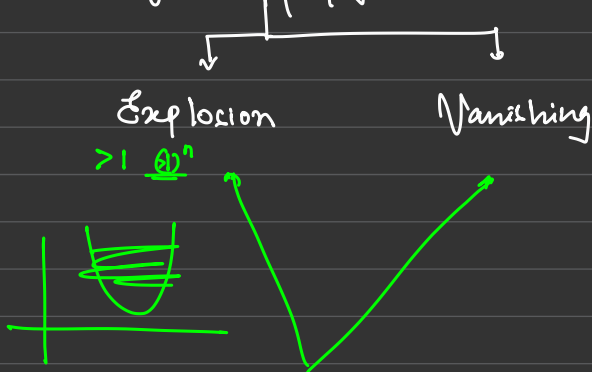


# Resnet Architecture

- ① won first place in ILSVRC-2015
- ① won first place in ImageNet, ImageNet detection
- ① COCO detection, COCO segmentation

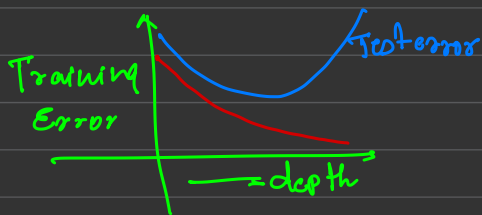
→ depth →

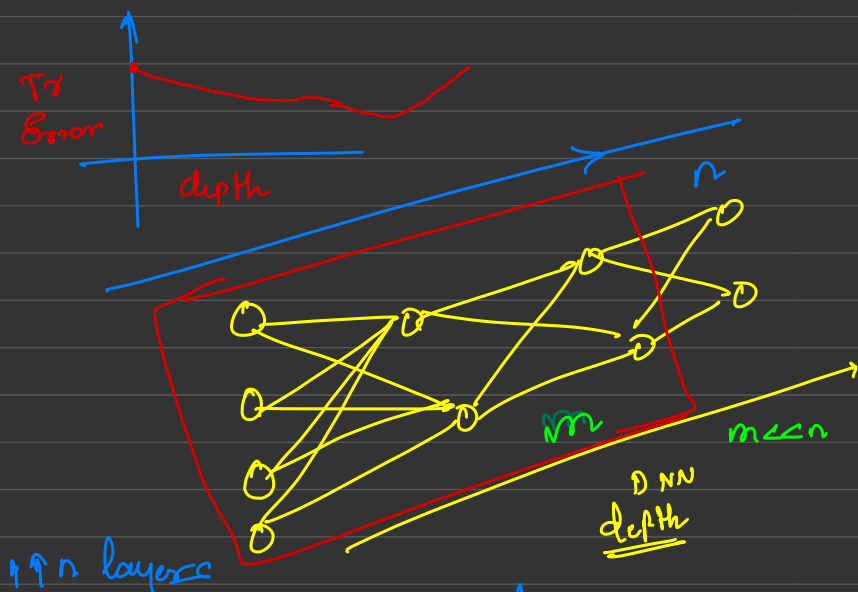
① The gradient propagation → Chain Rule (x x x x)



① Batch Normalization, Prelu, Xavier (init)

