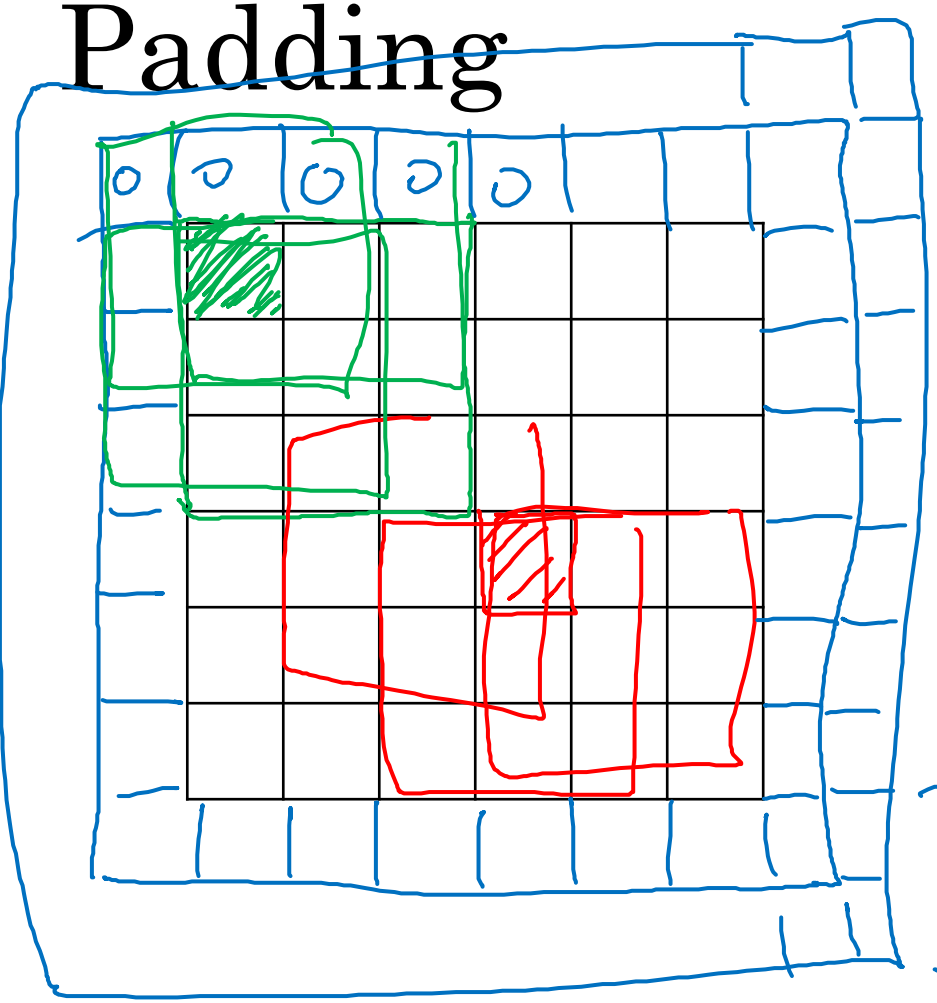
deeplearning.ai

Convolutional Neural Networks

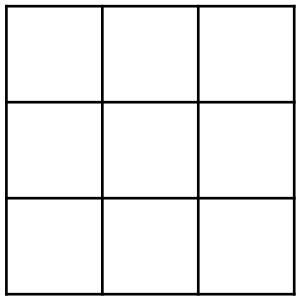
Padding

Padding



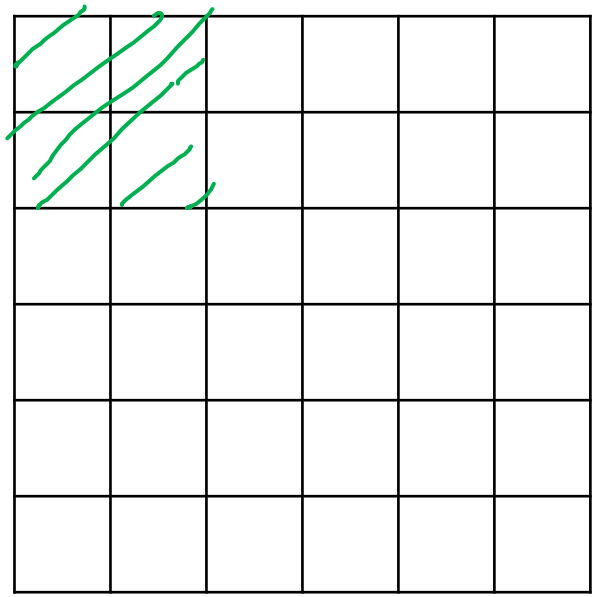
- shrinky output
- throw away info from edge

*



3×3
f×f

=



6×6

p=2

6×6 → 8×8
n×n

n-f+1 × n-f+1
6-3+1=4

~~4×4~~

p = padding = 1

n+2p-f+1 × n+2p-f+1
6+2-3+1 × ___ = 6×6

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Valid and Same convolutions

↳ no padding

"Valid": $n \times n \quad * \quad f \times f \quad \rightarrow \quad n-f+1 \times n-f+1$

$6 \times 6 \quad * \quad 3 \times 3 \quad \rightarrow \quad 4 \times 4$

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

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

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

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

$5 \times 5 \quad p = 2$

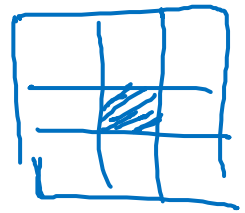
f is usually odd

1×1

3×3

5×5

7×7



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