Lecture 5

Terms:

Filter size — F, padding # — P

stride — S, Filter # - D

D=1, input image is W x W

out size is $\frac{(W - F + 2P)}{S} + 1$

W = 100, filter size F = 5, P = 0, S = 1

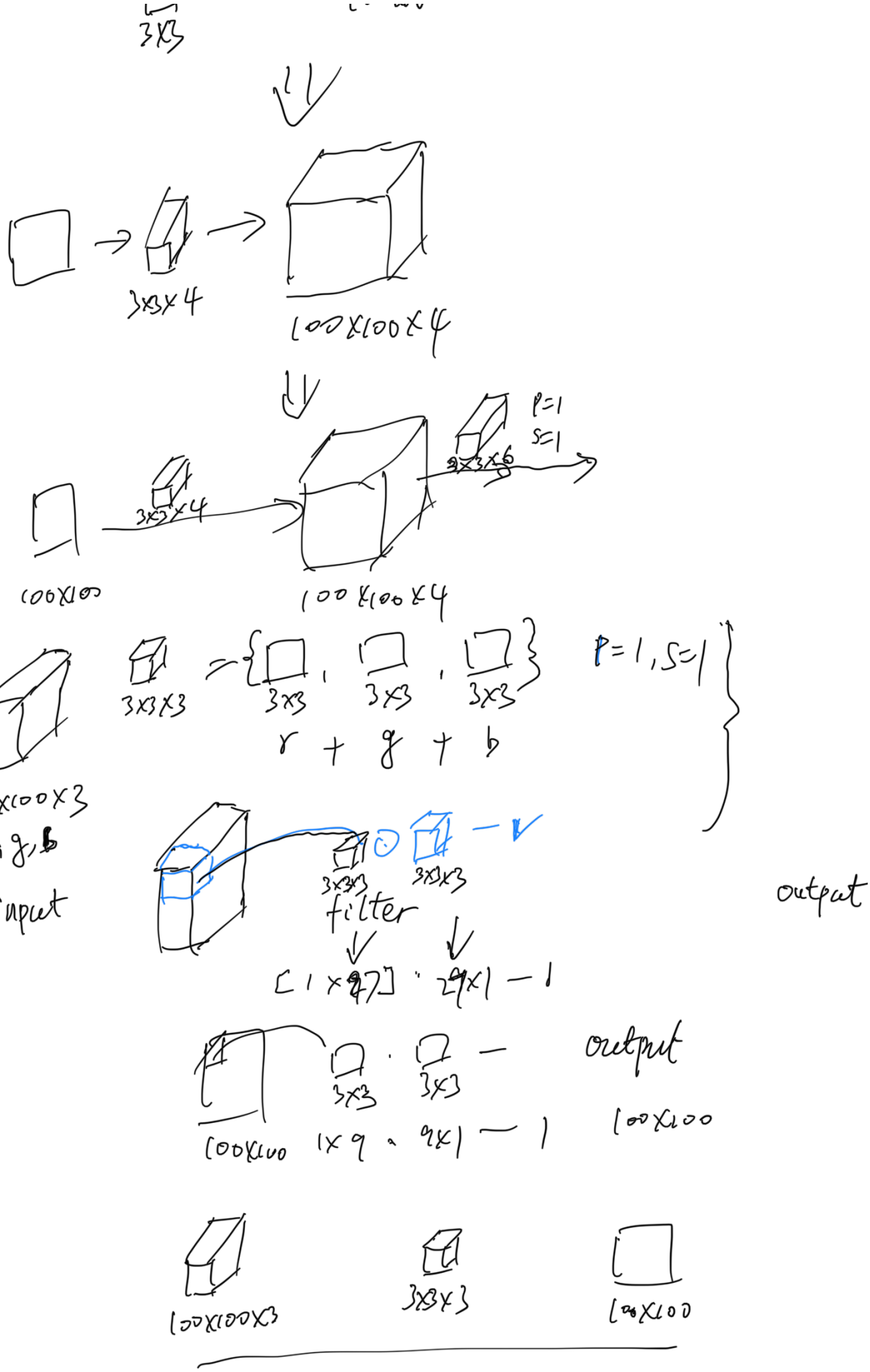
output size $\frac{100 - 5}{1} + 1 = 96$

