REPORT ON AIR QUALITY PREDICTION

PROJECT DONE BY:-
SAVRAM POKHRAN ROYAL
MADDALA LAKSHMANA VINAY
MAJJI PRADEEP KUMAR
(TEAM NAME :- CODE MAFIA)

REPORT ON AIR QUALITY PREDICTION

Abstract:

Air quality of a certain region can be used as one of the major factor determining pollution index also how well the city's industries and population is managed. Urban air quality monitoring has been a constant challenge with the advent of industrialization. Air pollution has remained a major challenge for the public and the government all over the world. Air pollution causes noticeable damage to the environment as well as to human health resulting into acid rain, global warming, heart diseases and skin cancer to the people. This paper addresses the challenge of predicting the Air Quality In our location with the aim to minimize the pollution before it gets adverse, using Machine Learning Algorithms like: XGBClassifier, Random Forest Classifier etc.. The air pollution databases were extracted from Kaggle. The proposed Machine Learning (ML) model is promising in prediction context for the Air Quality In our location. The results show improvement of the prediction accuracy and suggest that the model can be used in other smart cities as well.

REPORT ON AIR QUALITY PREDICTION

1. INTRODUCTION

1.1 ABOUT AIR QUALITY

In addition to land and water, air is the prime resource for sustenance of life. With the technological advancements, a vast amount of data on ambient air quality is generated and used to establish the quality of air in different areas. The large monitoring data result in encyclopaedic volumes of information that neither gives a clear picture to a decision maker nor to a common man who simply wants to know how good or bad the air is? One way to describe air quality is to report the concentrations of all pollutants with acceptable levels (standards). As the number of sampling stations and pollution parameters (and their sampling frequencies) increase, such descriptions of air qualitytend to become confusing even for the scientific and technical community.

As for the general public, they usually will not be satisfied with raw data, time series plots, statistical analyses, and other complex findings pertaining to air quality. The result is that people tend to lose interest and can neither appreciate the state of air quality nor the pollution mitigation efforts by regulatory agencies. Since awareness of daily levels of urban air pollution is important to those who suffer from illnesses caused by exposure to air pollution, the issue of air quality communication should be addressed in an effective manner. Further, the success of a nation to improve air quality depends on the support of its citizens who are well-informed about local and national air pollution problems and about the progress of mitigation efforts.

1.2 Project Conceptualization

In the past, AQ(air quality) has been based on maximum sub-index approach using five parameters i.e. suspended particulate matter (SPM), SO2, CO, PM10, and NO2 . However, the calculated AQ was always dominated by sub-index of SPM due to lack of data availability for other pollutants. Recently, Indian Institute of Tropical Meteorology (IITM), Pune has evolved an AQI, which provides sub-

index for PM10, PM2.5, O3, NO2, and CO, and has applied to continuous air quality monitoring network. The IITM-AQI describes air quality in terms of severe, satisfactory, very poor, poor, moderate and good. The revised CPCB air quality standards necessitate that the concept of AQI in India is examined afresh. The revised National Ambient Air Quality Standards are notified for 13parameters – PM10, PM2.5, NO2, SO2, CO, O3, NH3, Benzene,Xylene,Toluene,NOx,NO,AQI. Although AQ is usually based on criteria pollutants (i.e. PM10, PM2.5, SO2, NO2, CO and O3), a new approach to AQ which considers as many pollutants from the list of notified pollutants as possible is desirable.

1.3 Project Objectives

The project aims to achieve the following:
(i) Inform public regarding overall status of air quality through a summation parameter that is easy to understand.
(ii) Inform citizens about associated health impacts of air pollution exposure.
(iii) Rank cities/towns for prioritizing actions based on the AQ(Air Quality).

REPORT ON AIR QUALITY PREDICTION

2. MODELS USED FOR DEVELOPMENT

(i) Used XGBClassifier to get accurate results to our model
(ii) Used flask application to connect our machine learning algorithm and user interface.
(iii) Used html ,to interact with user and easy to understand by the user.

3.REFERENCES

(i) Dataset taken for the project is from Kaggle.
(ii) Dataset Link:

https://www.kaggle.com/datasets/rohanrao/air-quality-data-in-india

4.CONCLUSION

With the help of XGBClassifier we get the good accurate results.Finally with the help of this project people can know what is the quality of air in their location.