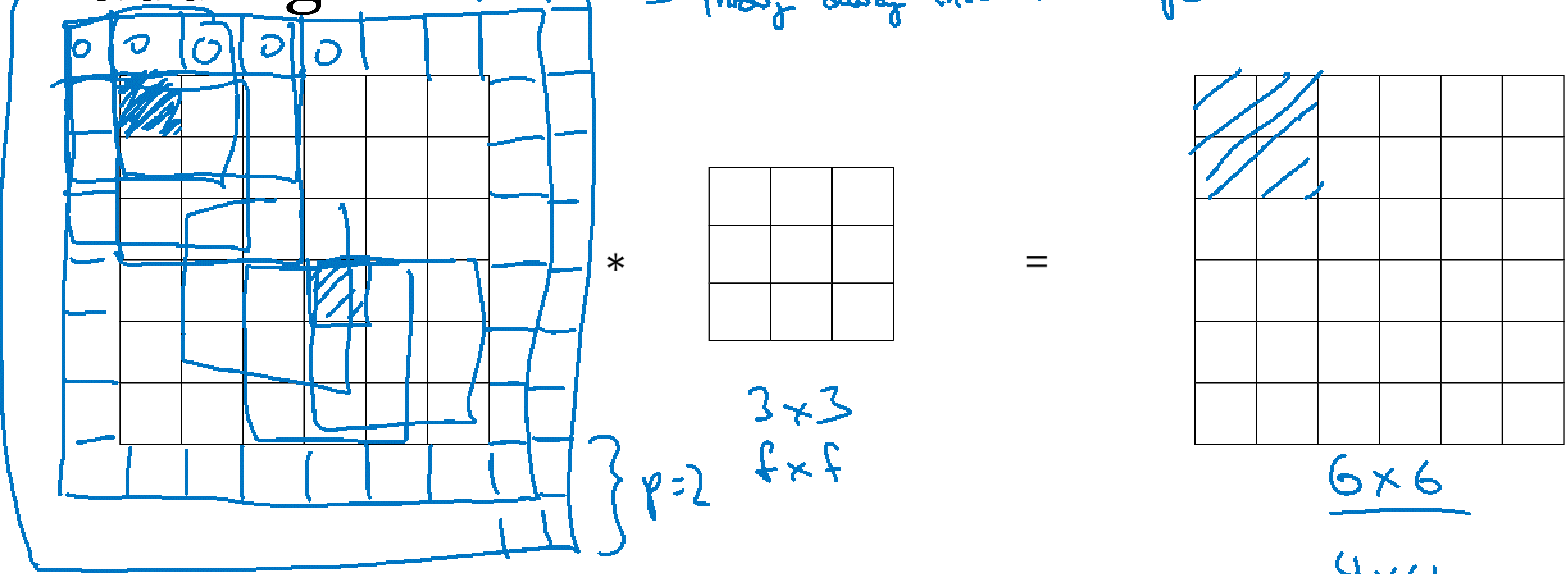
deeplearning.ai

Convolutional Neural Networks

Padding

Padding

- shrinking output
- throw away info from edge



$6 \times 6 \rightarrow 8 \times 8$

$n \times n$

$n-f+1 \times n-f+1$ → ~~4×4~~

$6-3+1=4$

p = padding = 1

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

$6+2-3+1 \times$ ___ $= 6 \times 6$

Valid and Same convolutions

↳ no padding

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

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

"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

1x1
3x3
5x5
7x7