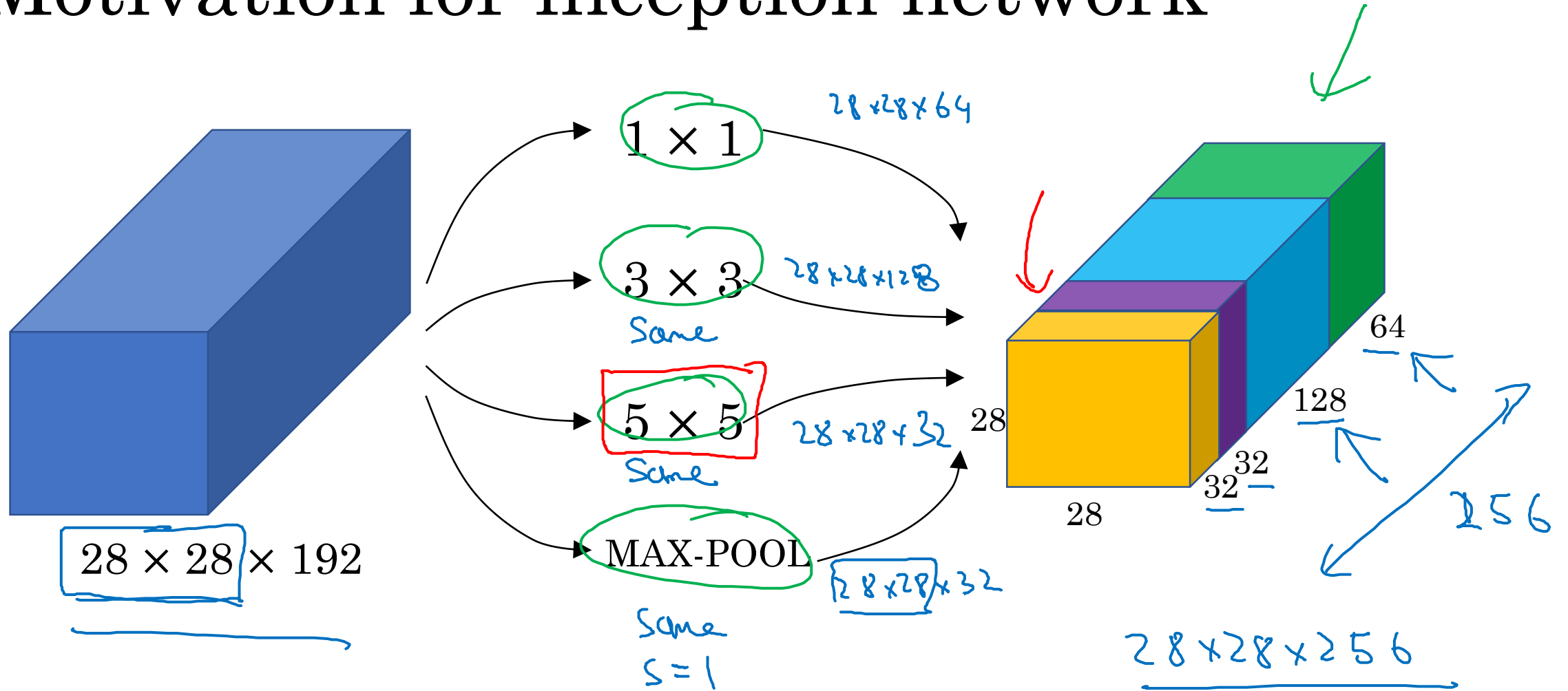deeplearning.ai

Case Studies

Inception network motivation

Motivation for inception network
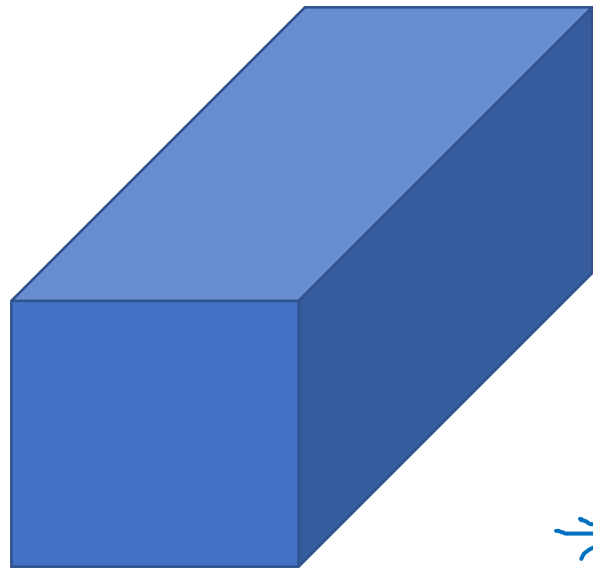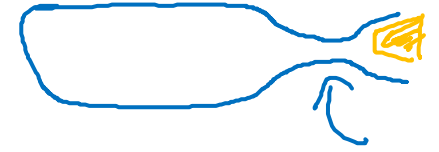

28 × 28 × 192

1 × 1   28×28×64

3 × 3   28×28×128
Same

5 × 5   28×28×32
Same

MAX-POOL   28×28×32
Same
S=1

28
28   32   32   128   64

256

28×28×256

[Szegedy et al. 2014. Going deeper with convolutions]

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The problem of computational cost

CONV
5 × 5,
same,
32

28 × 28 × 192

28 × 28 × 32

32 filters.   filters are 5×5×192.