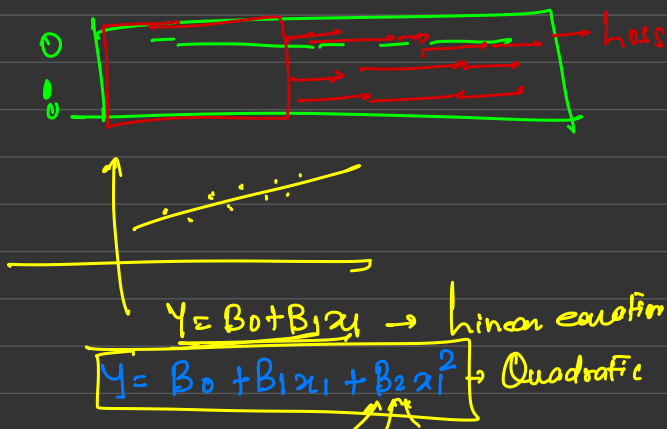
① Models deeper



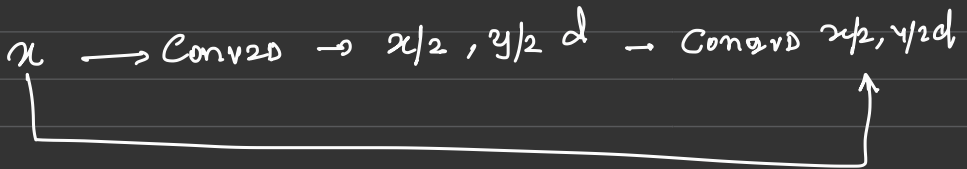
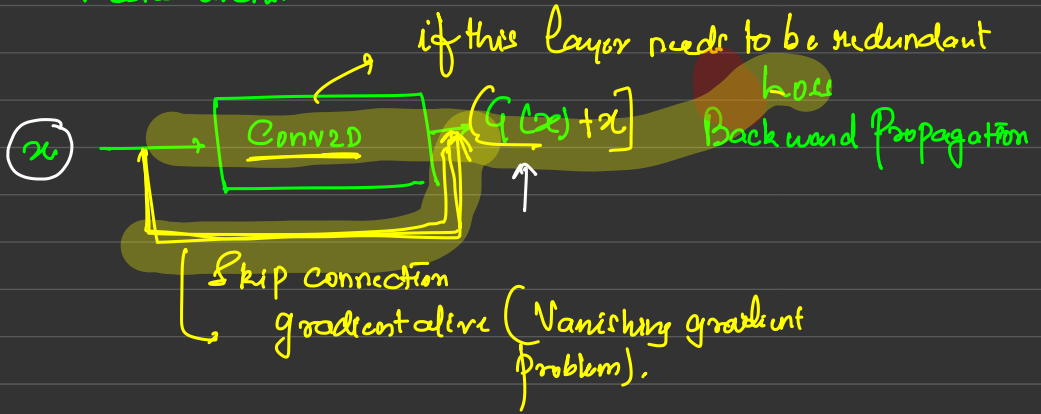


there will be certain (optimal) layer  
would have already trained the most optimal model.

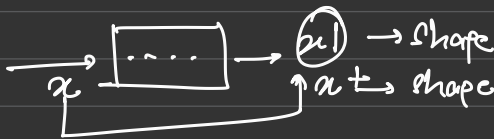
The remaining  $n-m$  layers to be an identity map.



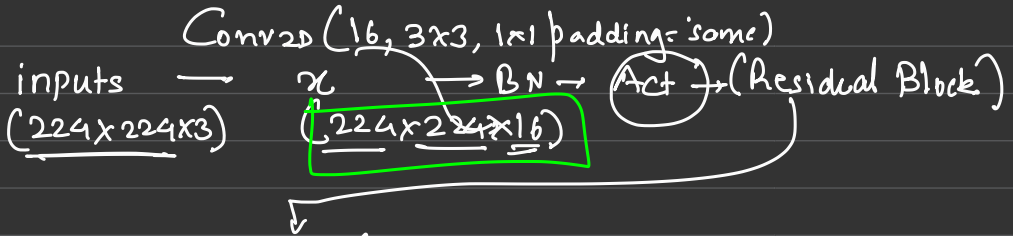
## Resnet architecture



## Residual connection (skip connection)



# Code understanding



Residual Block (16)

$$y = \text{Conv2D}(16, (3, 3), (1, 1), \text{padding} = \text{'same'})(x)$$

$$y = \text{BN}(y)$$

$$y = \text{Act}(y)$$

$$\hookrightarrow (224 \times 224 \times 16)$$

$$y = \text{Conv2D}(16, (3 \times 3), (1 \times 1), \text{'same'})(y)$$

$$y = \text{BN}(y) \rightarrow (224 \times 224 \times 16)$$

$$y = \text{Add}(y, x)$$

downsample = False

