CNN Workshop

Week 6 - Session 1

CNN Programming

In this section, you will implement a CNN model to classify CIFAR-10 images. Your task is to design a model that best fits the dataset. Read the following instructions and include all your result in the report.

Data You will be using the CIFAR-10 dataset which consists of numerous 32x32 color images in 10 specific classes. You can download the dataset with the same module used in the workshop - *tf.keras.dataset* (`https://keras.io/api/datasets/cifar10/`). For more information, visit `https://www.cs.toronto.edu/~kriz/cifar.html`.

Model You will be using the model from the workshop as a baseline (with the initial parameters). For this assignment, your job is to design a new CNN model, using the baseline model, that best fits the CIFAR10 dataset and a classification task. You are free to modify the structure and the parameters of the baseline model. (e.g. Add a regularization layer, modify filter size, etc)

You are given a basic 2-layer CNN model in the "W6S1_CNN_CIFAR10" file. The model is designed to be trained using the above dataset and evaluated by its prediction accuracy.

Report Follow the instruction below to design your CNN model.

- Load the dataset and report the shape of training and test images. How different is the shape compared to the one from Fashion-MNIST images?
- Report one sample image from each class to verify the data.
- Set up the CNN models (baseline from workshop and yours) and start training them. Report the training and test accuracies from the experiment.
- Briefly describe your model including parameters and architecture and justify your choice.