"Developing an accurate supervised learning regression model for predicting the Air Quality Index (AQI) based on relevant parameters and historical data."

Problem Description:

The objective of this project is to create a robust and precise predictive model that utilizes supervised learning regression techniques to estimate the Air Quality Index (AQI) based on a set of influential parameters. The model will be trained on a dataset consisting of historical AQI measurements along with corresponding environmental factors such as particulate matter (PM), ozone (O3), nitrogen dioxide (NO2), carbon monoxide (CO), and meteorological variables like temperature, humidity, and wind speed.

The primary goal is to identify patterns and relationships between these parameters and the AQI levels in order to accurately predict the air quality at a given location and time. This predictive capability can be invaluable for individuals, organizations, and government agencies to make informed decisions regarding outdoor activities, health precautions, and environmental policies.

The success of this project will be measured based on the model's performance metrics, such as root mean squared error (RMSE) or mean absolute error (MAE), in predicting the AQI values. The model will be evaluated using cross-validation techniques and compared against existing methods or baseline models to assess its effectiveness.

By developing an accurate AQI prediction model, this project aims to contribute to improving public health and environmental monitoring. The model can help raise awareness about air pollution, enable proactive measures to mitigate its impacts, and support policy decisions aimed at reducing pollution levels and promoting a healthier living environment.