Neural Networks: Assignment 2

(Due: 2025.5.27 11:59 pm)

Formatting: please include both a **`.ipynb`** and **`.pdf`** file in your homework submission, named **`studentID_homework2.ipynb`** and **`studentID_homework2.pdf`**. Please don't change the filename.

Convolutional Neural Network for Image Classification

In this homework, we will train and test convolutional neural network for image classification. We will do the following steps in order:

1. Load and normalizing the CIFAR-10 training and test datasets using `torchvision`
2. Define a Convolution Neural Network
3. Define a loss function
4. Train the network on the training data
5. Test the network on the test data

In the provided code in **`NN_homework2.ipynb`**, you will find the sample convolutional neural network with 2 convolutional layers and 3 fully connected layers. Based on the given code, build your own convolutional neural network to achieve test accuracy of at least **70%**. To improve your results, you may

- change the training hyperparameters such as batch size, number of epochs and learning rate.
- add more convolution layers with different kernel sizes (e.g. 3x3 kernels).
- (optional) change to another network, such as ResNet-18 or Inception.

After building your network, you need to report the network architecture, training history (including training loss and validation accuracy) and final test accuracy.