SUTD 50.039 Theory and Practice of Deep Learning (2025) - HW2, Part 2

Last update: 26-Feb 2025

Answer all questions and assemble your answers in the same report as the one you wrote for part 1.

## Question 1

1. What is the output when we convolve the left image with the 3 × 3 filter on the right (assuming stride = 1 and no padding)?

游戏的屏幕

中度可信度描述已自动生成手机屏幕的截图

低可信度描述已自动生成Image: Filter kernel:

1. What is the output if we instead perform convolution using padding = 1, stride = 2, and then apply ReLU?

## Question 2

Given the following deep neural network classification system (three classes):

手机屏幕的截图

描述已自动生成

For a training sample *x*, the activation *h* before the softmax layer is given by

Suppose the ground-truth class of this training sample is the first class.

Compute *L*.

(Note: Use natural logarithm, i.e., logarithm to the base of e).

## Question 3

Calculate the number of parameters in this CNN.

图示

描述已自动生成