Data Source:

CSV training set http://www.pjreddie.com/media/files/mnist_train.csv

CSV test set http://www.pjreddie.com/media/files/mnist_test.csv

I am using one input layer which has 785 nodes, one hidden layer which has 101 nodes and an output layer which has 10 nodes. Input layer is completely connected with hidden layer and also hidden layer is completely connected with output layer. The input data is pixel values from a 28*28 image. The label data is the number appears on the image.

Input layer receives data from image and there's a bias node has a constant value 1. Input layer processes the data and passes to hidden layer. Hidden layer receives the processed values from input layer and there's also a bias node has a constant value 1. Then, after hidden layer processes the data and passes to out layer, the number with highest values is the predict number. I examine the model with test set which has 10000 image and print out the accuracy.

After 60000 images training, the model performs a 95% accuracy on 10000 images test set.

The learning rate is set to 0.1 and momentum is set to 0.9.

```
After 0 images training is
8.67 %
After 1000 images training is
75.03 %
After 2000 images training is
85.37 %
After 3000 images training is
89.32 %
After 4000 images training is
89.69 %
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After 55000 images training is
95.26 %
After 56000 images training is
95.38 %
After 57000 images training is
95.61 %
After 58000 images training is
95.35 %
After 59000 images training is
95.6 %
Final accuracy is:
95.22
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