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HW1 Report

Test Accuracy : 0.9132

Implementation:

The code applies logistic regression and stochastic gradient descent to classify the mnist dataset. Since the classifying mnist dataset is a multiclass classification problem I choose to use the softmax function which is often used in the multiclass classification problems.
The parameters chosen are as following:
lr = 0.0001 # learning rate
epochs = 30 # number of epochs
First, I load the dataset using load_data() function. Randomly choose an image and the corresponding label to start the stochastic gradient descent process, and then get the predicted result using forward() and softmax() function. Update the gradient with predicted result and real result using update_gradient() function. Then use the formula weight = weight - lr * gradient to update the weight vector. Run this process through each training example. To test the data, apply the weight vector trained to predict the label for each test image and compare the predicted label with the true label to get the test accuracy. The final test accuracy is 0.9132.