Advanced Pollution Detector Using Satellite Images (APDUSI)

Organisation name : Indian Space Research Organisation (ISRO)

Problem Statement : Air pollution hot spots detection and identifying the source trajectories using AI/ML techniques

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Solution Prototype :

Predicting Pollution level

- Training the Linear regression based ML model with CSV dataset
- Getting the final model to predict the level of CO, NO2, SO2 & particles in the air

Detecting Hotspot

- Plotting the level of NO2, SO2, CO in the air for any particular area from satellite data (netCDF)
- Classifying the Air pollution sources (Industrial / overpopulated zones) using CNN
- Checking the pollution level & identify location of the Hotspots if the level crosses threesold
- Pointing out the changes in Air pollution Hotspots

Objectives :

- ✓ *Detection of the location of air pollution hotspots from satellite data*
- ✓ *Observation of changes in air pollution hotspots*
- ✓ *Real-time visualisation of satellite data*
- ✓ *Prediction of air pollution level of any particular area*
- ✓ *Analysation of air pollution records*
- ✓ *Exploration of air pollution sources*

Technology Stack :

- ➢ Python-3 with NumPy, Pandas & NetCDF
- ➢ Supervised Machine Learning
- ➢ Convolutional Neural Network
- ➢ SciKit Learn
- ➢ Matplotlib & Basemap

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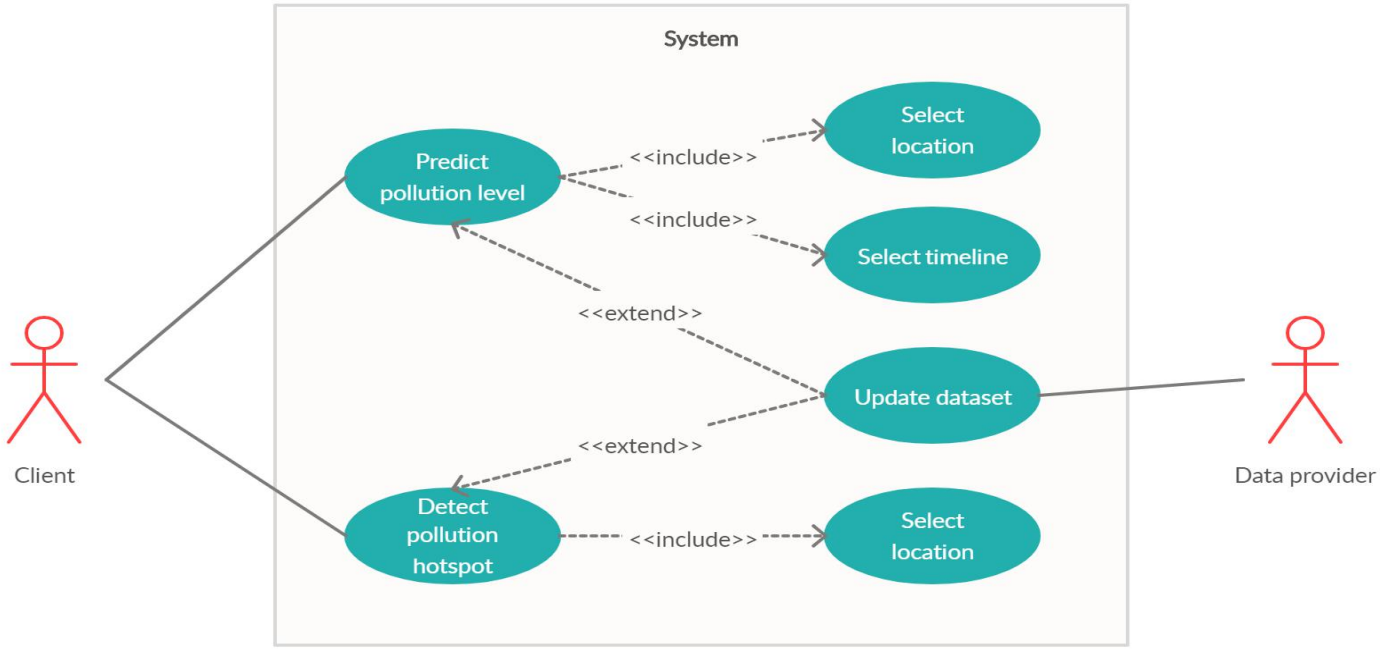
Use Case :



NOTE :
Client includes any Govt. organisation or private agency

NOTE :
Data provider includes any Govt. organisation or private body or space agency who is providing satellite data & pollution records

Dependencies/Show-stoppers :

- High performance computing device for real-time output
- Ample amount of Labelled data for better accuracy
- Large storage is required to implement this project into wide platform