

2.2 Neural Networks

In this task a multilayer perceptron is implemented with and without the use of a machine learning library. The multilayer perceptron is used to classify E. coli bacteria from 2 categories.

No libraries:

First, I implemented a neural network without using anything else than standard library of python. Backpropagation was not part of the task, and so the network outputs random values.

PyTorch:

I made a perceptron out of 4 layers of sigmoid functions and linear transformations. Both the training and test accuracy stayed at first at 0.65. After I increased the epoch amount from a few hundred to a few thousands though I realized the network just takes a very long time to train. That is possibly because sigmoid functions have a small gradient. The network seemed to generalize well with 19/20 accuracy on test data.

