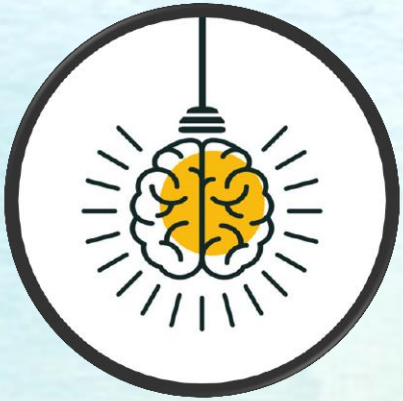




AIR POLLUTION CONTROL PREDECTION [DELHI]

-BINARY BRAINS[TEAM 110]

OVERVIEW



Problem Statement



Dataset



Solution



Conclusion

PROBLEM STATEMENT

- The survival of mankind cannot be imagined without air. Consistent developments in almost all realms of modern human society affected the health of the air adversely. Daily industrial, transport, and domestic activities are stirring hazardous pollutants in our environment.
- Monitoring and predicting air quality have become essentially important in this era, especially in developing countries like India. In contrast to the traditional methods, the prediction technologies based on machine learning techniques are proved to be the most efficient tools to study such modern hazards.
- The present work investigates five years of air pollution data from **DELHI** for air quality analysis and prediction. The dataset is well preprocessed and key features are selected through the correlation analysis. An exploratory data analysis is exercised to develop insights into various hidden patterns in the dataset and pollutants directly affecting the air quality index are identified.`

INSPIRATION AND CAUSE

- A study estimates that crop residue burning released 149.24 million tonnes of carbon dioxide (CO₂), over 9 million tonnes of carbon monoxide (CO), 0.25 million tonnes of oxides of sulphur (SOX), 1.28 million tonnes of particulate matter and 0.07 million tonnes of black carbon. These directly contribute to environmental pollution mainly air pollution
- Mainly in Punjab farmers have burnt paddy stubble over one lakh hectares in just eight days as per the data collected by the **Punjab Pollution Control Board (PPCB)** through satellite. So far in this season, the state has recorded farm fires over a total 2.11 lakh hectares area till October .**The crop burning in Punjab has been increasing for 218%** every year.
- Hence, we came to conclusion by integrating ML in predicting air pollutant and to control environmental pollution



DATASETS USED

<https://www.kaggle.com/datasets/dipeshmalhotra/air-pollution-in-delhi-5-sensors-5-years>



