Tutorial for Lab Week 13

This assignment is to help you familiarize yourself with the installation of libraries required and for the implementation of a simple deep neural network.

1. You have to find and load the MNIST digits dataset.
2. Install TensorFlow and Keras libraries.
3. Build your own CNN model using Keras and perform classification on the MNIST dataset.
4. For reference you can follow the following links:

* <https://www.kaggle.com/code/kanncaa1/convolutional-neural-network-cnn-tutorial>
* <https://www.askpython.com/python/examples/load-and-plot-mnist-dataset-in-python>

1. Submit the final code as a pdf with the final performance metrics displayed. Also answer the five questions below in the final submission:
2. How many layers in the deep neural network were used for features extraction and how many for features classification?
3. How many kernels were used to extract features on the MNIST images in the first convolutional layer? What were the size of these kernels?
4. What kind of pooling was done on the data and why?
5. What were the dimensions of the features set for each layer of the deep CNN? Why were the dimensions reducing in each layer?
6. How are the outputs of CNN (which are numbers) i.e. activation outputs of the last layer converted to probabilities and 10 classes (for the 10 digits)?