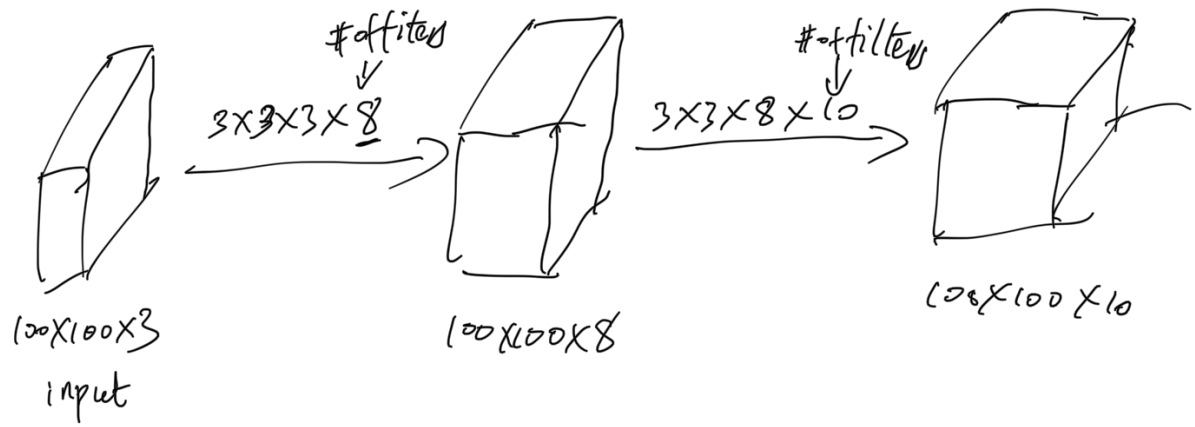
output image is 96 x 96

P = 2

$100 - 5 + 4 + 1 = 100$

Filter # — D

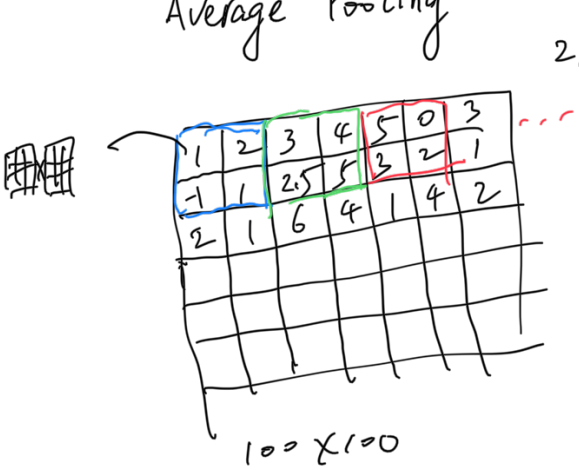

3X3
3X3X4
100X100X4
P=1
S=1
3X3X6
100X100
100X100X4
3X3X3
3X3
3X3
3X3
r + g + b
100X100X3
r, g, b
input
3X3X3
filter
[1X9] · [9X1] = 1
output
100X100
100X100
1X9 · 9X1 = 1
100X100X3
3X3X3
100X100

