Website:

The website can be run locally . no dependencies have to be installed for the same. Open the index.html file in a browser to view the website. There should be an active internet connection so that all the components can be loaded correctly

Image Classifier:

The **CNN Image Classifier for Waste Segregation** has been implemented using the **Fastai** library based on **Pytorch**. The CNN model used for training is the **ResNet34** which is pre-trained on the **ImageNet** database. The model consists of 34 layers and is able to classify the images of waste with a **90% accuracy**. We use 34 layers in order to increase the accuracy of the model. Also using a greater number of layers is avoided so that the model doesn't overfit. The model was implemented in **Google Colab**.In order to reuse the model again(once trained), a **pickle file** has been made which contains the trained model and further classifications can be done on a new set of images.
The libraries can be installed using the following commands:
pip install fastai
pip install torch
pip install pickle
pip install dill
Also alternatively you can use Google Colab to run the **jupyter notebook using a GPU**.
https://colab.research.google.com/
The code for the same can be found on this github repository under the branch Classifier.

Truck Route Optimization:

The truck route is optimized using the Traveling Salesman Problem Algorithm. The algorithm is a dynamic approach to find the shortest and the most optimal route between the source and the destination. This implementation is done in Python.
We use the Google Maps API in collaboration with Traveling Salesman Algorithm.
In Order to use the Maps API, you will have to generate an API key from *https://developers.google.com/maps/documentation/distance-matrix/start#get-a-key*.

The source and the destination are given to the algorithm, after which the latitudes and longitudes for those locations are fetched using the MAPS API.
The following python packages need to be installed:-
pip install python-google-places==1.4.1
pip install googlemaps==3.0.2
pip install gmaps==0.8.4
python -m pip install --upgrade --user ortools

The code for the same can be found on this github repository under the branch Algorithm.