



deeplearning.ai

# Convolutional Neural Networks

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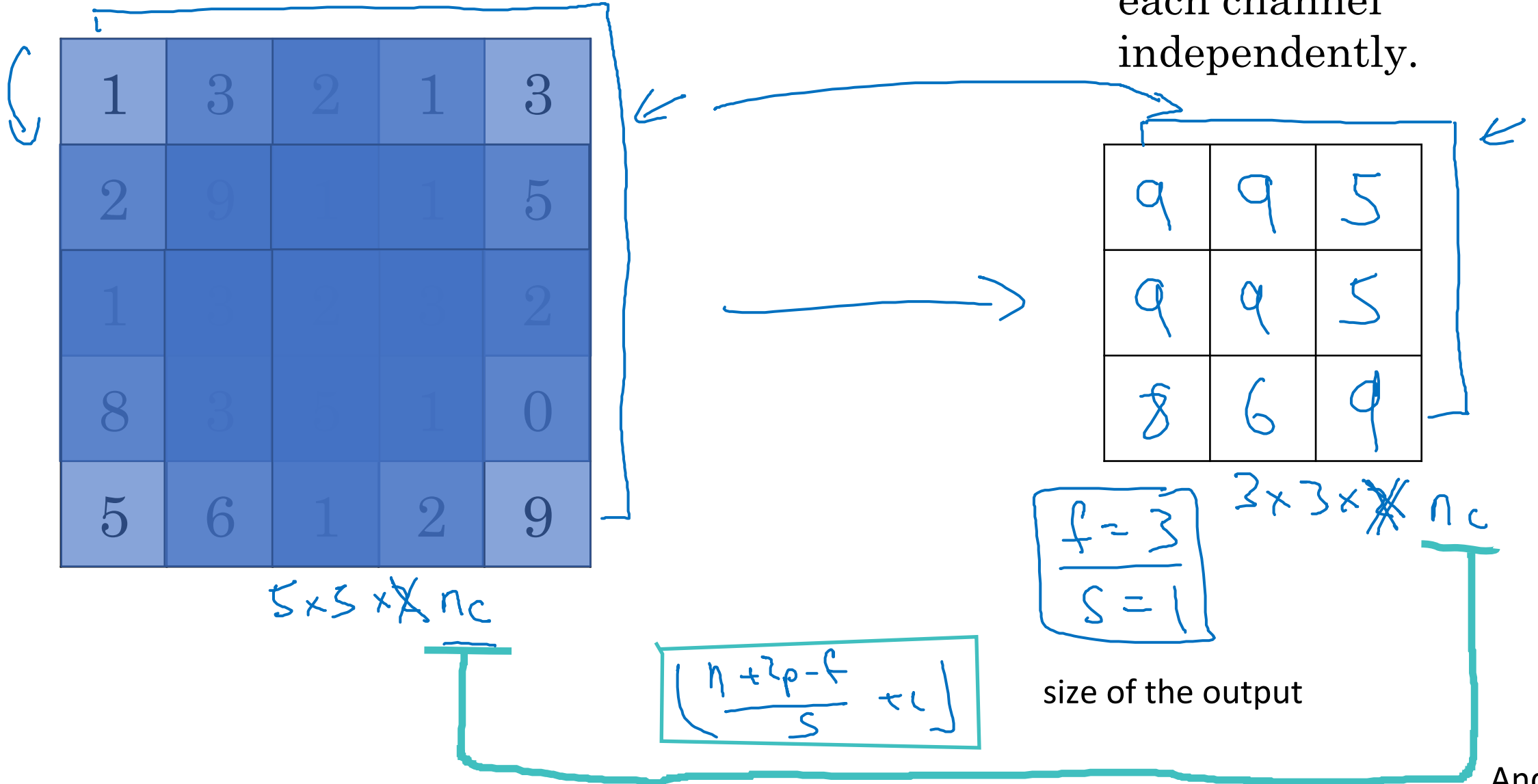
## Pooling layers

# Pooling layer: Max pooling

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


# Pooling layer: Max pooling

Max pooling is done for each channel independently.



# Pooling layer: Average pooling

1	3	2	1
2	9	1	1
1	4	2	3
5	6	1	2



3.75	1.25
4	2

$$f=2$$

$$s=2$$

$$\underline{7 \times 7 \times 1000} \rightarrow 1 \times 1 \times 1000$$

# Summary of pooling

## Hyperparameters:

f : filter size

s : stride

Max or average pooling

f=2, s=2  
f=3, s=2

~~⇒ p: padding.~~

default p = 0 ⇒ don't use padding.

No parameters to learn!

$$\begin{array}{c} n_H \times n_W \times \underline{n_C} \\ \downarrow \\ \left\lfloor \frac{n_H - f}{s} + 1 \right\rfloor \times \left\lfloor \frac{n_W - f}{s} + 1 \right\rfloor \\ \times \underline{n_C} \end{array}$$