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Report Homework 5

In my code I initialized the variable datasets_split to 0 in order to run the part of the code specific to the split of the dataset into training and test. To run the code without considering that part I changed the value to 1.

After the definition of a class to create my dataset, in which the images were resized to a size of 100x100 and transformed into greyscale images, I started to define the neural network.

The network is based on 5 different convolutional stages where features using a kernel size of 3 are extracted in order to represent different levels of aggregation. The stride was kept as 1 except for the third stage. Each convolutional step is followed by a ReLU and some are followed by a max pooling layer. As final stages are inserted 3 fully connected layers, each one followed by a step of dropout (except for the last one).

After 15 epochs this network reaches an accuracy of 64.90% on training set and 76.37% on test set.
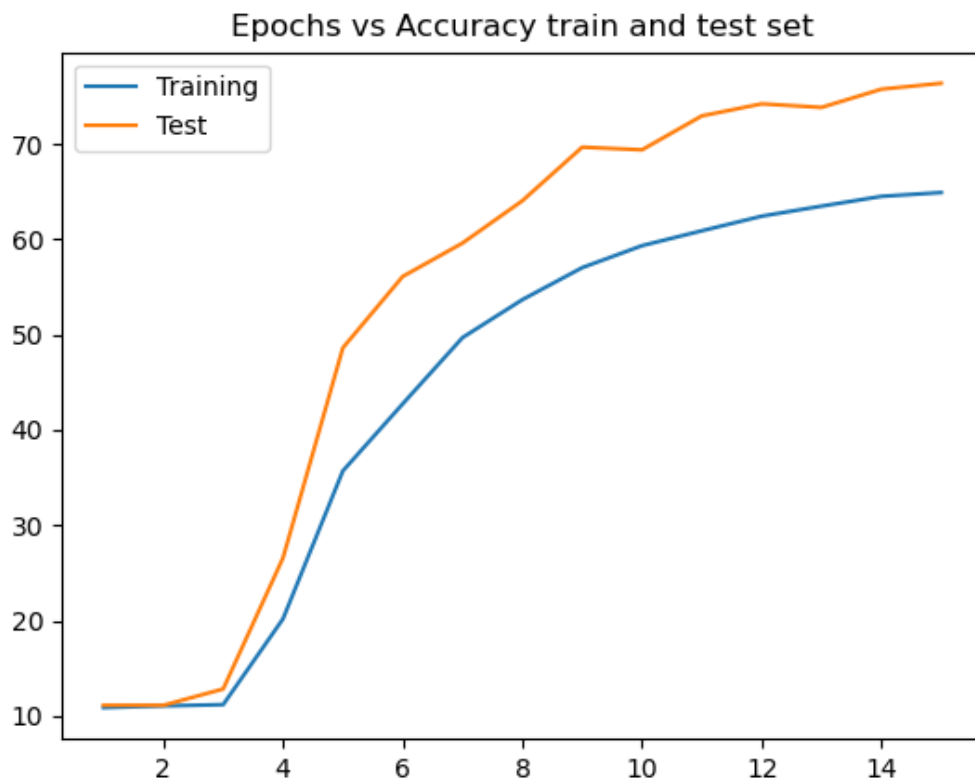
I used as loss function the Cross-entropy loss and the Adam optimizer as optimizer.

As scheduler for the optimizer is inserted the StepLR.

Hyperparameters:

- Batch size: 500
- Test batch size 300
- Max epochs: 15
- Learning rate: 1e-3
- Gamma: 0.8

Here the plot of the accuracy, on the y axis, and the number of epochs, for training and test

Here the plot of the loss, on the y axis, and the number of epochs, for training and test