deeplearning.ai

Convolutional Neural Networks

Edge detection example

Computer Vision Problem
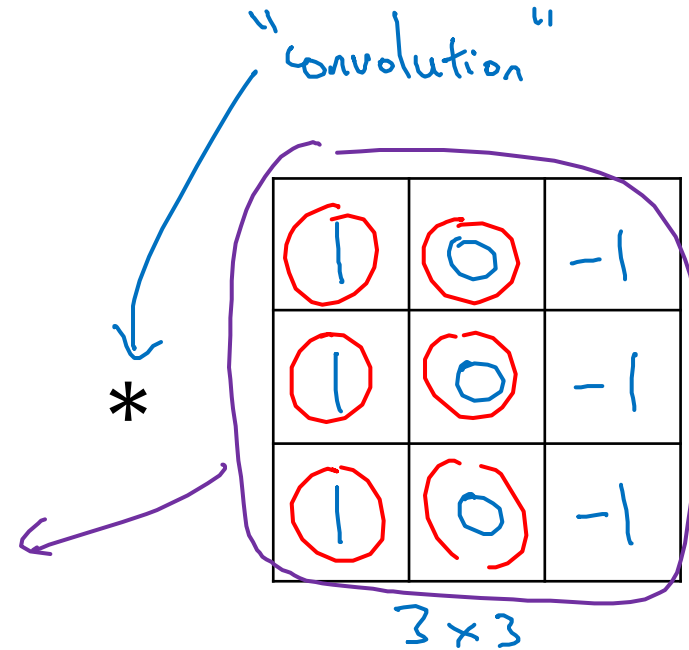

vertical edges

horizontal edges

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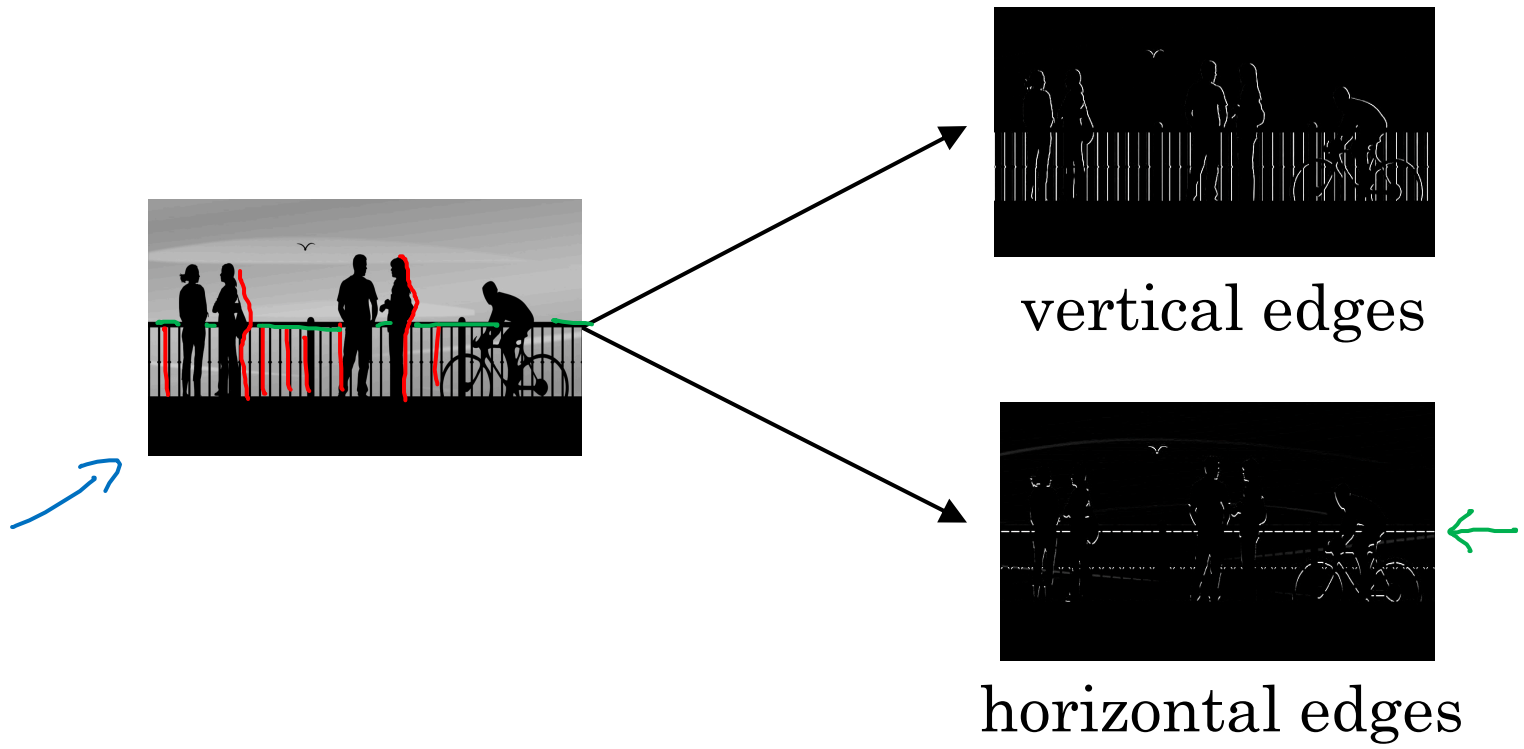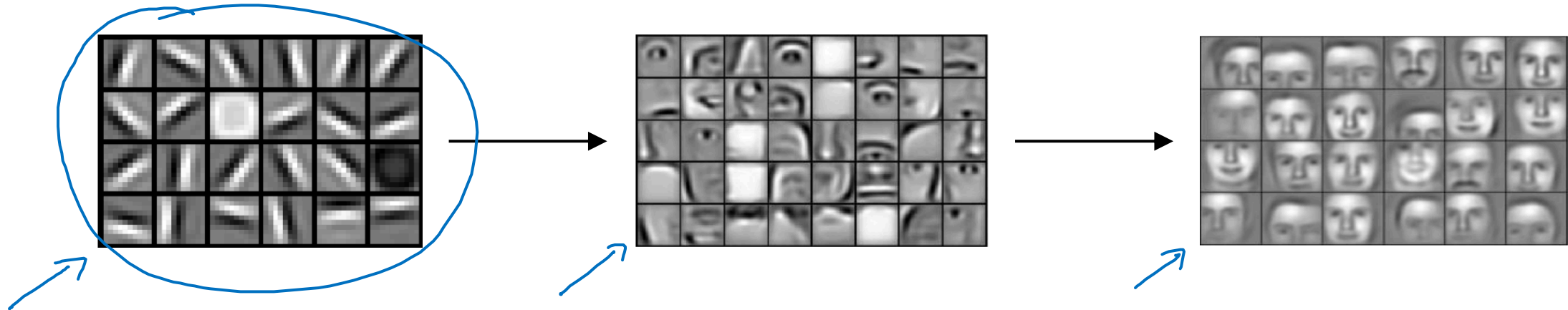
Vertical edge detection

$3\times1 + 1\times1 + 2\times1 + 0\times0 + 5\times0 + 7\times0 + 1\times7 + 8\times-1 + 2\times-1 = -5$

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

6 × 6

*

"convolution"

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

3 × 3

→ filter
kernel

=

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

4 × 4

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Vertical edge detection

10	10	10	0	0	0
10	10	10	0	0	0
10	10	10	0	0	0
10	10	10	0	0	0
10	10	10	0	0	0
10	10	10	0	0	0

6 x 6

$*$
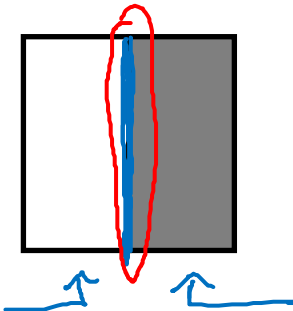
1	0	-1
1	0	-1
1	0	-1

3 x 3

$=$
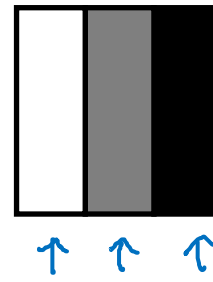
0	30	30	0
0	30	30	0
0	30	30	0
0	30	30	0

4 x 4

$*$

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