

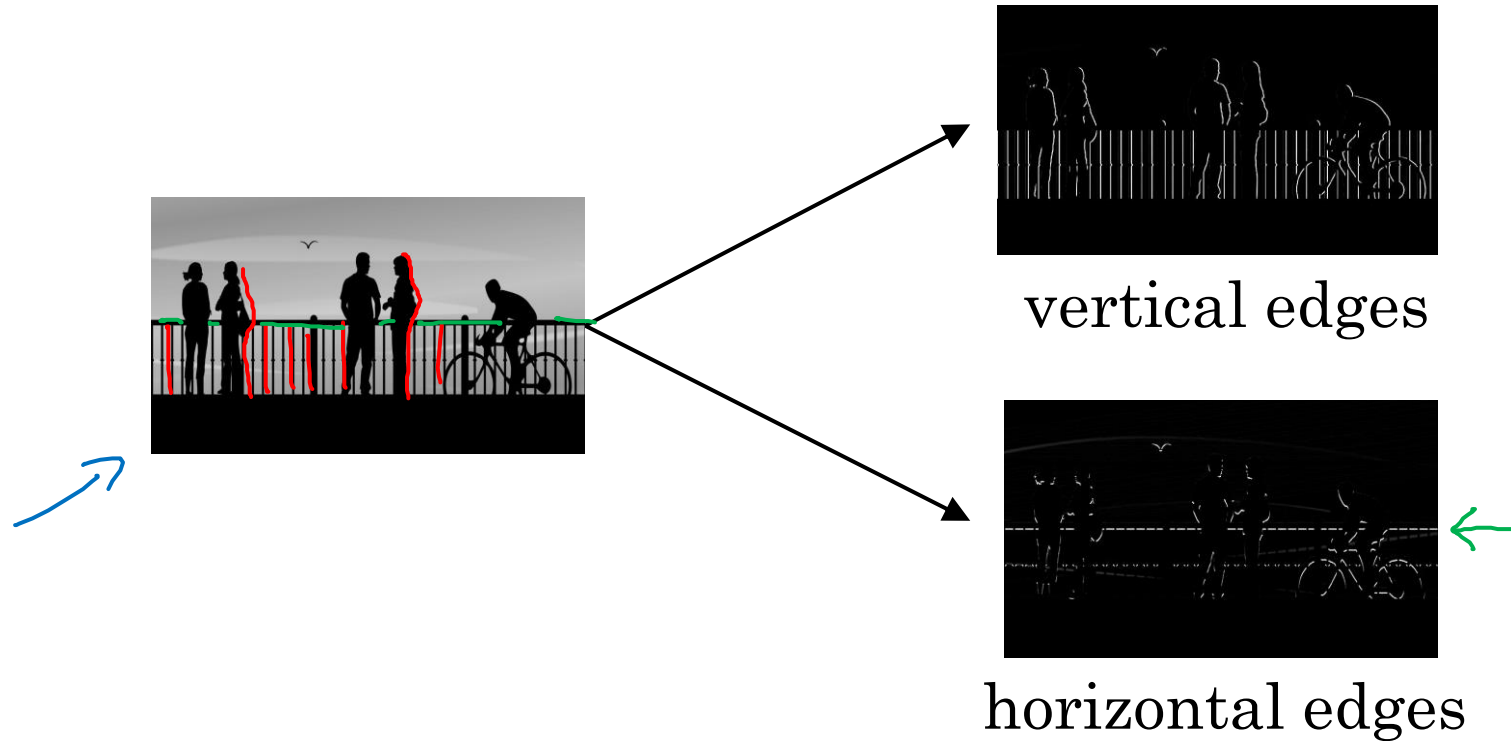
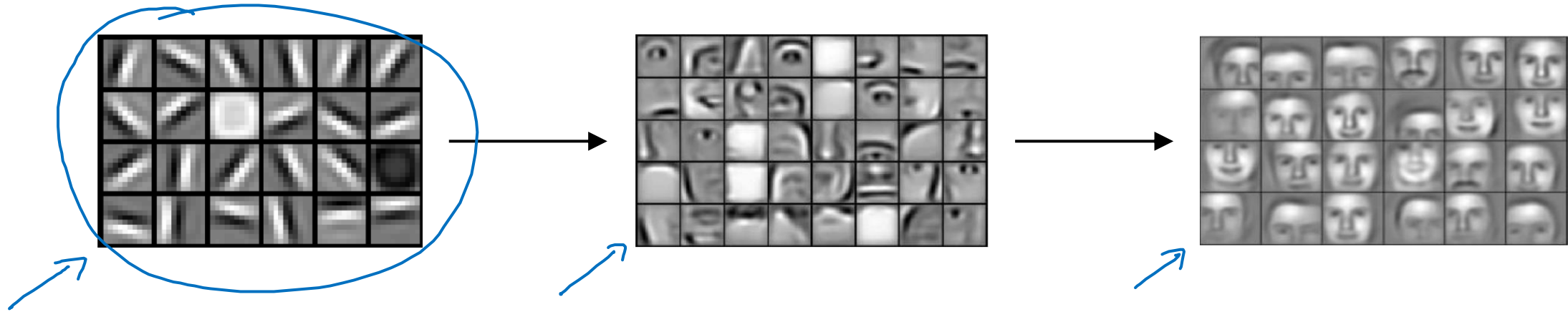


