

27-10-2025

## 13 - Understanding the Architecture of a pre-trained model .

Aim :

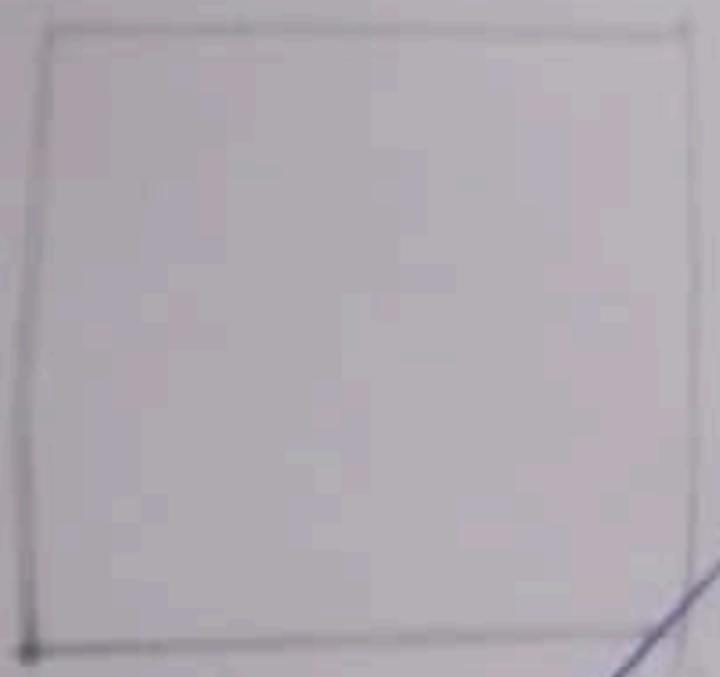
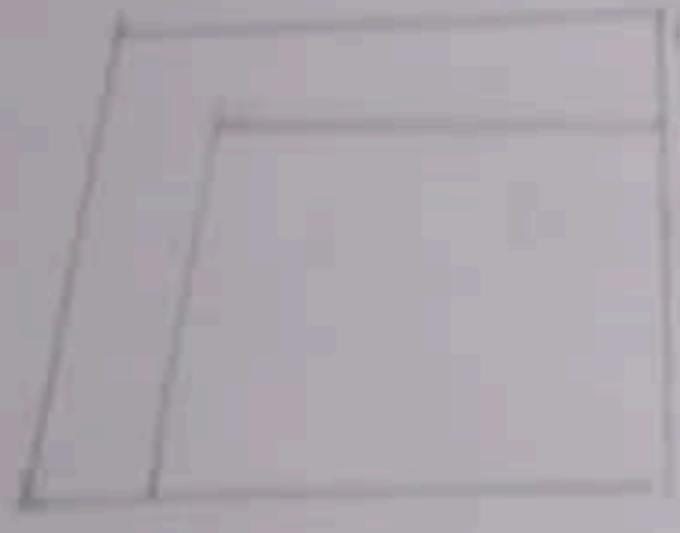
To study and analyze the  
internal architecture of a pre-trained  
CNN model .

Objectives

- \* To understand how deep pre-trained networks are constructed .
- \* To analyze convolutional layers , pooling layers , and fully-connected
- \* To observe how pre-trained weights encode hierarchical image features .

## Data flow

7x7 Conv



out image

## pseudocode

★ Start

★ Import a pre-trained  
CNN model (e.g.: VGG16) with  
weights = "imagenet"

★ Display model summary

★ Visualize selected intermediate  
layers and their feature maps

★ Interpret how features

for example from edges - textures

objectives

★ End

Epoch

output

layer 1

feature  
type

Description

Conv 1

Edges, colors

Basic visual  
feats

Layer 1

Textures

Detect, skip

Layer 2

Shapes

Recognize  
pattern

Layer 3

object

Detect  
object

Layer 4

Semantic

High level  
context

## observation

- ★ Early layers detected simple shapes like edges and color gradients
- ★ middle layers captured textured and repeated patterns.
- ★ Visudhive selected intermediate layers and their feature semantic representations
- ★ pre-trained models reduce training time and improve accuracy significantly.

## Result :

~~Q&A~~ The internal working of a pre-trained CNN model was successfully studied showing how dep networks learn hierarchical visual features.