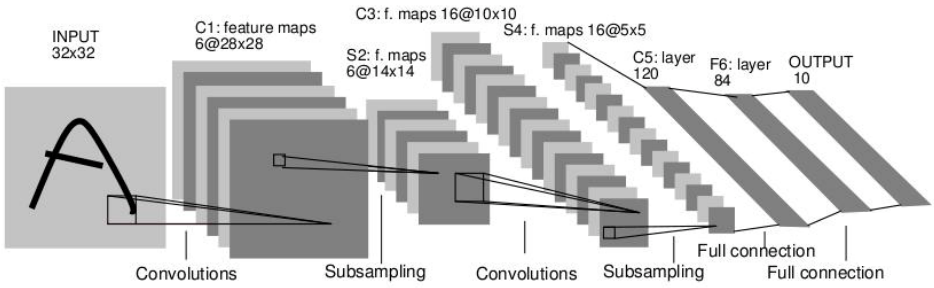
ISTD 50.035
Computer Vision
2020

Tutorial exercise (topics: Deep learning, CNN)

Note: Use natural logarithm, i.e., logarithm to the base of e, unless specified otherwise.

Q.1

Consider the following CNN model:



Determine the number of trainable parameters in this model.

Trainable parameters are from:
(1) Filter Kernels
(2) Fully-connected Layer

For filter kernels, three things to consider (parameters when using filter):
(1) Filter size
(2) Stride size
(3) Padding

Assume stride size = 1 (when stride=2, we are downsampling image into 2) and no padding.
** sub-sampling (or pooling) -> apply to individual activation map independently thats why we still have 6x after sub-sampling.*
** sub-sampling has no trainable parameters*

(1) conv --> 6 filter kernels with filter size = 5x5x1 ----- (5x5x**1**) x6
(2) conv --> 16 filter kernels with filter size = 5x5x6 ----- (5x5x**6**) x16
(3) FC --> 120 x (16x5x5)
(4) FC --> 120 x 84
(5) FC --> 84 x 10

Total number of trainable parameters = **61 470**