Assignment 2 – Backpropagation

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# Backpropagation

The results for this part were did not align with the correct output. The method calculates the gradient of a loss function with respect to all the weights in the network, so that the gradient is fed to the optimization method which in turn uses it to update the weights, in an attempt to minimize the loss function. To calculate the loss function, one needs a desired output for each input value and is considered supervised learning. How the code is supposed to work is in the back-propagation step, you cannot know the errors occurred in every neuron but the ones in the output layer. Calculating the errors of output nodes is straightforward - you can take the difference between the output from the neuron and the desired output actual output for that instance in training set. The neurons in the hidden layers must update their errors from this. Thus you have to pass the error values back to them. From these values, the hidden neurons can update their error and other parameters using the weighted sum of errors from the layer ahead. In conclusion, the output of the code classified 0 out of 100 handwritten characters from the UCI Learning Repository. This is due to the lack time spent on the debugging of the code and given enough time, could have been optimized and fixed.