CSPB 4622 - Truong - Machine Learning

Started on	Monday, 18 November 2024, 9:31 PM
State	Finished
Completed on	Monday, 18 November 2024, 9:32 PM
Time taken	1 min 6 secs
Marks	5.00/5.00
Grade	**10.00** out of 10.00 (**100**%)

Question **1**

Correct

Mark 1.00 out of 1.00

Consider a **convolutional neural network model** that has three convolution layers. The first layer has 50 filters, the second layer has 100 filters, and the third layer has 200 filters. All convolution layers have stride=2, and the same padding. The input images are 300x400 pixels with RGB channels. *How many trainable parameters does the CNN model have? Enter integer answer* .

Answer: 226700 ✔

The correct answer is: 226700

Question **2**

Correct

Mark 1.00 out of 1.00

Consider a **convolutional neural network model** that has three convolution layers. The first layer has 50 filters, the second layer has 100 filters, and the third layer has 200 filters. All convolution layers have stride=2, and the same padding. The input images are 300x400 pixels with RGB channels. What is the **feature map size** after the third convolution layer?

- a. 75x100x100
- b. 38x50x200 ✔
- c. 150x200x50

After applying the first convolutional layer, the first feature map size is 150x200x50. After the second layer, the feature map size is 75x100x100. After the third layer, the feature map size is 38x50x200.(the width 75 gets padded to 77, then divided by two is 38).

The correct answer is: 38x50x200

Question **3**

Correct

Mark 1.00 out of 1.00

While training a CNN model, you receive the **OOM (out of memory) error message.** What can you do to resolve the issue? Choose all that apply.

- a. Reduce the batch size ✔
- b. Reduce the number of epochs
- d. Reduce the number of filters in conv layers ✔
- d. Reduce the stride of conv layers
- e. Reduce the number of layers ✔

A smaller number of layers will give fewer parameters and feature maps.

The correct answers are: Reduce the batch size, Reduce the number of filters in conv layers, Reduce the number of layers

Question **4**

Correct

Mark 1.00 out of 1.00

True or False You can use bigger strides in a convolutional layer instead of a max-pooling layer for better accuracy.

- (•) a. True ✔
- ( ) b. False

A conv layer with stride two can subsample equivalently with max pool with a 2x2 filter size. It costs more parameters, but the conv layer is learnable, so it generally tends to have better accuracy.

The correct answer is: True

Question **5**

Correct

Mark 1.00 out of 1.00

How many conv layers with 3x3 filters would you need to have the same receptive field as a conv layer with 11x11 filters? Assume stride=1 and no padding. *Enter your answer for the number of layers as an integer* E.g., 1

Answer: 5 ✔

The correct answer is: 5