

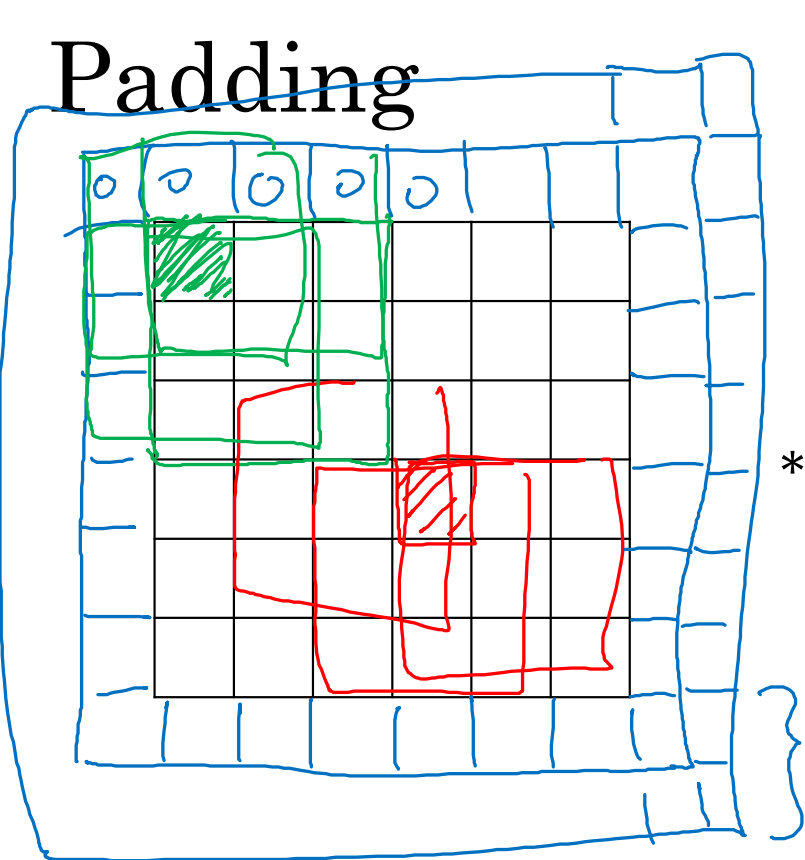


deeplearning.ai

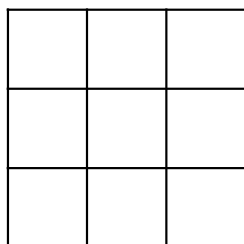
Convolutional Neural Networks

Padding

Padding

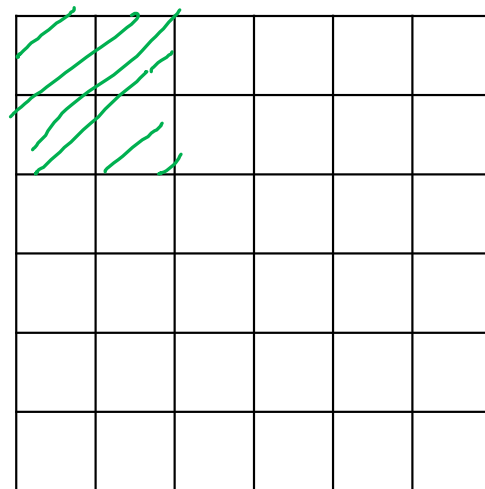


- shrinky output
- throw away info from edge



3x3
f x f

=



6x6

6x6 → 8x8
n x n

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

$$6 - 3 + 1 = 4$$

p = padding = 1

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

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

Andrew Ng

Valid and Same convolutions

→ no padding

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

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

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

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

$3 \times 3 \quad p = \frac{3-1}{2} = 1$ $5 \times 5 \quad f=5 \quad p=2$

f is usually odd

1x1
3x3
5x5
7x7

