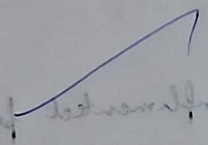
Epoch	Training	Val. Acc
1	58.2	55.1
5	72.4	69.3
10	83.7	80.1
15	90.5	87.2
20	99.8	94.7



Exp 14 Implement a Pre-trained CNN model as a Feature extractor

AIM: To implement a pre-trained CNN model as a feature extractor using transfer learning model.

Objective

To understand how a CNN pre-trained on ImageNet can extract visual features

To freeze convolutional layer and use their output features for new tasks

To train only the classifier head for faster and more accurate learning

Pseudocode

Import libraries
Load a pre-trained CNN
Freeze all convolution layer to prevent retrained
Replace final classifier layer for new no. of classes
Load small dataset
Extract features
Train only new classifier head
Evaluate accuracy

Observation:

The pre-trained ResNet18 model was successfully loaded

Frozen layers acted as fixed feature extractor, capturing low-level edges, corners, textures

Training was significantly faster because only the final classifier parameter ~~~~ were updated leading stable convergence

This exp. demonstrated how transfer learning can drastically reduce training time and computional cost

Result

Successfully implemented pre-trained CNN model