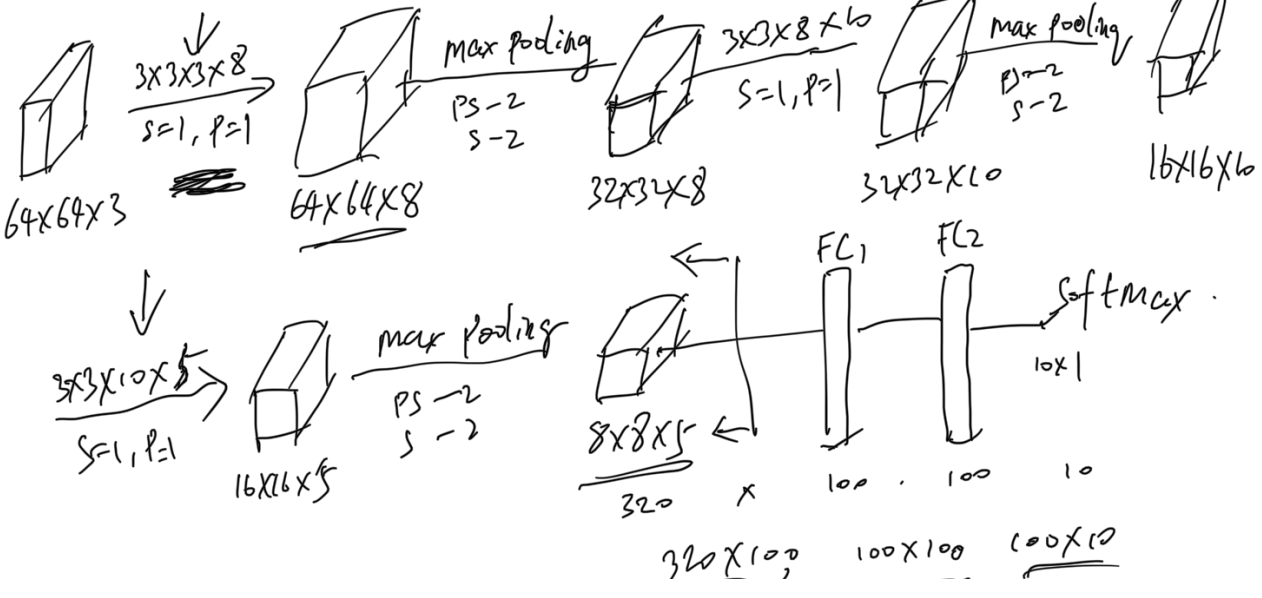


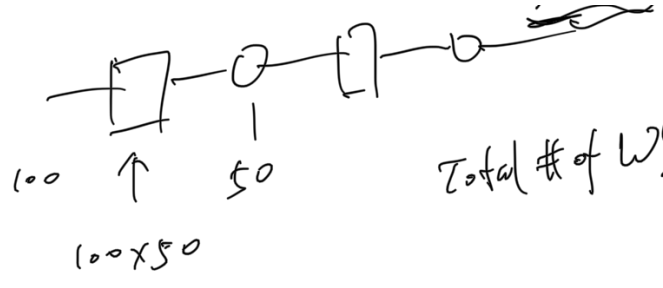
- Pooling

max pooling

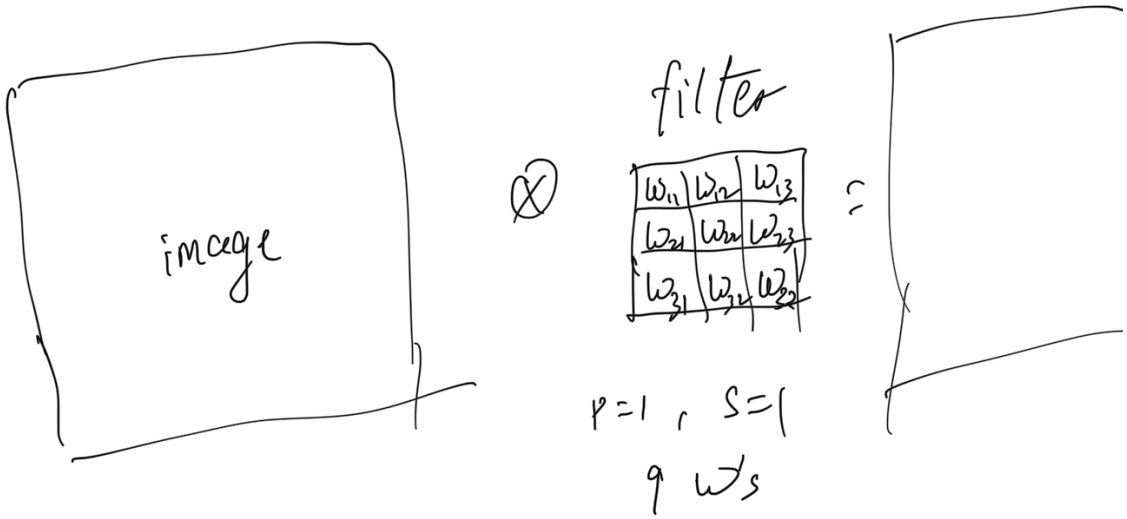
Average Pooling



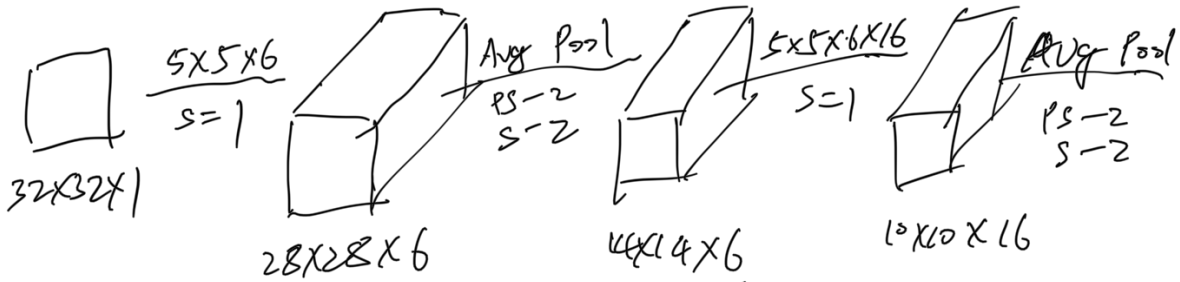


