Fiche TP3 : Training a CNN From Scratch

1- Load the cifar-10 dataset and perform pre-processing: data normalization and data augmentation.

2- Create a convolutional neural network via Keras with the following layers:

- Input of (32, 32, 3)
- Conv2D, 16 kernels, kernel size = 3, valid padding, ReLu actvation
- Conv2D, 16 kernels, kernel size = 3, valid padding, ReLu actvation
- Maxpooling kernel size = 2*2
- Conv2D, 32 kernels, kernel size = 3, valid padding, ReLu actvation
- Conv2D, 32 kernels, kernel size = 3, valid padding, ReLu actvation
- Maxpooling kernel size = 2*2
- Flatten
- Dense, 10 neurons, softmax activation

3. Fit the neural network for the training data.
   - use Adam optimizer with its default settings
   - use batch size of 64
   - use accuracy as a metric
   - use categorical_crossentropy loss
   - print the metric after each epoch for both the train and the test set!
   - train the neural network for 5 epochs

4. Improving CNN: try to fit another convolutional neural network that can achieve 70% accuracy on the test set (with only 5 epochs).