

~~AIM~~
LAB 14:- Implement a pre-trained CNN
using Transfer learning models.

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

Pseudo Code :-

- Import necessary libraries.
- Load a pre-trained CNN model.
- Freeze all convolution layers to prevent training.
- Remove the original & classification layer.
- Add a new classifier layer suitable for the custom dataset.
- Load and preprocess the dataset.
- Pass images through the pre-trained model.
- Train only the new classifier using extracted feature.
- Evaluate model performance on the test dataset.
- Display Accuracy & loss curves.

Observation :-

- The pre-trained CNN already knows how to detect low-level or mid-level features like edges or shapes.
- By freezing the CNN layers, we reuse this prior knowledge instead of training from scratch.
- Only the final classification layer is trained, reducing training time.
- The model converges faster & performs better.
- ResNet performed better on complex datasets due to its residual, while VGG16 gave stable maps.

Result :-

Successfully implemented pre-trained model as a feature extractor using Transfer learning mode

(Q.)

Diagram

Custom architecture :-

Customized VGG16