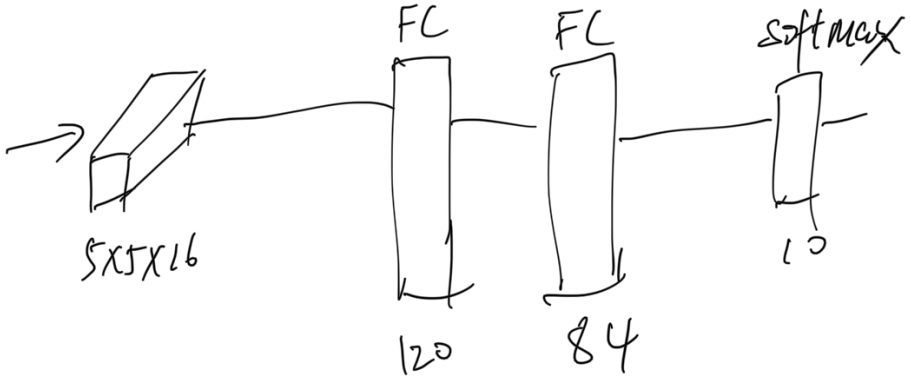


Total # of W's = $\begin{cases} 3\times3\times3\times8 \\ 3\times3\times8\times10 \\ 3\times3\times10\times5 \\ 320\times100 \\ 100\times100 \\ 100\times10 \end{cases}$

