Congratulations! You passed!

Grade

received 100%

Latest Submission Grade 100%

To pass 80% or

higher

Go to next item

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

1/1 point

$$\begin{bmatrix} 0 & 1 & -1 & 0 \\ 1 & 3 & -3 & -1 \\ 1 & 3 & -3 & -1 \\ 0 & 1 & -1 & 0 \end{bmatrix}$$

- Oetect horizontal edges
- Detect 45 degree edges
- Detect image contrast
- Detect vertical edges



✓ Correct

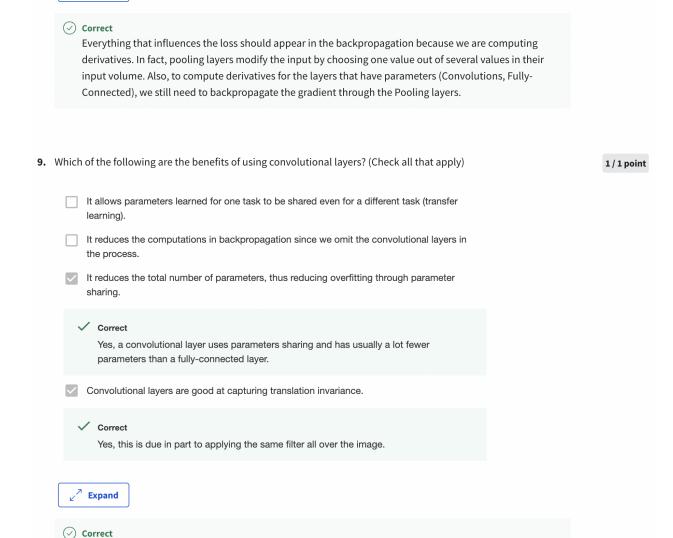
Correct! As you can see the difference between values from the left part and values from the right of this filter is high. When convolving this filter on a grayscale image, the vertical edges will be detected.

2.	Suppose your input is a 300 by 300 color (RGB) image, and you are not using a convolutional network. If the first hidden layer has 100 neurons, each one fully connected to the input, how many parameters does this hidden layer have (including the bias parameters)?	1/1 point
	9,000,001	
	27,000,001	
	27,000,100	
	9,000,100	
	∠ ⁷ Expand	
	\bigcirc correct Correct, the number of weights is $300 \times 300 \times 3 \times 100 = 27,000,000$, when you add the bias terms (one per neuron) you get 27,000,100.	
2	Suppose your input is a 256 by 256 grayscale image, and you use a convolutional layer with 128 filters that are	1/1
٥.	each 3×3 . How many parameters does this hidden layer have (including the bias parameters)?	1/1 point
	O 1152	
	1280	
	75497600	
	Expand	
	\bigcirc 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.	You have an input volume that is 63x63x16, and convolve it with 32 filters that are each 7x7, using a stride of 2 and no padding. What is the output volume?	1/1 point
	16x16x32	
	29x29x32	
	16x16x16	
	∠ ⁷ Expand	
	\bigcirc Correct Yes, $\frac{63-7+0\times2}{2}+1=29$ and the number of channels should match the number of filters.	
5.	You have an input volume that is 61x61x32, and pad it using "pad=3". What is the dimension of the resulting volume (after padding)?	1/1 point
	○ 61x61x35	
	○ 64x64x32	
	○ 64x64x35	
	∠ [™] Expand	

	✓ Correct Yes, if the padding is 3 you add 6 to the height dimension and 6 to the width dimension.	
6.	You have an input volume that is 63x63x16, and convolve it with 32 filters that are each 7x7, and stride of 1. You want to use a "same" convolution. What is the padding?	1 / 1 point
	○ 1	
	O 2	
	3	
	O 7	
	∠ ^N Expand	
	\bigcirc Correct Correct, you need to satisfy the following equation: $n_H - f + 2 \times p + 1 = n_H$ as you want to keep the dimensions between the input volume and the output volume.	

7.	You have an input volume that is 32x32x16, and apply max pooling with a stride of 2 and a filter size of 2. What is the output volume?	1 / 1 point
	○ 32x32x8	
	○ 15x15x16	
	○ 16x16x8	
	∠ ⁷ Expand	
	\bigcirc Correct Correct, using the following formula: $n_H^{[l]} = \frac{n_H^{[l-1]} + 2 \times p - f}{s} + 1$	
8.	Because pooling layers do not have parameters, they do not affect the backpropagation (derivatives) calculation.	1/1 point
	○ True	
	False	



Expand

Great, you got all the right answers.

convolutional layer making it possible to train a network with smaller training sets. True/False?	
convolutional tayer making it possible to train a network with smaller training sets. True/raise:	
True	
○ False	
Expand	
Correct Yes, weight sharing reduces significantly the number of parameters in a neural network, and sparsity of connections allows us to use a smaller number of inputs thus reducing even further the number of	
parameters.	