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**Homework 03 Report: Perceptron for Multiclass Discrimination**

I’ve imported the data and apply one-hot encoding to the training label data as same as in the second homework. Softmax, sigmoid and safelog functions are taken from the fifth and fourth lab sessions. I’ve replicated the backpropagation algorithm in the book chapter 11.7.3. Since I need gradient of v in the calculation of gradient of W, I’ve used two separate loops. One for calculation of gradient of v, other for W. In order to consider the bias term, I needed to bind column of ones to hidden nodes matrix for the backpropagation of v and train data(X\_train) when I was calculating the gradient of W in the second loop. Here are the confusion matrices and objective values (which are nearly identical as in the homework description) throughout the iterations:   
  