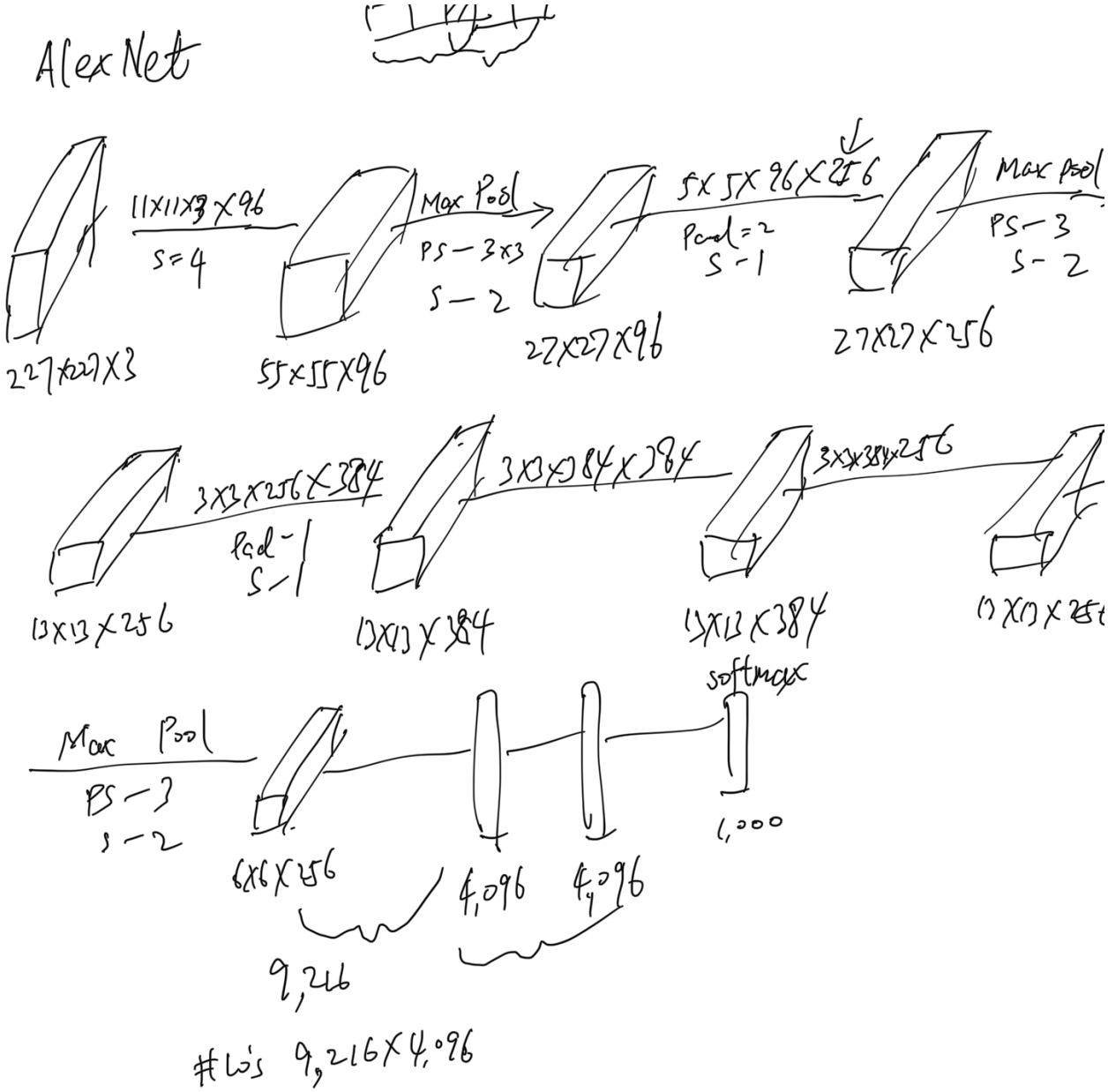


LeNet



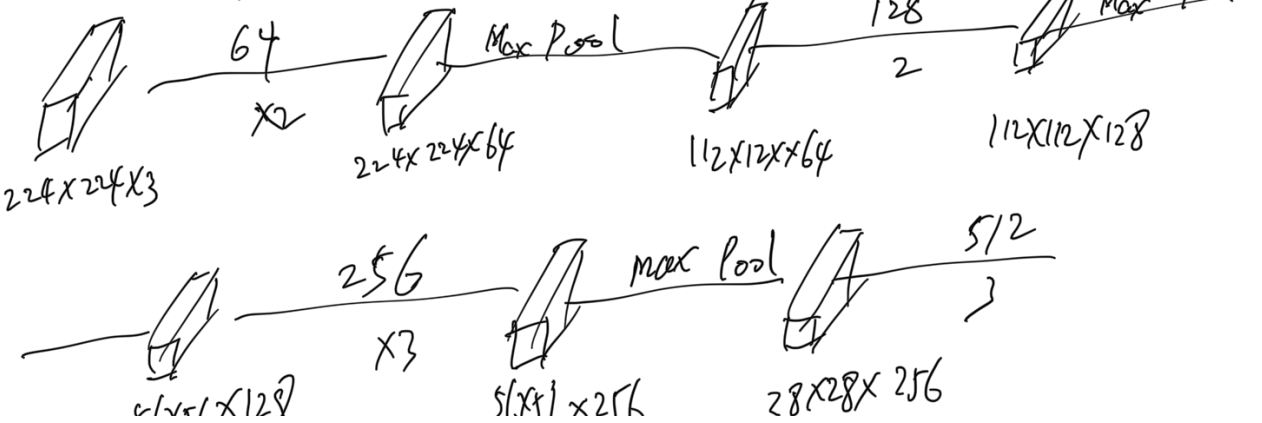


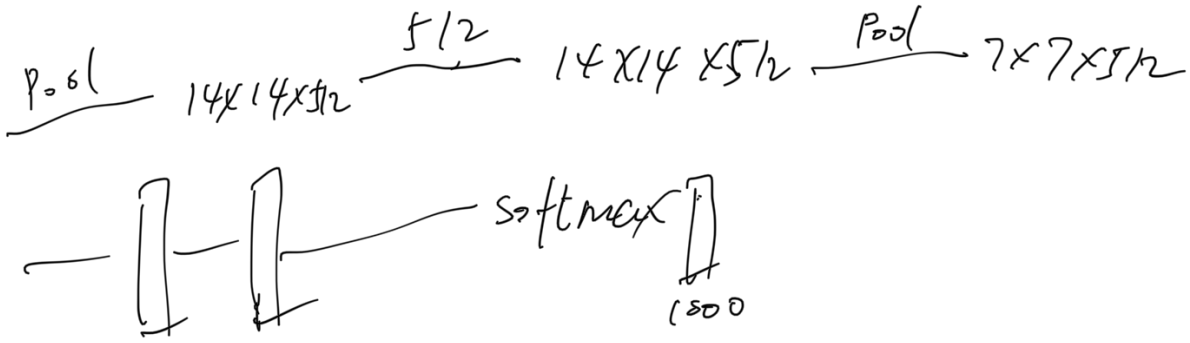
AlexNet



VGG-16

filter size — 3x3, P=1, S=1, Max Pool: PS-2, S-2




Pool
14X14X512
512
14X14X512
Pool
7X7X512
Softmax
1000