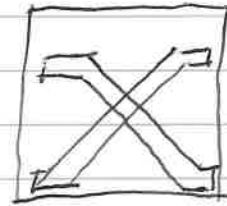
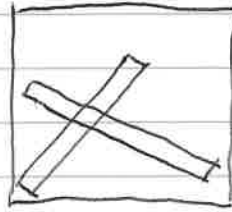


# CNN

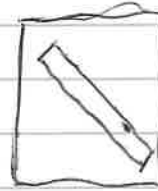
10/7/2021

## convolutional NN



0	0	0	0	0	0	0	0
	1					1	0
		1					0
			1	1			0
				1	1		0
		1			1		0
	1					1	0
							0

8x8



3x3

1	0	0
0	1	0
0	0	1

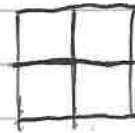
3x3

convolution kernel

Inner product:  $0 \times 1 + 0 \times 0 + 0 \times 0 + 0 \times 0 + 1 \times 1 + \dots = 2$

2		1		4	
	3		1		1
1		3		1	
	1		3		
1		1		2	
	1				1

6x6



2x2

3	1	1
1	3	1
1	1	2

3x3

Pool layer  $\downarrow$  max pooling

3	1	1
1	3	1
1	1	2

linear  $\rightarrow 4 \times 4$   
 $W_{4 \times 3} \cdot (3 \times 3) \times W_{3 \times 4}$

Activation  
 $\rightarrow$  ReLU  
 $\rightarrow$  Sigmoid

A typical CNN:

A Convolution layer + Pool layer

+ (linear layer + activation)

+ A convolution layer + Pool layer

+ . . .

