**CAP5415**

**Computer Vision**

**Fall 2022**

**Homework 4**

**Questions 1:**

In MLP, consider a task of image classification where we are using a network with 10 hidden layers. We are using the pixel values of the image as input which requires a lot of parameters. We can reduce the number of neurons in hidden layers to reduce the number of parameters in the network and this will negatively impact the overall performance.

The following statement is True or False?

To overcome this issue, we can increase the performance by using an image with a higher resolution, which will improve the network’s performance without changing the total number of parameters in the network.

True/False

**False**

**Questions 2:**

We know that a single layer neural network can learn any function with sufficiently large number of parameters. However, having multiple layers is useful because, (multiple options may be true)

A – It helps in reducing the number of parameters in the network with a lot of sacrifice in performance.

B – It helps in improving the performance but will require more parameters.

C – It helps in improving the performance and may require less parameters.

D – They allow us to introduce non-linearity in the network.

**C and D are True**

**Questions 3:**

Convolutional neural networks are only effective for visual data such as images and videos.

True/False

**False**

**CNN is also useful for audios and working in the similar manner as images and videos.**

**Question 4:**

We need multiple kernels/filters in a Convolutional Neural Network because we want to extract different set of features from the input image.

True/False

**True**

**In CNN we learn features using kernels/filters, so we need multiple filters.**

**Question 5:**

If we have a feature map of size 64x64 with 1024 channels and we want to transform this to another feature maps of size 64x64 with 4096 channels using convolution kernels of size 5x5, what value for stride, padding, and number of kernels can be used for such a transformation? (multiple options may be true)

A – 1, 2, 1024

B – 1, 2, 4096

C – 5, 128, 4096

D – 3, 65, 4096

Answers: **BCD**

Use the formula from class: (N - F + 2P)/S + 1