

Waste Classification using Images

Theme - Waste Management
Environmental Sciences - Group 20

Problem Statement

Waste management and recycling is the key for moving towards a sustainable tomorrow. It protects the environment, saves the Earth and conserves energy. Waste generation in India has increased considerably over the past decades. Much of the waste is not processed hence dumped into landfills, which are growing in size everyday. Several articles [1,2] have highlighted the shocking state of waste management in the country. With increase in consumerism, the problem will worsen unless proper waste management measures are adopted.

The government, in order to tackle this, as part of its Swachh Bharat Abhiyan is trying to get people to help in being conscious citizens and segregating waste both in households and in public places. This, however, requires the citizens to be aware of waste classification so that they can help in, and be a part of this movement.

The idea of our project is to be able to classify the content of images into various categories of waste by using AI and deep learning techniques.



Importance of waste classification

- Waste recycling - Reuse waste and make it a resource
- Appropriate treatment for each type of waste
- Reduce the amount of waste taken to landfills
- Makes the waste treatment process more efficient

Project Plan

- A mobile application front-end which will allow the user to upload an image
- It then detects waste objects present using Deep Learning API at back-end
- Classifies images into waste categories like glass, plastic, paper, metal, e-waste, organic etc
- Tells the user if the detected waste is recyclable or not
- Provides other general facts to educate the user more
- Explains the user about how to treat that waste category

Dataset

We found a [dataset](#) containing 2527 images of waste classified into 6 categories - glass, paper, cardboard, plastic, metal, trash. We will use this to train/test our learning network.

Applications of our project

- Easy guide to waste classification
- Predicts category of waste simply by uploading its image
- Interactive platform to increase users awareness about waste classification and management