Case Studies

(Network in Network) and (1×1 convolutions)

deeplearning.ai

Why does a 1 × 1 convolution do?

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

$6 \times 6 \times 1$

$*$ $\boxed{2}$ $=$

2	4	6	...		

$32 \rightarrow$ # filters.
$n_c^{[\ell+1]}$

ReLu

Other filters

$6 \times 6 \times 32$ $*$ $1 \times 1 \times 32$

element wire product $\rightarrow$ ReLu

ReLU
Network in
Network

$6 \times 6 \times$ # filters

[Lin et al., 2013. Network in network]

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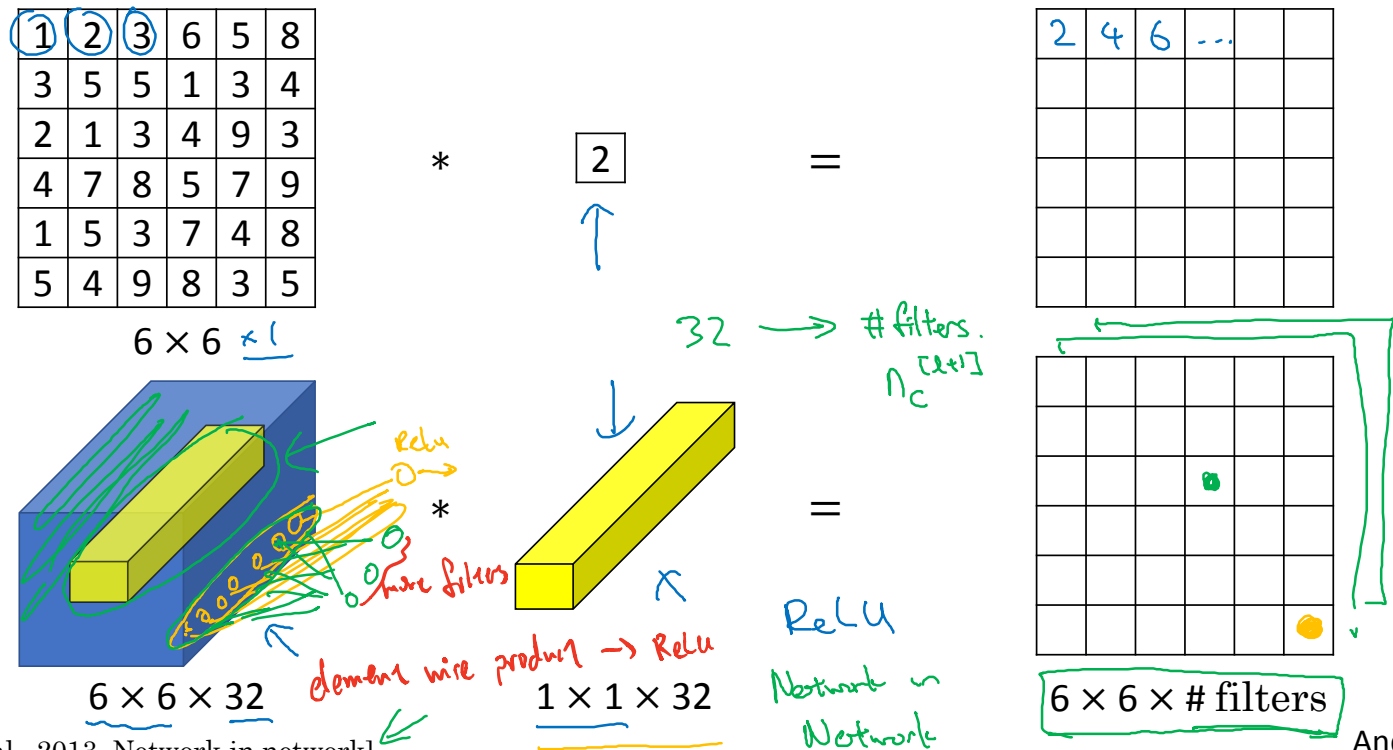
Using 1×1 convolutions (shrink the number of channels)

ReLU

CONV 1×1

~~32~~

192

$28 \times 28 \times$ ~~32~~ 192

$1 \times 1 \times 192$

32 filters.

n_H, n_W, n_c

$28 \times 28 \times 192$

[Lin et al., 2013. Network in network]

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