

1 MINI PROJECT ACTIVITY: TRANSFER LEARNING SHOWDOWN (APPLIED)

1.1 OBJECTIVE

Pick two pretrained CNN architectures, compare their specs, and apply one of them to a small image classification task using transfer learning.

1.2 STEP 1: EXPLORE AND COMPARE MODELS

- <https://keras.io/api/applications/>

Pick any 2 models (e.g., MobileNetV2, ResNet50, EfficientNetB0, etc.) and fill the table below:

Feature	Model 1	Model 2
Input Image Size		
Parameters		
Layers / Depth		
ImageNet Accuracy (Top-1)		
Model Size (MB)		
Inference Speed (if known)		

1.3 STEP 2: PICK A TOY DATASET

Use any small dataset from the following options:

- CIFAR-10
- Rock-Paper-Scissors
- Dogs vs. Cats (subset of 1,000 images)
- 3–5 classes of your own images from Google

1.4 STEP 3: TRANSFER LEARNING WORKFLOW

Apply one of your selected models using the following steps:

1. Load & preprocess the dataset
 - Resize images to match model input size
 - Normalize appropriately (e.g., `preprocess_input`)

2. Load the pretrained model

- Without top layer
- Freeze base model

3. Add custom classifier head

- Use GlobalAveragePooling2D, Dense, Dropout, etc. 4.

Train the model

- Use EarlyStopping and ReduceLROnPlateau
- Train for 20–30 epochs

5. Fine-tune top few layers of the base model after initial training

1.5 STEP 4: REPORT

Submit a notebook or PDF containing:

- Model comparison table
- Justification of selected model
- Code and plots (loss/accuracy)
- Final test accuracy

1.6 BONUS (OPTIONAL)

Train both models on the same dataset (if time permits) and report:

- Which performed better?
- Any noticeable difference in training speed?