CMPT 728 Deep Learning

School of Computing Science

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Assignment 2:

This assignment consists of two parts : conceptual exercises + a project.

You should submit a assignment2.zip package including:
- Answers to the conceptual exercises part in .PDF version,
- Your code of project part in both .PDF (or .html) and .ipynb (Jupyter notebook) version.

A. Conceptual Exercises (50 points)

Exercise numbers refer to the textbook ("Introduction to Deep Learning").

A.1 Solve Exercise 3.1 (10 points)

A.2 Solve Exercise 3.2 (10 points)

A.3 Solve Exercise 3.4 (10 points, 5 for part (a), 5 for part (b).)

A.4 Same padding when combined with stride of one has the property that the size of the output is the same as that of the original image. Let's consider a convolutional operation on an image with dimensions (H, W), where H represents the height and W represents the width of the image. For simplicity assume that W=H=I, and I is the input size of the image. In same padding with the stride of 1, the number of rows and columns of padding are added to the input image so that the output feature map has the same spatial dimensions. If P is the padding size, then 2P columns (or rows) are padded to the input image. This means that P columns (or rows) are added to both the left and right (or top and bottom) sides of the input image.

Let us assume,

- I is the input size (H or W) of the image
- F is the filter/kernel size
- P is the padding size
-O output size

please calculate the padding size in "same padding" (20 points).

B. Project Part (100 points)

Please see the assignment2_proj.pdf and assignment2_proj.ipynb files.