

Neural Network

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1 Basic and Advanced Functions Implementation

While implementing the basic and advanced functions, I had some unfamiliar understanding of backpropagation algorithm. To resolve it, I spent some time on recapping the concept of forward pass, backward pass and weights update. Besides, I also read some useful articles about the activation functions, knowing when to utilize those functions.

2 My Binary and Multi-class Classifiers

2.1 Binary classifier

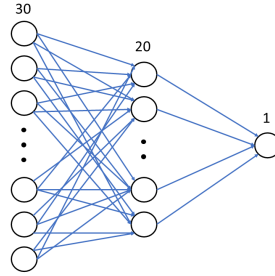


Figure 1: Learning rate: 0.1, numbers of iterations: 6001, 1st activation layer function: relu, 2nd activation layer function: sigmoid

2.2 Multi-class classifier

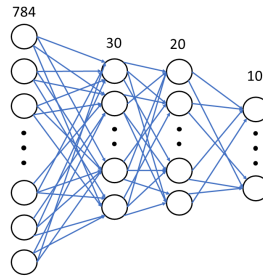


Figure 2: Learning rate: 0.1, numbers of iterations: 43, batch size ratio: 0.01, 1st activation layer function: relu, 2nd activation layer function: relu, 3rd activation layer function: softmax

2.3 Model improvement

In order to improve the performance of both my models, I made some effort on tuning the parameters of models and determining the number of hidden layers and number of units in each hidden layer. What I modified frequently are learning rate and the related parameters of hidden layers. And finally, both my models successfully got great performance.