PROJECT TITLE:WASTE CLASSIFICATION FOR SMART RECYCLING

PROJECT PROBLEM STATEMENT:

Improper waste segregation leads to pollution and inefficient recycling. To support sustainability, an image-based system can help classify waste automatically into categories like plastic, paper, metal, and organic using a Convolutional Neural Network (CNN).

PROJECT GOAL:

Build a CNN model that can take an image of waste and classify it into the correct category, promoting smart recycling and sustainable waste management.

CONCEPTS USED:

- CNN (Convolutional Neural Network): for image recognition.
- Deep Learning: part of AI that helps computers learn from images.
- Sustainability: helps reduce pollution by sorting waste properly.

DATASET: Waste Classification Dataset from Kaggle https://www.kaggle.com/datasets/techsash/waste-classification-data It contains labeled images of: Plastic, Paper, Metal, Glass, Organic waste

TECHNOLOGIES USED

• Python

• TensorFlow / Keras

• OpenCV

• NumPy, Pandas

• Matplotlib / Seaborn

EXPECTED OUTPUT:

User uploads a waste image → Model predicts the category, e.g., “Plastic Waste” or “Organic Waste”

FUTURE SCOPE:

• Integrate with IoT-based smart bins for real-time sorting.

• Deploy as a mobile/web app for smart city waste management