CNN Workshop

Week 6 - Session 1

CNN Programming

In this workshop, you will be training a simple Convolutional Neural Network (CNN) to classify Fashion-MNIST images. Read the following instructions and include all your result in the report.

Data You will be downloading the Fashion-MNIST dataset using *tf.keras.dataset* (`https://keras.io/api/datasets/fashion_mnist/`) module, which is made to replace the original MNIST dataset containing a log of handwritten digits. The Fashion-MNIST dataset consists of 28x28 grayscale images of fashion items such as pullovers and sneakers, with a label from 10 classes. For more information, visit `https://github.com/zalandoresearch/fashion-mnist`.

Model You are given a basic 2-layer CNN model in the "W6S1_CNN_MNIST" file. The model is designed to be trained using the above dataset and evaluated by its prediction accuracy.

Report Follow the instruction below to run the CNN model.

- Load the dataset and report the shape of training and test images. Additionally, report one sample image from each class.
- Set up the CNN model and start training. Report the structure of the model and training/test accuracy for your experiment.
- Draw a plot for training/test accuracy and loss over the number of epochs and briefly describe how the training went. (e.g. over-fitted, under-fitted)
- (Optional) Explore the model freely by modifying the structure and parameters.