Exercise Set 6

1. Count number of parameters in a NN

Inputs: $\underbrace{64 \cdot 64 \cdot 3}_{12288}$ of two categories of traffic signs

1st layer: 100 nodes $= l_1$
2nd " : 100 " $= l_2$
3rd " : 10 " (one for each class) $= l_3 =$

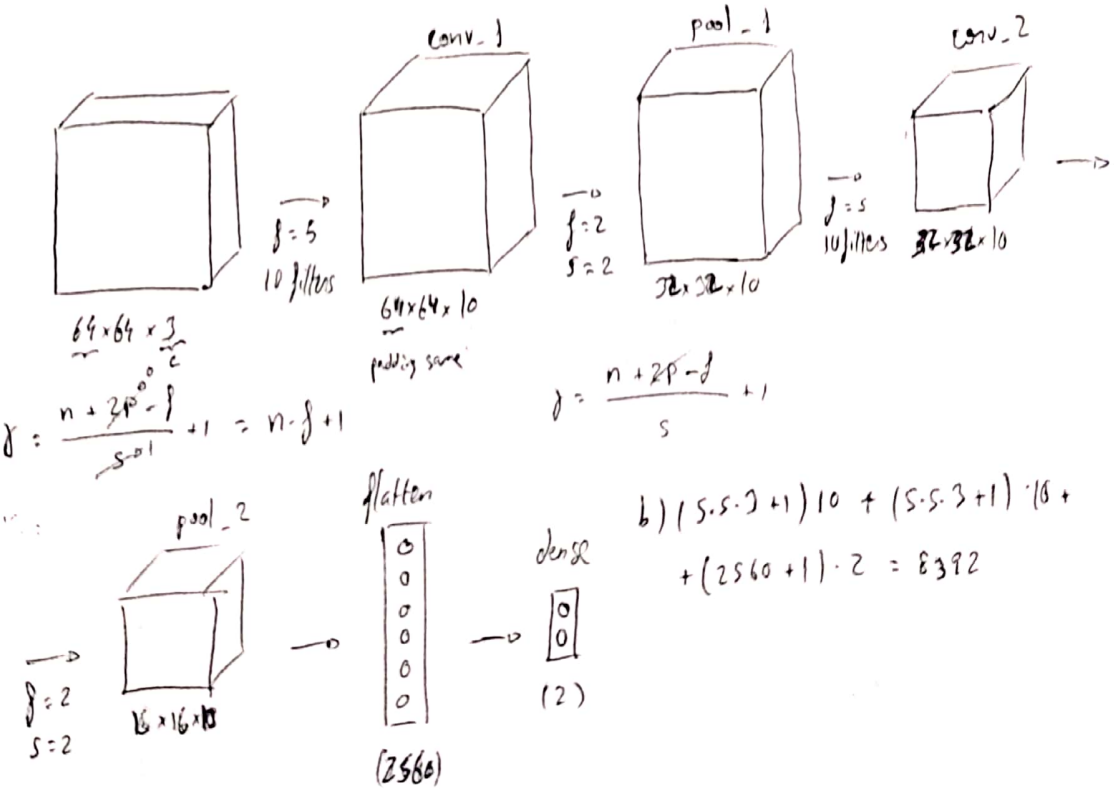
Fully connected

Parameters: $W^{[l]}, b^{[l]}$

$$\#\text{parameters} = \underbrace{(12288 \cdot 100 + 100 \cdot 100 + 100 \cdot 10)}_{W} + \underbrace{(100 + 100 + 10)}_{b} =$$

$$= 1240010$$

2.



$$n' = \frac{n + 2p^{0} - f}{s^{=1}} + 1 = n - f + 1$$

$$n' = \frac{n + 2p - f}{s} + 1$$

b) $(5 \cdot 5 \cdot 3 + 1)10 + (5 \cdot 5 \cdot 3 + 1) \cdot 10 +$
$+ (2560 + 1) \cdot 2 = 8392$

parameters_convolutional_layer $= W_c + B_c = f^2 c_{\text{(previous)}} (\#\text{filters}) + \text{filters}$