Exercise 7

Advanced Methods in Medical Image Analysis, Julia Wolleb

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By using convolutional neural networks, we want to classify the MNIST dataset of images of hand-written digits into the digits 0 to 9.

Exercise 7: CNN for MNIST Classification

Implement a Convolutional Neural Network (CNN) model as described in the lecture for the classification of the MNIST data set. Follow the code snippet `mnist-classification-CNN.py`. The `Sequential` method of PyTorch should be used to build the model, including convolutional layers, normalization layers, activation functions, pooling layers, as well as the final fully connected layer. Do you need an activation function on the final layer?

- Download the MNIST train and test set. Additionally, split the train set into train and validation.
- Input dimensions: 32×32
- Output dimensions: 10
- Return the plots for the loss curve, as well as training and validation accuracies during training.
- Report the accuracy on the test set.
- Hand in your code, which does not throw exceptions.