

**20IT7301: DEEP LEARNING**

**HOME ASSIGNMENT-2 QUESTIONS**

A.Y:2023-24

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| Batch  No | QUESTION | CO | BTL |
|  | **COMMON for all QUESTIONS:**   1. Draw architecture of Convolution Neural Network. 2. Explain the General mathematical expressions for Output feature map   with and without zero padding and stride=1, stride=2 after convolution  pooling operations with window size=2 and explain the terms in the expression.   1. Compare the output feature map size obtained with mathematical expression with the size obtained based on your manual computation. | CO2 | APPLY |
| 1 | 1. Identify Output matrix after applying convolution operation with zero padding and stride=1.  2. On the output matrix, apply max pooling with window size=2.  3. Write the mathematical expressions for output matrix size and compare with your result. | CO2 | Apply |
| 2 | Find output image by considering input and filter matrices given | CO2 | Apply |
| 3 | 1. Identify Output matrix after applying convolution operation with zero padding and stride=1.  2. On the output matrix, apply average pooling with window size=2.  3. Write the mathematical expressions for output matrix size and compare with your result. | CO2 | Apply |
| 4 | 1. Identify Output matrix after applying convolution operation without zero padding and stride=1.  2. On the output matrix, apply average pooling with window size=2.  3. Write the mathematical expressions for output matrix size and compare with your result. | CO2 | Apply |
| 5 | |  |  |  |  |  | | --- | --- | --- | --- | --- | | 1 | 0 | 0 | 1 | 1 | | 0 | 1 | 1 | 0 | 0 | | 1 | 0 | 1 | 1 | 0 | | 0 | 1 | 1 | 0 | 0 | | 1 | 0 | 0 | 1 | 1 |  |  |  |  | | --- | --- | --- | | 1 | 0 | 1 | | 0 | 1 | 0 | | 1 | 0 | 1 |   X  1. Identify Output matrix after applying convolution operation with and without zero padding and stride=1.  2. On the output matrix, apply average pooling with window size=2.  3. Write the mathematical expressions for output matrix size and compare with your result. | CO2 | Apply |
| 6 | |  |  |  |  |  | | --- | --- | --- | --- | --- | | 1 | 0 | 0 | 1 | 1 | | 0 | 1 | 1 | 0 | 0 | | 1 | 0 | 1 | 1 | 0 | | 0 | 1 | 1 | 0 | 0 | | 1 | 0 | 0 | 1 | 1 |  |  |  |  | | --- | --- | --- | | 1 | 0 | -1 | | 1 | 0 | -1 | | 1 | 0 | -1 |   X  Identify Output matrix after applying convolution operation with zero padding and stride=1.  2. On the output matrix, apply average pooling with window size=2.  3. Write the mathematical expressions for output matrix size and compare with your result. | CO2 | Apply |
| 7 | |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | 1 | 0 | 0 | 1 | 1 | 0 | 1 | | 0 | 1 | 1 | 0 | 0 | 1 | 0 | | 1 | 0 | 1 | 1 | 0 | 1 | 1 | | 0 | 1 | 1 | 0 | 0 | 1 | 0 | | 1 | 0 | 0 | 1 | 1 | 0 | 1 | | 0 | 1 | 1 | 0 | 0 | 1 | 0 | | 1 | 0 | 0 | 1 | 1 | 0 | 1 |  |  |  |  |  |  | | --- | --- | --- | --- | --- | | 1 | 1 | 0 | -1 | -1 | | 1 | 1 | 0 | -1 | -1 | | 1 | 1 | 0 | -1 | -1 | | 1 | 1 | 0 | -1 | -1 | | 1 | 1 | 0 | -1 | -1 |     X  Identify Output matrix after applying convolution operation without zero padding and stride=2.  2. On the output matrix, apply average pooling with window size=3.  3. Write the mathematical expressions for output matrix size and compare with your result. | CO2 | Apply |
| 8 | Consider the 3D input image values in column 1 and corresponding filters. Filter3 is for red color, filter2 for green and filter1 for blue.  Find the output feature matrix by applying zero padding on input image. | CO2 | Apply |
| 9 | Find the Convoluted image matrix values by considering the input and filter matrix values given. | CO2 | Apply |
| 10 | Find the Convoluted image matrix values by considering the input and filter matrix values given. | CO2 | Apply |
| 11 | Find the Convoluted image matrix values by considering the input and filter matrix values given. | CO2 | Apply |
| 12 | Find the Convoluted image matrix values by considering the input and filter matrix values given. | CO2 | Apply |
| 13 | 1. Identify Output matrix after applying convolution operation with zero padding and stride=1. From left to right and top to bottom on the input image  2. On the output matrix, apply max pooling with window size=2.  3. Write the mathematical expressions for output matrix size and compare with your result. | CO2 | Apply |
| 14 | * Identify output matrix values by applying convolution with given kernal and bias value with and without applying zero bias, stride=1 and stride=2 | CO2 | Apply |
| 15 |  |  |  |
| 15 | * Identify output matrix values by applying convolution with given kernal and bias =1 with and without applying zero bias, stride=1 and stride=2 | CO2 | Apply |
| 16 | Apply convolution operation on the given input matrix by considering the kernel and parameters shown in the figure and show the output feature matrix values. | CO2 | Apply |
| 17 | * Identify output matrix values by applying convolution with given kernal and bias =1 with and without applying zero bias, stride=1 and stride=2 | CO2 | Apply |
| 18 | * Identify output matrix values by applying convolution with given kernal and bias =1 with and without applying zero bias, stride=1 and stride=2 | CO2 | Apply |
| 19 | * Identify output matrix values by applying convolution with given kernal and bias =1 with and without applying zero bias, stride=1 and stride=2 | CO2 | Apply |
| 20 | * Identify output matrix values by applying convolution with given kernal and bias =1 with and without applying zero bias, stride=1 and stride=2 | CO2 | Apply |
| 21 | * Identify output matrix values by applying convolution with given kernal Also do without applying zero bias, stride=1 and stride=2 | CO2 | Apply |
| 22 | * Identify output matrix values by applying convolution with given kernal Also do without applying zero bias, stride=1 and stride=2 | CO2 | Apply |