

Machine Learning Homework 3

109062131 林劭軒

1 Problems and Solution

Slow calculation Avoid repeatedly calling same function, store the result instead. Using early stopping when difference of cost is near zero.

2 Structure

2.1 binary

2 hidden layers with dimension 64 and 64. With learning rate 0.4.

2.2 multi-class

2 hidden layers with dimension 600 and 512. With decreasing learning rate from 0.5 to 0.0001. Batch size is 512. Early stops when $|previous_cost - cost| < 1e - 6$.

3 Efforts

I implemented data augmentation using numpy. Including random rotating, random scaling, random shifting. I've tried multiple pairs of hyperparameter, it took lots of time training. Although using early stopping, it still takes 10 minutes to train. Considering time to train, I created 60000 more augmented data only.