28×28×32 × 5×5×192 = 120M.

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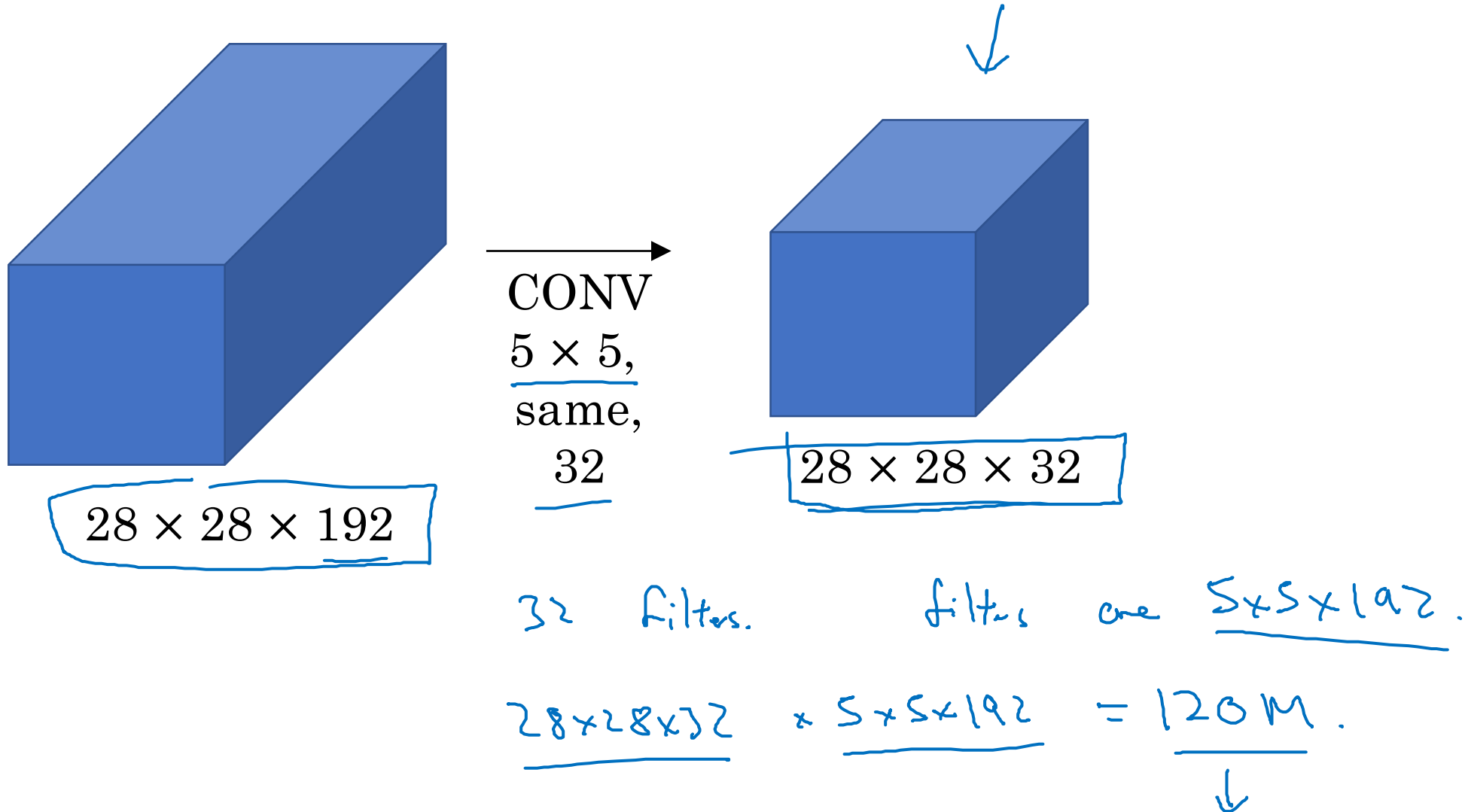
Using 1×1 convolution

"bottleneck layer"

CONV
1 × 1,
16,
1 × 1 × 192

28 × 28 × 192
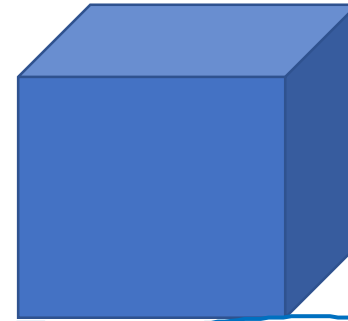
28 × 28 × 16

CONV
5 × 5,
32,
5 × 5 × 16
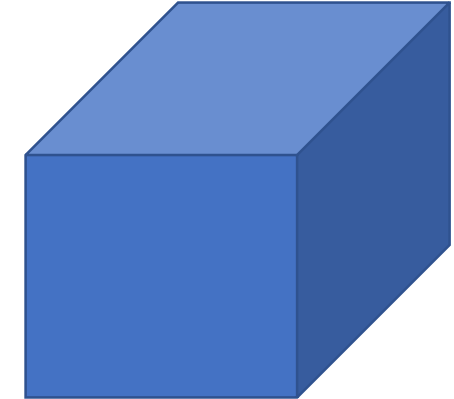
28 × 28 × 32

$28 \times 28 \times 16 \times 192 = 2.4M$

$28 \times 28 \times 32 \times 5 \times 5 \times 16 = 10.0M$

$12.4M$

$120M \rightarrow 12.4M$

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