



IPD GROUP 38

# AIR VISION

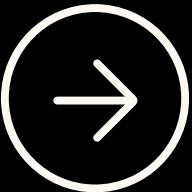
Predicting tomorrow's AQI with AI

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# MOTIVATION FOR THE IDEA



A critical gap in existing research and data has been identified: the impact of landfill incinerations on AQI. Despite being a significant contributor to air pollution, this area remains underexplored due to inconsistent or incomplete datasets.

- Solving discrepancies in already existing datasets: Inefficiencies and inaccuracies in current waste management practices exacerbate pollution levels. By identifying discrepancies in waste segregation, incineration, and landfill data, our project aims to spotlight areas requiring reform.
- Helping government bodies to drive Policy and Action: A data-driven approach to predicting AQI spikes caused by landfill fires can empower governments and organizations with actionable insights to develop stricter waste management protocols and policies.

# OUR PRODUCT

## MODEL 1

Model 1 uses linear regression analysis to estimate the amount of non-biodegradable waste generated at various scales.

## MODEL 2

Model 2 focuses on predicting the environmental impact of non-biodegradable waste incineration, with a particular emphasis on the Air Quality Index (AQI).

## MODEL 3

It will handle future prediction by comparing the calculated data from Model 2, historic data and also the necessary data from upcoming major events.

Personal

Residential complexes

Locality

Districts under a specific dumping ground

Calculations through-  
a. Elemental Emissions  
Retrieved from data of Model 1  
b. Holistic view of AQI  
from vehicular emissions,  
constructions sites, major cultural  
activities, residual pollution,etc.

**FINAL AQI**

All the streamlined data from the three models will give rise to a product which allows anyone to predict AQI levels in the near future.

With the final goal being

21st JULY, 2029 12 P.M

# ISSUES IN SIMILAR EXISTING SYSTEMS

STATE	SOLID WASTE TREATMENT	COLLECTED	TREATED	LANDFILLED
MAHARASHTRA	22632.71	22584.4	15056.1	1355.36

The above data is from a government issued research paper which clearly points out to the discrepancies in the data-

There is no clear information on how much waste is incinerated prior to being landfilled.

The data does not clarify how much organic waste is composted or incinerated. If incinerated, organic waste, due to its high calorific value - produces more CO<sub>2</sub> compared to non-biodegradable waste.

It is unclear whether the reported quantities of recyclable waste are accurate. If not recycled, is it being incinerated instead?

With the most important point being-

The reports do not disclose the amount of waste incinerated before landfilling or the criteria used to segregate waste for incineration.

# TECH STACK

## MODEL 1

**Scikit-Learn**  
library for data preprocessing

**Numpy**  
library for numerical computations

**Pandas**  
data manipulation and analysis library.

**RandomForest**

**Linear regression models**  
predicting continuous outcomes

**Matplotlib**  
library for data visualization

**Seaborn**  
data visualization library built on top of Matplotlib

## MODEL 2

**TensorFlow**  
training ML and deep learning models

**PyTorch**  
dynamic computational graph and ease of experimentation.

**LSTM**  
RNN designed to capture temporal dependencies in sequential data.

**Keras(API)**  
building and training deep learning models

**Matplotlib**  
library for data visualization

## MODEL 3

**ARIMA**  
statistical method for time-series forecasting

**PyTorch**  
dynamic computational graph and ease of experimentation

**Statsmodels**  
statistical modeling and time-series analysis

**Plotly**  
visualization library for creating dynamic and shareable plots

**Prophet**  
open-source library developed by Facebook for time-series forecasting

# SCOPE OF THE PRODUCT

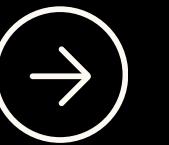
As for the initial phases, the initial datasets will be made by us and a few trusted relatives.

The ML models will be restricted to one of the three dumping grounds namely - Deonar, Mulund and Kanjur Marg.

The AQI models shall only help calculate the pollution participation caused due to incineration of non-biodegradable waste at these landfills.

As for the predictive analysis, it will take into account the model data, historic data and obvious future events. Any unexpected events such as natural disasters shall not be taken into consideration.

# ESTIMATED TIMELINE



**SEM 3**

In our first year, we successfully launched a new product/service, received positive feedback from early users, and formed partnerships with key industry players.

**SEM 4**

We expanded into new markets, improved operational efficiency, and saw an increase in customer satisfaction.

**SEM 5**

We secured funding for growth, refined our offerings based on customer feedback, and formed strategic partnerships.

**SEM 6**

We achieved profitability, expanded our product line, and strengthened our brand reputation through positive customer feedback.





AIR VISION

# THANK YOU

for your time and attention

Presented by IPD GROUP 38

