Agenda:

1. Padding in CNN
2. Strides in CNN

$$(n - f + 1)(n - f + 1)$$

7	2	3	3	8
4	5	3	8	4
3	3	2	8	4
2	8	7	2	7
5	4	4	5	4

*

1	0	-1
1	0	-1
1	0	-1

3×3

=

6	-9	-8
-3	-2	

3×3

5×5

5×5

0	0	0	0	0	0	0
0	7	2	3	3	8	0
0	4	5	3	8	4	0
0	3	3	2	8	4	0
0	2	8	7	2	7	0
0	5	4	4	5	4	0
0	0	0	0	0	0	0

7×7

1	0	-1
1	0	-1
1	0	-1

3×3

= 5×5
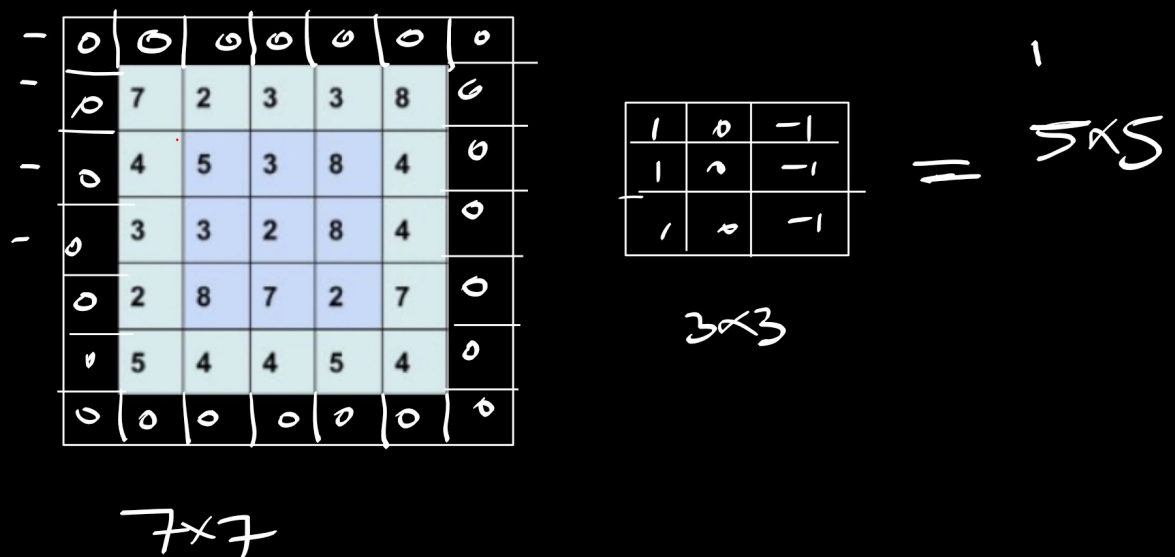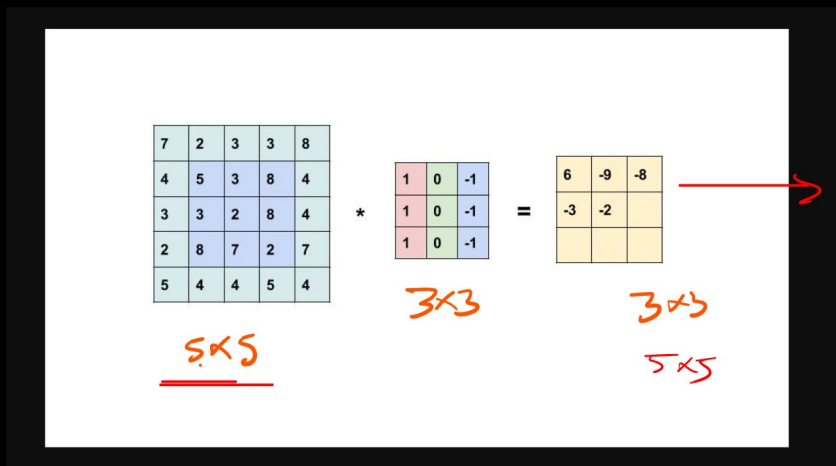
$(n - f + 1)$

$(5 \times 5) - (3 \times 3)$

$(n + 2p - f + 1)$

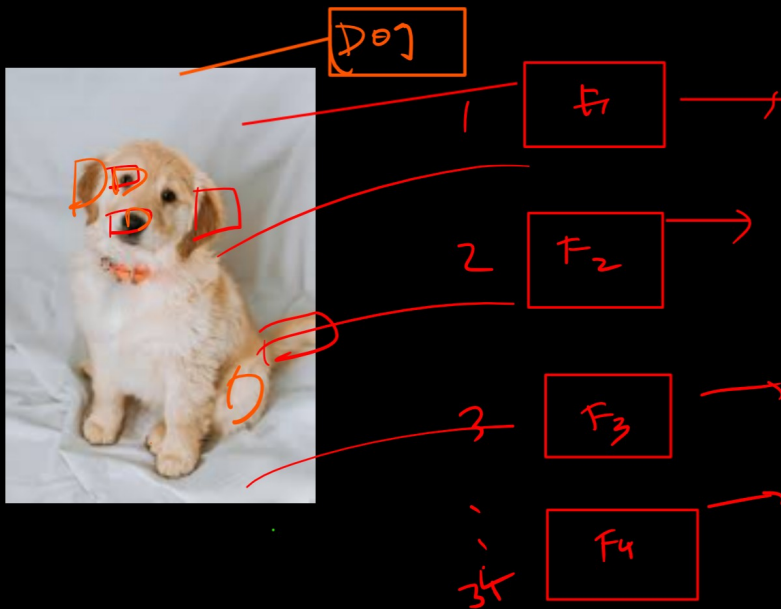$\Rightarrow 5 + 2(1) - 3 + 1)$

$\Rightarrow 7 - 3 + 1$
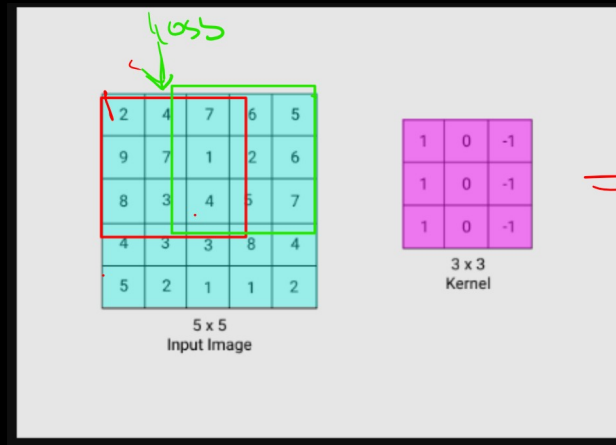
$\Rightarrow 5 \Leftarrow$

Output
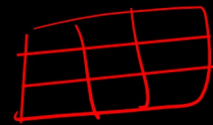
Tensorflow
keras

→ Same ← padding
→ valid ← not padding

─── O

+ 0.25 ──→ 1

5 x 5 Input Image / 3 x 3 Kernel

stride = 1
stride = 2

High level
feature

$\longrightarrow$ Fast computation

$\Longrightarrow$ Less Time

$(5 \times 5) - (3 \times 3)$
Stride = 2

$$\left[\frac{n - f}{s} + 1 \right]$$

2×2

$$\Longrightarrow \frac{5 - 3}{2} + 1$$

$$= \frac{2}{2} + 1$$

$$= 1 + 1$$

$$= 2$$

$\longrightarrow$ Pooling Layer in CNN $\longleftarrow$