Computer Vision 2016 Spring HW#5 Experiment

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Experiment result

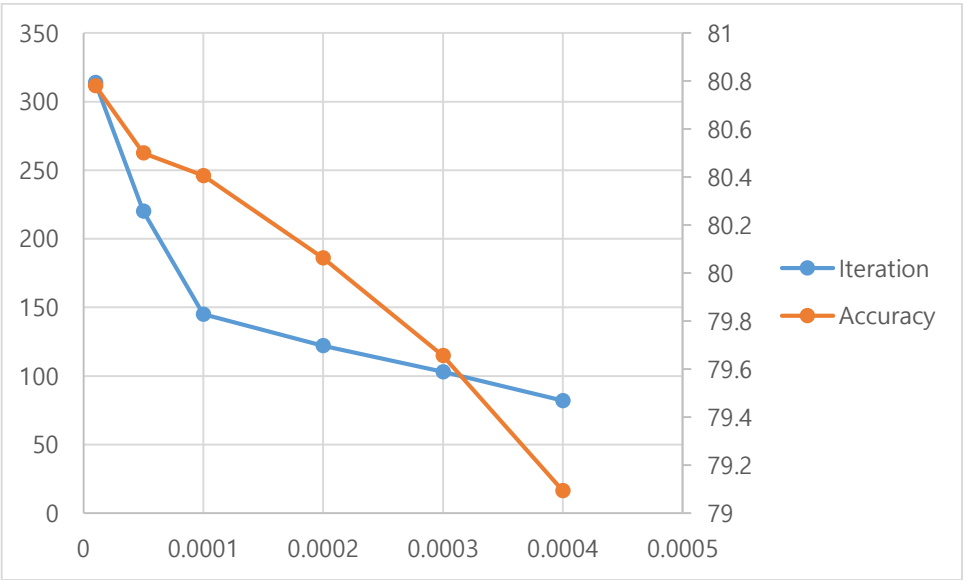
Basic cnnExercise.m shows accuracy around 80%. This classifier classifies things fairly well.

```
    Optimizer Results
        Algorithm Used: limited memory BFGS (L-BFGS)
        Exit message : Change in the objective function value was less than the specified tolerance TolFun.
        iterations : 146
        Function Count : 465
        Minimum found : 0.46826
        Intern Time : 0.86134 seconds
        Total Time : 5.2463 seconds
Accuracy: 80.406%
```

Accuracy and training iteration was differ depending on decaying factor softmaxLambda like below.

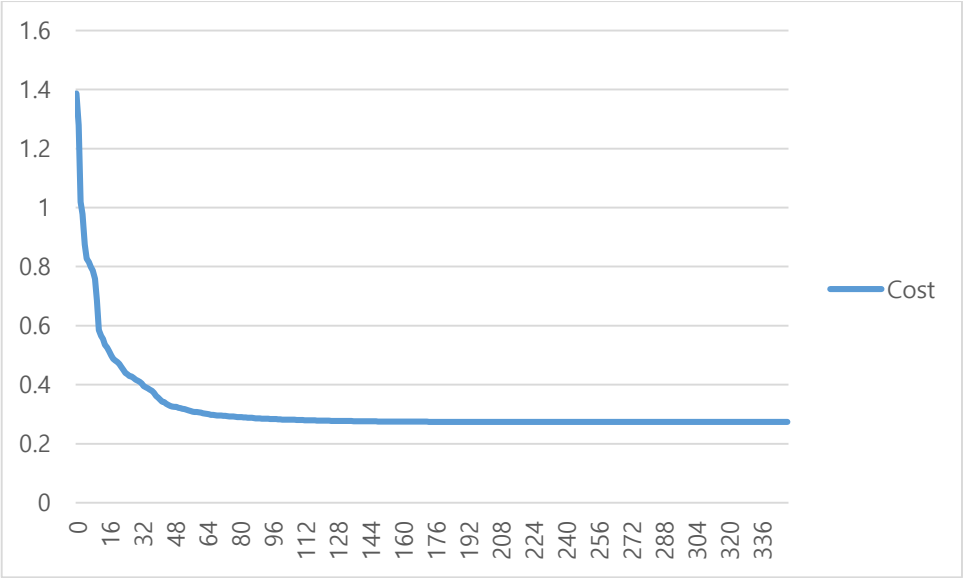
Iteration was changed in each trial, so average iteration was filled in.

Lambda	Training iteration	Accuracy
1.0×10^{-5}	314	80.781
5.0×10^{-5}	220	80.500
1.0×10^{-4}	145	80.406
2.0×10^{-4}	122	80.063
3.0×10^{-4}	103	79.656
4.0×10^{-4}	82	79.094



This experiment means that small decaying lambda makes the cost decaying slower. Because of this, smaller lambda require much more iteration, but it shows also much better performance (accuracy).

Also, loss (softmax cost) decreasing fallowed by iteration was observed.



This means that softmax cost minimizing operation is conducted with iteration.