



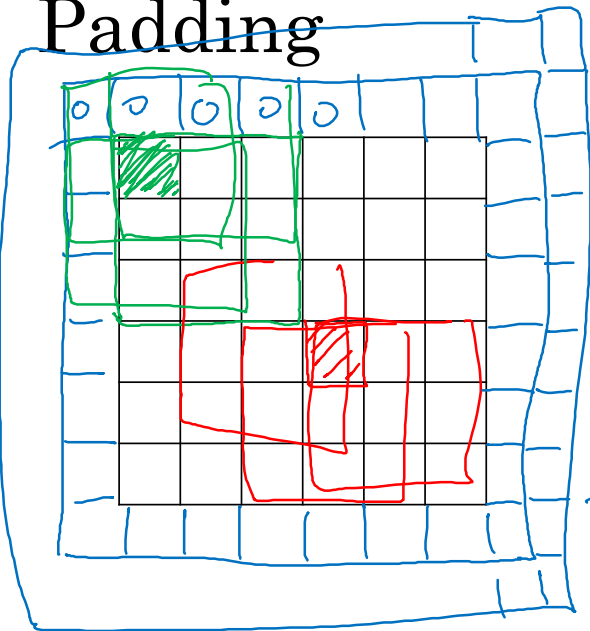
deeplearning.ai

Convolutional Neural Networks

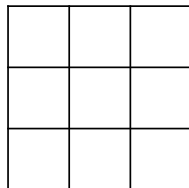
Padding

Padding

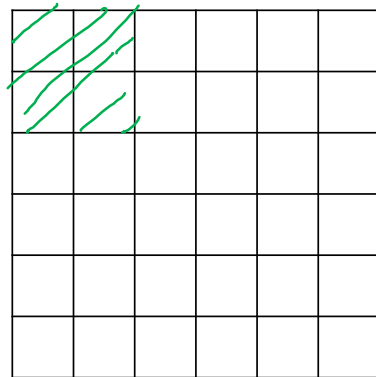
- shrinky output
- throw away info from edge } without p.



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=



3x3

f x f

p=2

6x6

6x6 → 8x8

n x n

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

$6 - 3 + 1 = 4$

p = padding = 1

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

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

Valid and Same convolutions

→ no padding

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

→ same size

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

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

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

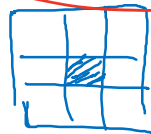
$$3 \times 3$$

$$p = \frac{3-1}{2} = 1$$

$$5 \times 5$$
$$f=5$$

$$p=2$$

f is usually odd



1x1
3x3
5x5
7x7