

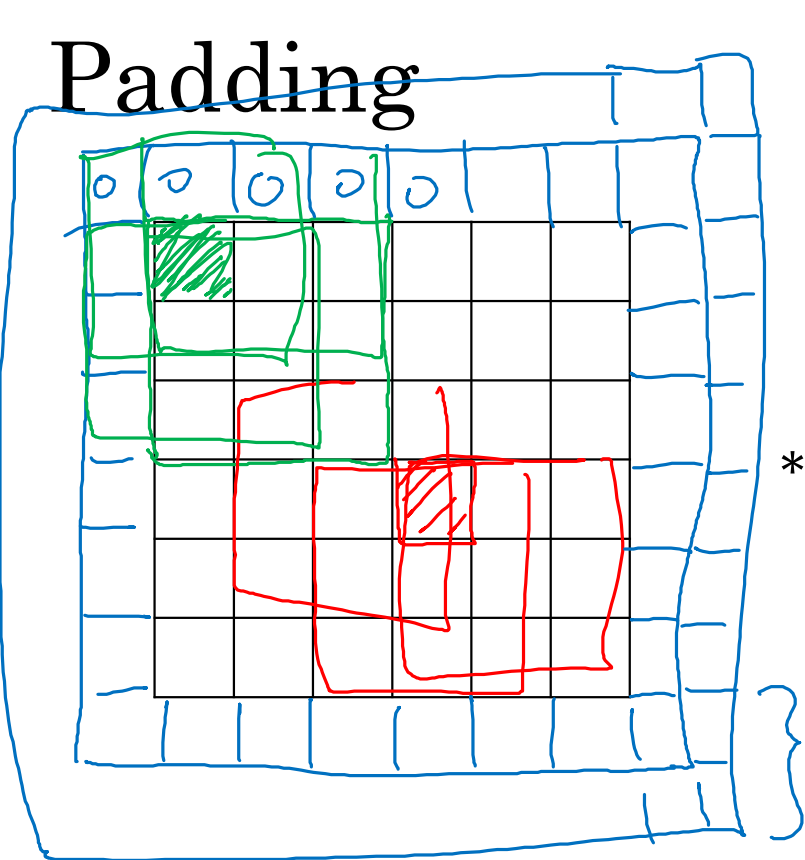


deeplearning.ai

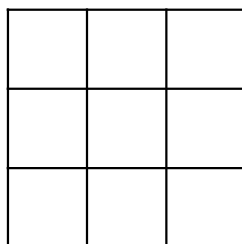
Convolutional Neural Networks

Padding

Padding



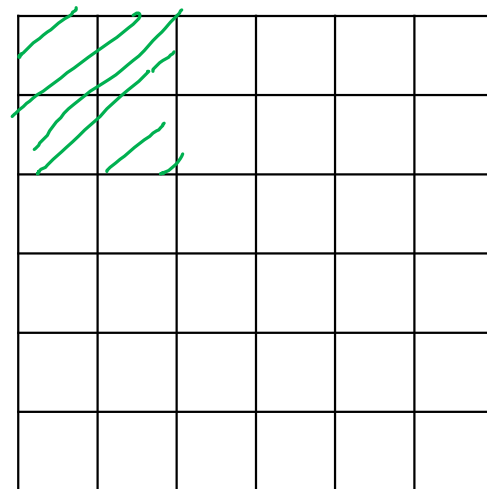
- shrinky output
- throw away info from edge



3x3
f x f

*

=



6x6

6x6 → 8x8
n x n

$$n - f + 1 \times n - f + 1$$

$$6 - 3 + 1 = 4$$

p = padding = 1

$$n + 2p - f + 1 \times n + 2p - f + 1$$

$$6 + 2 - 3 + 1 \times \text{---} = 6 \times 6$$

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Valid and Same convolutions

→ no padding

“Valid”: $n \times n$ \ast $f \times f$ \rightarrow $\frac{n-f+1}{1} \times n-f+1$
 6×6 \ast 3×3 \rightarrow 4×4

“Same”: Pad so that output size is the same as the input size.

$$n+2p-f+1 \times n+2p-f+1$$

$$\cancel{n+2p-f+1} = \cancel{n} \Rightarrow \boxed{p = \frac{f-1}{2}}$$

3×3 $p = \frac{3-1}{2} = 1$ | 5×5 $f=5$ $p=2$

f is usually odd

1×1
 3×3
 5×5
 7×7

