Exercise 1

Create your own Convolutional Neural Network (CNN) and implement Sigmoid, Hyperbolic Tangent, ReLU, ELU and SELU node function (activation function) on the MNIST and CIFAR10 dataset, plot training loss and validation loss by epoch, training accuracy and validation accuracy by epoch, which node function is the most suitable one for MNIST and CIFAR10 dataset, respectively?

Notes:

1. MNIST database link: http://yann.lecun.com/exdb/mnist/, in MNIST dataset 60000 images for training and 10000 images for testing
2. CIFAR10 database link: https://www.cs.toronto.edu/~kriz/cifar.html, in CIFAR10 dataset 50000 images for training and 10000 images for testing
3. Recommended to use Google Colab to solve neural network related tasks, it will provide fast computation speed with enabled GPU hardware in your browser, introduction of Google Colab: https://colab.research.google.com/?utm_source=scs-index , how to enable GPU: https://colab.research.google.com/notebooks/gpu.ipynb