E-Waste Segregation using Random Forest

Overview

In this project, e-waste images are classified into categories using a Random Forest classifier trained on the flattened image pixels: mobile, laptop, battery, charger, and PCB.

Dataset

Store the dataset in Google Drive under `E_waste_dataset/`, and create subfolders for each class. Use 50 images per class, as needed.
How to run (Google Colab)
1. Upload dataset to Google Drive.

2. Open `notebooks/colab_notebook.ipynb` in Colab.
3. Mount Drive and update `DATA_DIR` with the dataset path.
4. Run cells: load -> preprocess -> train -> evaluate -> save model.

Files

- `src/`: scripts used in the notebook
- `notebooks/colab_notebook.ipynb` : main notebook
- `report.pdf` : project report for submission

Requirements

- scikit-learn

- scikit-image

- joblib

- matplotlib

Project Statement

Problem Statement: E-waste segregation is slow and error-prone if performed manually. In this work, we propose an image-based classifier to automatically identify e-waste item types to assist sorting.

Scope:

Classification of common e-waste items: mobile, laptop, battery, charger, and PCB. Target users: Recycling centers, waste-collection teams, small-scale recyclers. **High-level features:

Upload image -> predicts e-waste class - Using Google Drive Images for Training Pipelines
Model evaluation and sample predictions