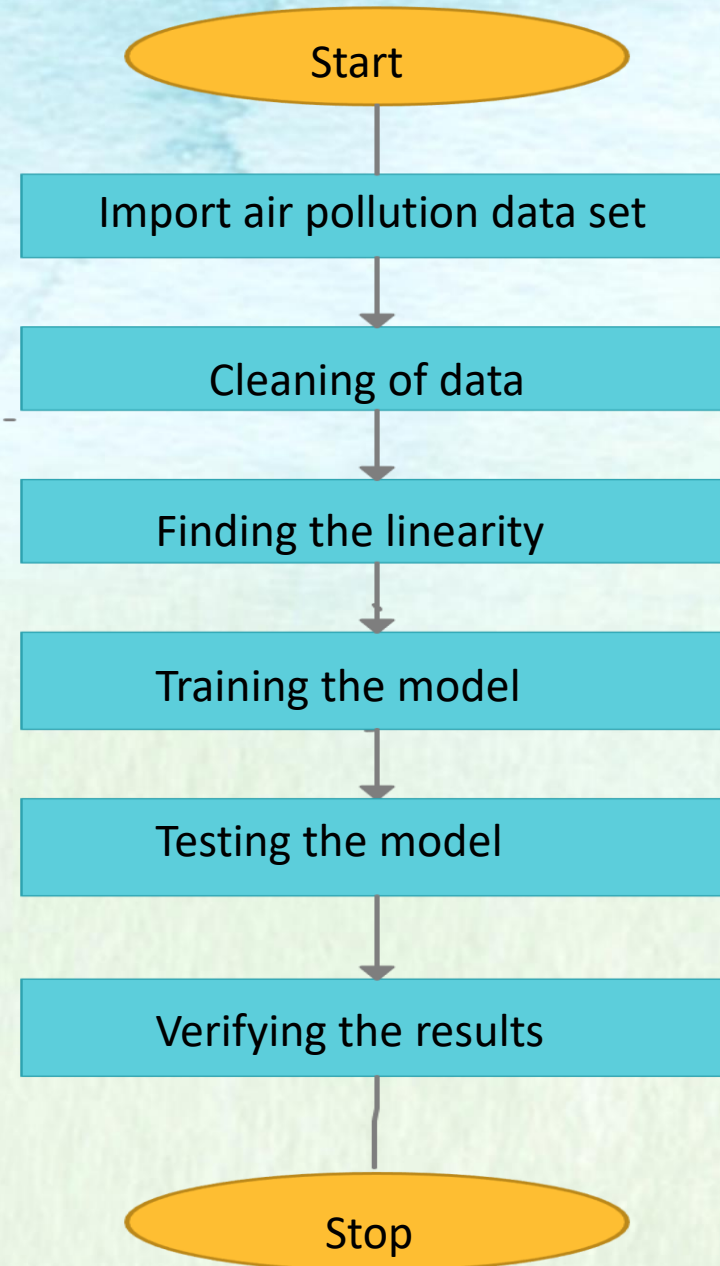
Most air pollution comes from **energy use and production**. **Burning fossil fuels** releases gases and chemicals into the air. And in an especially destructive feedback loop, air pollution not only contributes to climate change but is also exacerbated by it. Air pollution in the form of carbon dioxide and methane raises the earth's temperature. Another type of air pollution is then worsened by that increased heat: **Smog** forms when the weather is warmer and there's more **ultraviolet radiation**. **Climate change** also increases the production of allergenic air pollutants including mold (thanks to damp conditions caused by extreme weather and increased flooding) and pollen (due to a longer pollen season and more pollen production).

DATASET QUESTIONS

- Reason for environmental pollution ?
- Which nearby districts highly affected by air pollution ?
- What are the public sources are affected due to air pollution ?
- What are the main pollutants ?
- How we can reduce the air pollution ?



Flow chart



WHAT IS WASTE COLLECTORS?

- **The transfer of solid waste from the point of use and disposal to the point of treatment or landfill.** Waste collection also includes the curbside collection of recyclable materials that technically are not waste, as part of a municipal landfill diversion program.
- There are **11** active Agricultural waste Buyers in India.
- Top 3 Agricultural waste Buyers are [RAJKUMAR AGRO ENGINEERS PVT LTD](#), [ABELLON CLEANENERGY LTD](#) and [FARM AND GARDEN TECHNOLOGIES PRIVATE LIMITED](#).

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SOLUTION

Machine learning offers advanced techniques on predicting the air quality using datasets for users can predict easily

We take the datasets and created a the experimental design and empirical analysis for predicting AQI values through the pollutants present in the air. The air pollution dataset is split into training (75%) and testing (25%) subsets before evaluating ML models and final output has been generated

The ambient air quality monitoring around the active waste disposal sites has indicated higher levels of particulate matter, carbon monoxide (CO) and methane than the prescribed standards. Apart from these pollutants, emission of traces of **hydrogen sulfide (H₂S) from waste disposal sites is also a concern as even its small concentrations are toxic to humans**. Our ML models will predict the waste disposal sites around the most polluted area.

For further implementation we can build a clear website or app for public use which will be more

How our solution leverages IBMZ

- By using IBMz we could host our jupyter notebook and the dataset seamlessly
- IBMZ community was very user friendly portal we made our project without any trouble
- Uploading the dataset files was very easy by using IBMZ
- IBMZ community serves a great interface for hosting our application and cloud

FUNCTIONAL DEPENDENCIES

- Python(jupyter notebook)
- Uploaded csv files and attached links.

CONCLUSION

- The regulation of air pollutant levels is rapidly becoming one of the most important tasks. It is important that people know what the level of pollution in their surroundings is and takes a step towards fighting against it.
- The results show that machine learning models (logistic regression and autoregression) can be efficiently used to detect the quality of air and predict the level of Pollutant in the future.

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