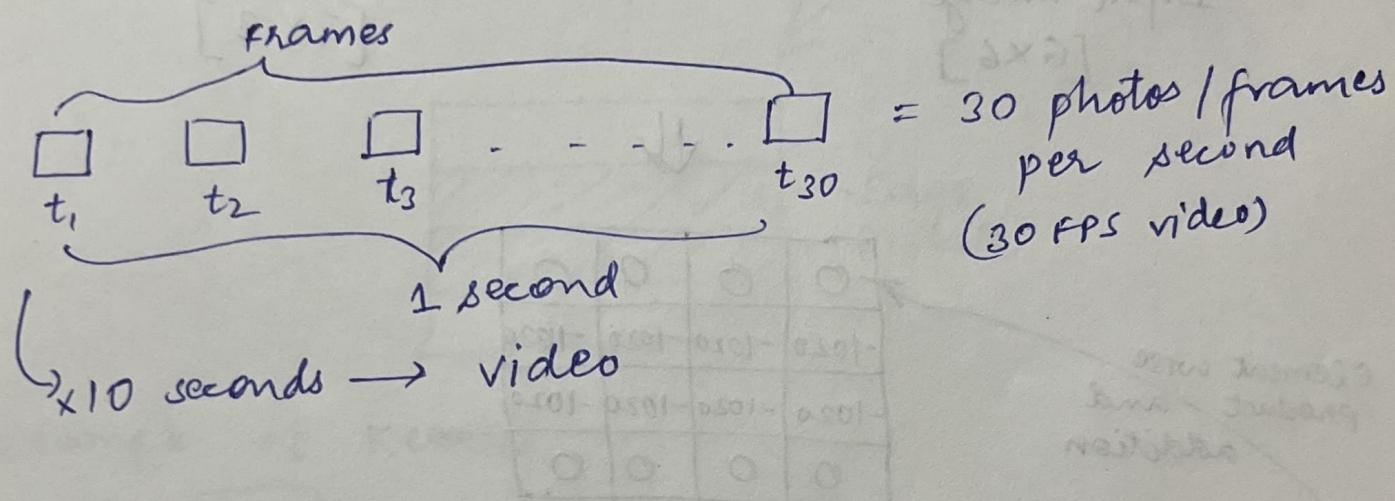


CLASS - 2

Types of images :

- JPEG / JPG
- PNG
- GIF
- HEIF / HEIC
- Vector images, Raw images, 3D images.

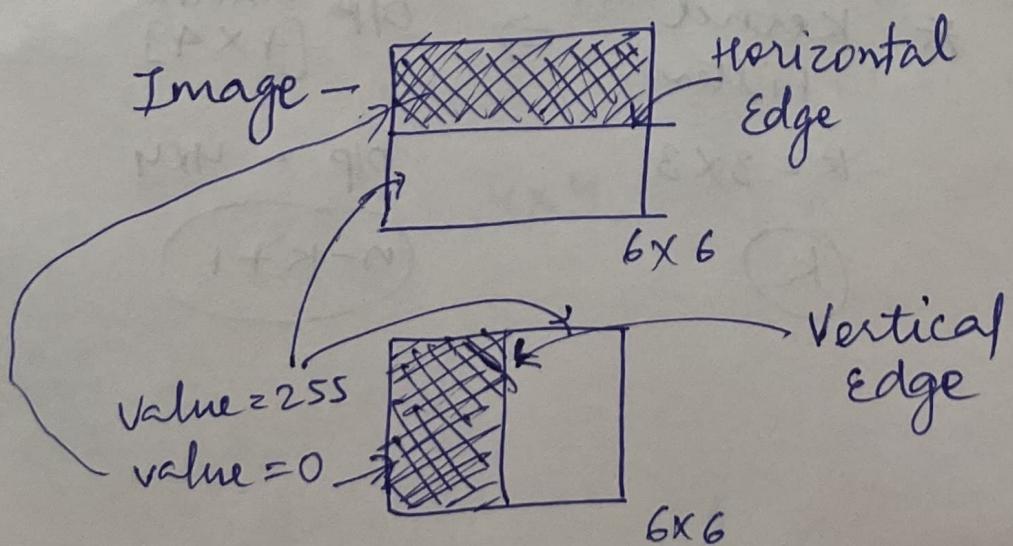
When Resized → Quality may be lost



CONVOLUTION - EDGE DETECTION

V1 — part of visual cortex

Grey scale Image : $[6 \times 6]$ — shape of image
No. of channels = 1
 $[6 \times 6 \times 1]$



Horizontal sliding

vertical sliding

0	0	0	0	0	0
0	0	0	0	0	0
0	0	0	0	0	0
255	255	255	255	255	255
255	255	255	255	255	255
255	255	255	255	255	255

Input Image
[6x6]

*

convolution
operation

1	2	1
0	0	0
-1	-2	-1

Kernel / Filter /
operator / Mask
[3x3]



0	0	0	0
-1020	-1020	-1020	-1020
-1020	-1020	-1020	-1020
0	0	0	0

O/P
matrix [4x4]

Element wise product and addition

First cell of O/P matrix = $(0 \times 1) + (0 \times 2) + (0 \times 1) + (0 \times 0) + (0 \times 0) + (0 \times 0) + (0 \times -1) + (0 \times -2) + (0 \times -1)$
 $= 0$

Input Image * Kernel Filter \Rightarrow O/P Matrix [4x4]

$n = 6 \times 6$

$k = 3 \times 3$

O/P = 4x4

n

k

$n-k+1$

0	0	0	0
-1020	-1020	-1020	-1020
-1020	-1020	-1020	-1020
0	0	0	0

$$\max = 0$$

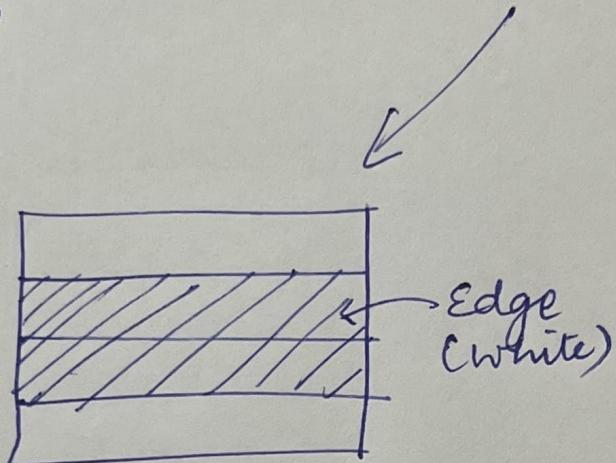
$$\min = -1020$$

Replace
with
normalisation
 $\xrightarrow{(0-255)}$

255	255	255	255
0	0	0	0
0	0	0	0
255	255	255	255

$$\max = 255$$

$$\min = 0$$



Example of Kernels:

1	2	1
0	0	0
-1	-2	-1

→ sobel Horizontal Edge
Detector

1	0	-1
2	0	-2
1	0	-1

→ sobel vertical edge
detector

- ⑥ The kernels can be of different sizes but should only be squares, like 3×3 , 4×4 , 5×5 , etc.