Convolutional Neural Networks

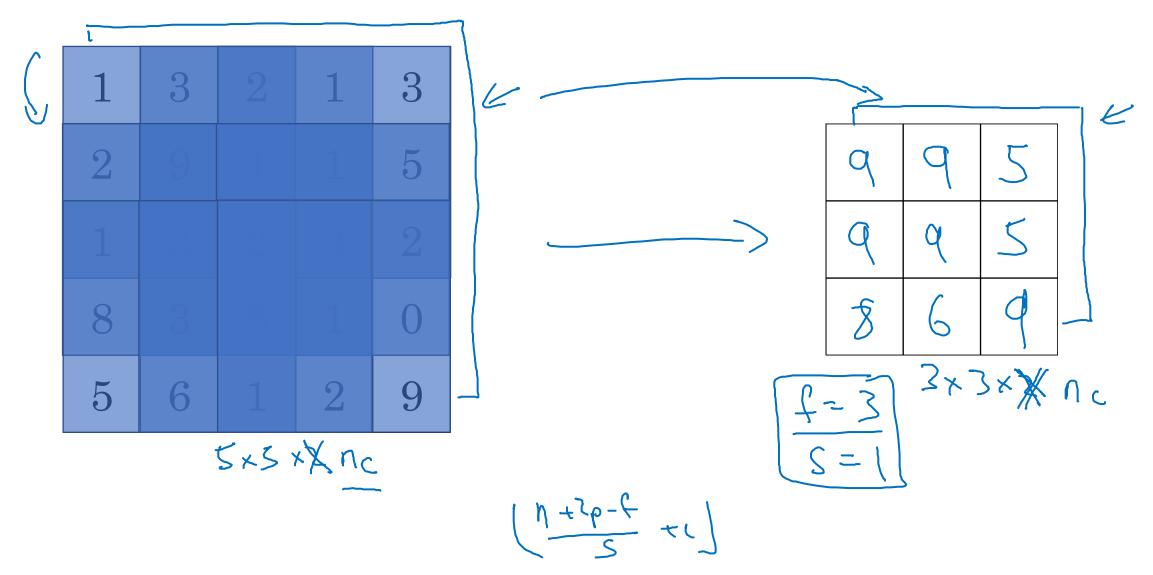## Pooling layers

deeplearning.ai

Pooling layer: Max pooling

1	3	2	1
2	9	1	1
1	3	2	3
5	6	1	2

Pooling layer: Max pooling

1	3	2	1	3
2	9	1	1	5
1	3	2	3	2
8	3	5	1	0
5	6	1	2	9

$5 \times 5 \times n_c$

9	9	5
9	9	5
8	6	9

$3 \times 3 \times n_c$

$\dfrac{f = 3}{s = 1}$

$\left(\dfrac{n + 2p - f}{s} + 1 \right)$

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Pooling layer: Average pooling

$f = 2$

$s = 2$

$7 \times 7 \times 1000 \longrightarrow 1 \times 1 \times 1000$

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Summary of pooling

Hyperparameters:

$\Big[$
   f : filter size

   s : stride

   Max or average pooling

$f=2, s=2$

$f=3, s=2$

$\Rightarrow$ p: padding.

No parameters to learn!

$$n_H \times n_W \times n_c$$

$$\downarrow$$

$$\left\lfloor \frac{n_H - f}{s} + 1 \right\rfloor \times \left\lfloor \frac{n_W - f}{s} + 1 \right\rfloor$$

$$\times \, n_c$$