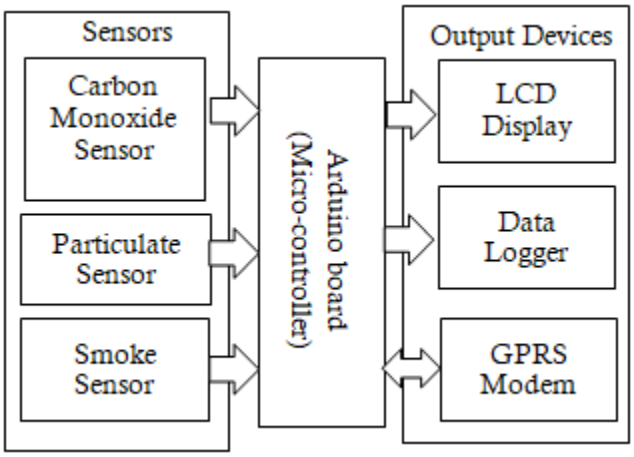
Data Encryption :

Implement data encryption to protect sensitive data during transmission and storage.

Code implementation :

```
{% if api %}
{% if api == "Error..." %}
There was an error, please try again...
{% else %}
<div class="jumbotron {{category_color }}">
 <h1 class="display-4">{{api.0.Category.Name}}</h1>
 <p class="lead"> Current {{api.0.ReportingArea}} Air Quality: {{api.0.AQI}}</p>
 <p>{{ category_description }}</p>
</div>
{% endif %}
{% endif%}
```

Flow diagram :


Sensors
Carbon Monoxide Sensor
Particulate Sensor
Smoke Sensor
Arduino board (Micro-controller)
Output Devices
LCD Display
Data Logger
GPRS Modem