deeplearning.ai

Convolutional Neural Networks

Edge detection example

Computer Vision Problem

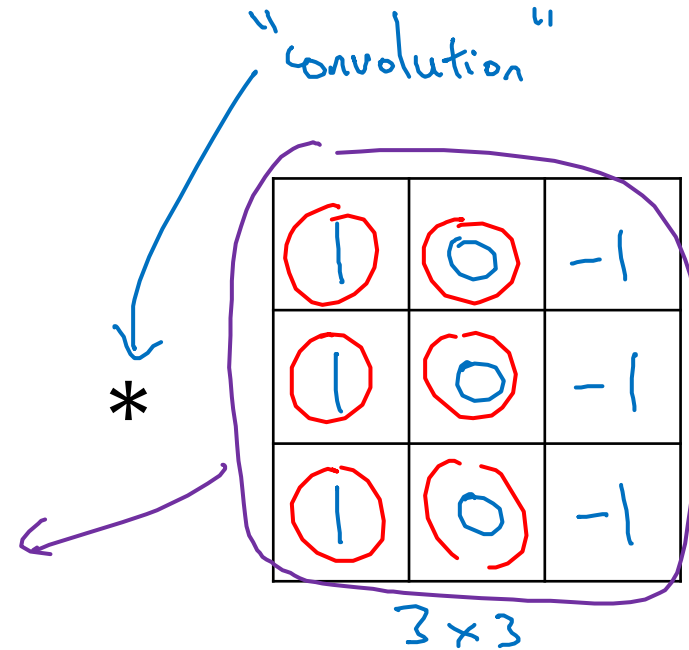


Vertical edge detection

$$\rightarrow 3 \times 1 + 1 \times 1 + 2 \times 1 + 0 \times 0 + 5 \times 0 + 7 \times 0 + 1 \times -1 + 8 \times -1 + 2 \times -1 = -5$$

3 ¹	0 ¹	1 ⁻¹	2 ⁻¹	7 ⁻⁰	4 ⁻¹
1 ¹	5 ¹	8 ⁻¹	9 ⁻¹	3 ⁻⁰	1 ⁻¹
2 ¹	7 ¹	2 ⁻¹	5 ⁻¹	1 ⁻⁰	3 ⁻¹
0 ¹	1 ¹	3 ⁻¹	1 ⁻¹	7 ⁻⁰	8 ⁻¹
4	2	1	6	2	8
2	4	5	2	3	9

6x6



=

-5	-4	0	8
-10	-2	2	3
0	-2	-4	-7
-3	-2	-3	-16

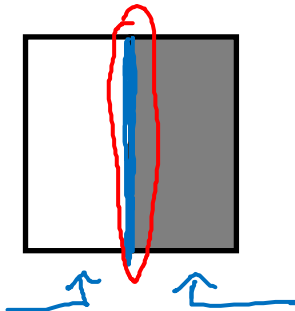
4x4

Vertical edge detection

↓ ↓

10	10	10	0	0	0
10	10	10	0	0	0
10	10	10	0	0	0
10	<u>10</u>	<u>10</u>	<u>0</u>	0	0
10	<u>10</u>	<u>10</u>	<u>0</u>	0	0
10	<u>10</u>	<u>10</u>	<u>0</u>	0	0

6x6



*

↓

1	0	-1
1	0	-1
1	0	-1

3x3

=

↓

0	30	30	0
0	30	30	0
0	30	30	0
0	30	30	0

4x4

*

