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?