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[Quiz: The Basics of ConvNets](#)

10 questions

- Programming Assignments
- Heroes of Deep Learning (Optional)

The Basics of ConvNets

Quiz 50 minutes • 50 min

Submit your assignment

Due May 2, 1:59 PM +07 May 2, 1:59 PM +07

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The Basics of ConvNets

Graded Quiz • 50 min

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The Basics of ConvNets

Latest Submission Grade 100%

1.

Question 1

What do you think applying this filter to a grayscale image will do?

$$\begin{bmatrix} -1 & -12 & -12 & 12 & 11 \end{bmatrix}$$

1 / 1 point

Expand

Correct

Correct. Notice that there is a high delta between the values in the top left part and the ones in the bottom right part. When convolving this filter on a grayscale image, the edges forming a 45-degree angle with the horizontal will be detected.

2.

Question 2

Suppose your input is a 128 by 128 grayscale image, and you are not using a convolutional network. If the first hidden layer has 256 neurons, each one fully connected to the input, how many parameters does this hidden layer have (including the bias parameters)?

1 / 1 point

Expand

Correct

Correct, the number of inputs for each unit is 128×128 since the input image is grayscale, so we need $128 \times 128 \times 256$ parameters for the weights and 256 parameters for the bias thus $128 \times 128 \times 256 + 256 = 4194560$.

3.

Question 3

Suppose your input is a 256 by 256 grayscale image, and you use a convolutional layer with 128 filters that are each 3×3 . How many parameters does this hidden layer have (including the bias parameters)?

1 / 1 point

Expand

Correct

Yes, since the input volume has only one channel each filter has $3 \times 3 + 1$ weights including the bias, thus the total is $(3 \times 3 + 1) \times 128$.

4.

Question 4

You have an input volume that is $121 \times 121 \times 16$, and convolve it with 32 filters of 4×4 , using a stride of 3 and no padding. What is the output volume?

1 / 1 point

Expand

Correct

Correct, using the formula $n[l]H = n[l-1]H + 2 \times p - fs + 1$ with $n[l-1]H = 121$, $p = 0$, $f = 4$, and $s = 3$ we get 40

5.

Question 5

You have an input volume that is $31 \times 31 \times 32$, and pad it using "pad=1". What is the dimension of the resulting volume (after padding)?

1 / 1 point

Expand

Correct

Yes, if the padding is 1 you add 2 to the height dimension and 2 to the width dimension.

6.

Question 6

You have an input volume that is $63 \times 63 \times 16$, and convolve it with 32 filters that are each 7×7 , and stride of 1. You want to use a "same" convolution. What is the padding?

1 / 1 point

Expand

Correct

Correct, you need to satisfy the following equation: $nH - f + 2 \times p + 1 = nH$ as you want to keep the dimensions between the input volume and the output volume.

7.

Question 7

You have an input volume that is 128x128x12, and apply max pooling with a stride of 4 and a filter size of 4. What is the output volume?

1 / 1 point