Neural Networks and Deep Learning

Cracow University of Technology

Lab Assignment 3:

Task: Implementation of Gradient Descent in neural networks with one hidden layer

In this lab we are going to implement a neural network with one hidden layer. The architecture of our neural network is as follows:

- Input layer
- One hidden layer with 2 neurons
- Output layer

Train the network using the same process as lab 2:

Perform the training process one time with the following dataset and initial weights and another time with random dataset and random initial weights. Random dataset has the same dimensionality as the following sample dataset and has a binary value as labels.

```
data=    [[0.08, 0.72, 1.0],
          [0.01, 1.00, 0.0],
          [0.26, 0.58, 1.0],
          [0.35, 0.95, 0.0],
          [0.45, 0.15, 1.0],
          [0.60, 0.30, 1.0],
          [0.70, 0.65, 0.0],
          [0.92, 0.45, 0.0]]


weights = [1.00, -1.00]
bias = 0.20

learning rate = 0.001
```