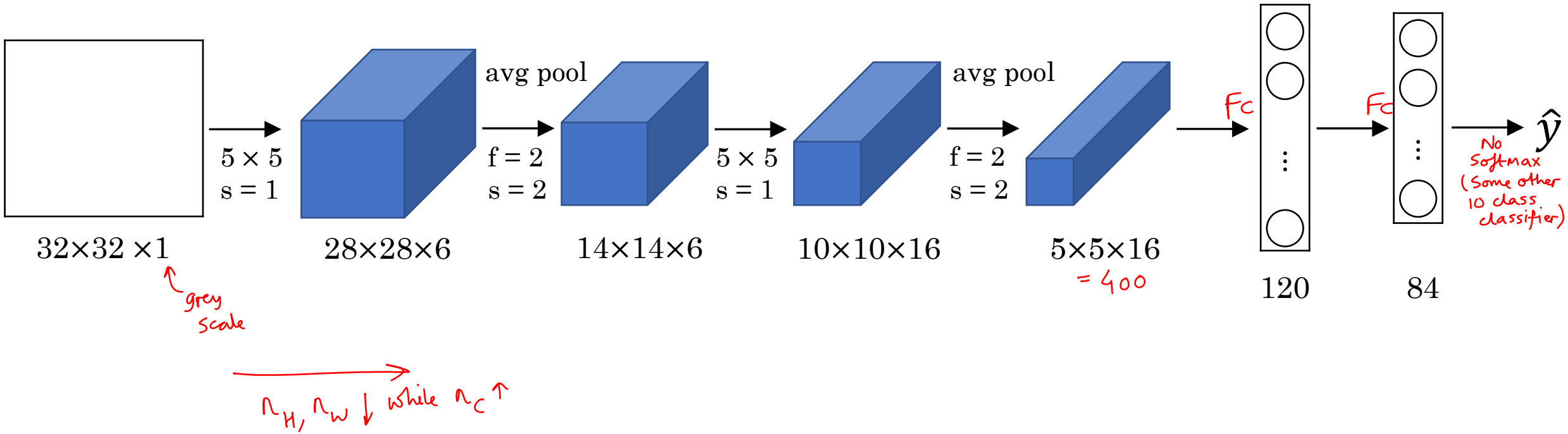
deeplearning.ai

Case Studies

Classic networks

LeNet - 5 (Recognize Hand written digits)

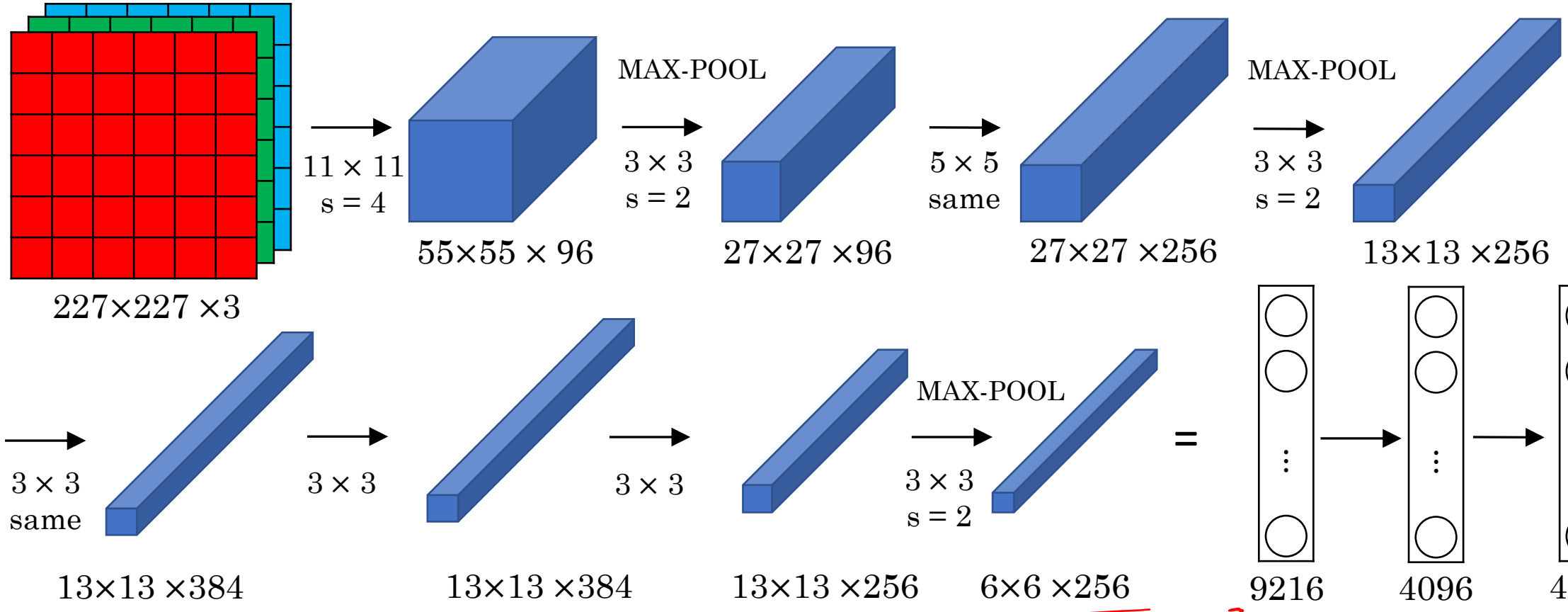


- Paper used sigmoid/tanh over Relu
- uses sigmoid non-linearity after pooling

Focus on section II & III

[LeCun et al., 1998. Gradient-based learning applied to document recognition]

AlexNet (Easier to Read Paper)



- This used Relu
- Trained on multiple GPUs (GPUs were slow back then so had to parallelize)

[Krizhevsky et al., 2012. ImageNet classification with deep convolutional neural networks]

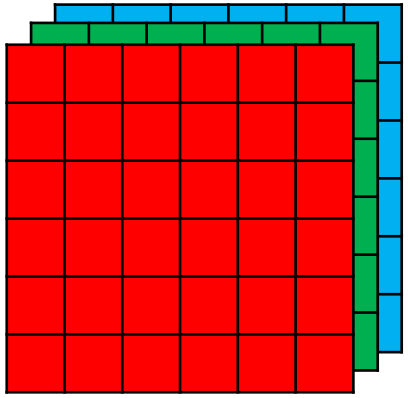
VGG - 16

Fix this

CONV = 3×3 filter, s = 1, same

MAX-POOL = 2×2 , s = 2

Becomes easier to Implement model



224×224 ×3

→ 224×224×64 [CONV 64] ×2 (# filters; # conv layers)

→ 112×112 ×64 POOL

→ 112×112 ×128 [CONV 128] ×2

→ 56×56 ×128 POOL

→ 56×56 ×256 [CONV 256] ×3

→ 28×28 ×256 POOL

→ 28×28 ×512 [CONV 512] × 3

→ 14×14×512 POOL

→ 14×14 ×512 [CONV 512] ×3

→ 7×7×512 POOL

→ FC 4096

→ FC 4096

→ Softmax 1000

$n_H, n_w \downarrow \quad n_c \uparrow$

≈ 138 M params
- simple & uniform
- VGG-16 → # layers

[Simonyan & Zisserman 2015. Very deep convolutional networks for large-scale image recognition]

Andrew Ng