# AIR QUALITY MONITORING –IOT

**SANGEETHA R K**
**MADHUMITHA P S**
**SRIANNAAMALAI V S S**

**PHASE -2 :** **Consider incorporating predictive modeling to forecast air quality trends based on historical data.**

**VISUALIZATION:**

- Create visualizations of historical air quality data, allowing users to explore trends and patterns over time..
- Visualize the forecasts generated by the predictive model.
- Include charts or graphs that display predicted air quality trends for specific time intervals (e.g., hourly, daily).
- Highlight predicted changes in air quality to help users prepare for potential shifts in conditions.
- Incorporate interactive maps that display air quality data by location.
- Use color gradients or markers on the map to represent air quality levels at different monitoring stations or measurement points.
- Allow users to zoom in and out and click on specific locations for detailed information.

**ALERT SYSTEM:**

- Set predefined air quality thresholds for various pollutants and parameters. These thresholds define the levels at which air quality is considered poor or potentially harmful.
- When the monitored data surpasses predefined thresholds, trigger alerts to notify users of deteriorating air quality.
- Categorize alerts into different levels based on the severity of air quality degradation (e.g., moderate, unhealthy, hazardous).
- Include essential information in alerts, such as the specific air quality parameter affected, the location, the severity level, and any recommended actions.

**FEATURE ENGINEERING**

Identify which features in your dataset are most likely to have a meaningful impact on air quality. These features can include:

- Meteorological data: Temperature, humidity, wind speed, wind direction, atmospheric pressure, precipitation, etc.
- Temporal data: Time of day, day of the week, month, season, etc.
- Historical air quality data: Past pollutant levels, trends, and patterns.

**CROSS VALIDATION**

- Data Splitting:

  The dataset is divided into k equally sized subsets or folds. Common choices for k are 5 or 10, but it can vary based on your dataset size and needs.

- Model Training and Testing:

  The predictive model is trained on k-1 of the folds (the training set) and tested on the remaining fold (the validation set). This process is repeated k times, with each fold serving as the validation set once.

- Performance Evaluation:

  After each iteration, the model's performance is evaluated using a chosen evaluation metric (e.g., Mean Absolute Error, Root Mean Squared Error) on the validation set.

**CONTINUOUS MONITORING AND FEEDBACK:**

Continuously check the quality and integrity of the data collected from IoT devices. This includes identifying and addressing data anomalies, sensor malfunctions, or connectivity issues that could affect data accuracy.Verify that data transmission from IoT devices to the platform is continuous and error-free. Implement mechanisms to detect and recover from data transmission failures or disruptions.

Establish channels for users to provide feedback, such as surveys, feedback forms, or contact points on the platform. Encourage users to report issues, suggest improvements, or share their experiences.Regularly review and analyze the feedback received. Categorize feedback into different types, such as bug reports, feature requests, or general comments.

**CONCLUSION:**

Air quality monitoring project can evolve and adapt to meet the needs of users while maintaining the quality and reliability of the data and services it provides. This ensures that the project remains a valuable resource for the public and contributes to raising awareness about air quality and its impact on public health.