Comparative Analysis of CNN and Transformer Architecture for Image Classification

# Summary

This project aims to conduct a comparative analysis of Convolutional Neural Networks (CNNs) and Transformer architectures for image classification. We will collaborate to build, train, and evaluate two different deep learning models, one based on a CNN and the other based on a Transformer, using the same dataset. Goal of this project is to learn and understand the two architectures and how both are different from each other, and when can we consider using it.

# Dataset

Currently, we are using the following dataset : <https://www.kaggle.com/datasets/techsash/waste-classification-data/>

Problem Statement : Given the image we are trying to find the weather it’s recyclable or Organic waste ?

# CNN – Convolution Neural Network

We will be using Different types of convolution Neural Network, to benchmark against Transformer, so to use different CNNs could be and see their accuracy using the same Testbeds.

Different types of CNN we have used in our project :

* AlexNet
* VGG-16
* ResNet-18
* InceptionV3

We will be using PyTorch to build this CNN and then we will find the accuracy.

Different types of CNN have different architecture , Each CNN could be used for different purpose.