

Deep Learning - Lab 3 Exercise

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1 Exercise 1

Exercise 1.1:Rastrigin.

verges quickly, reaching the lowest point when the number of iteration is about 15. SGD has the next highest performance. Adam converges quickly after 50 epochs.

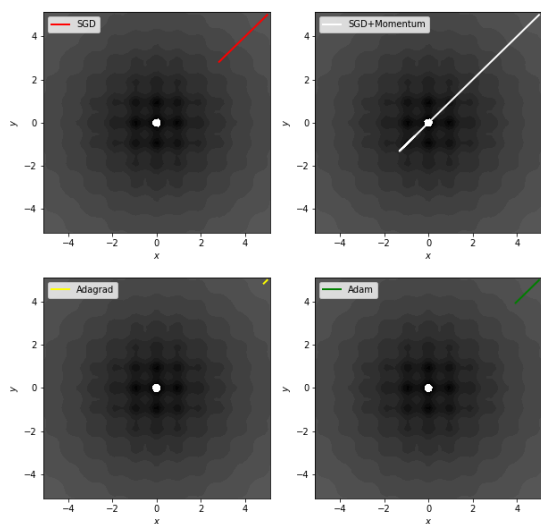


Figure 1: Overview plot of Four methods

Shown in the Figure 1, the graph demonstrates that SGD+Momentum converges quickly to the local minima. It can be observed that all optimisers got stuck at local minima.

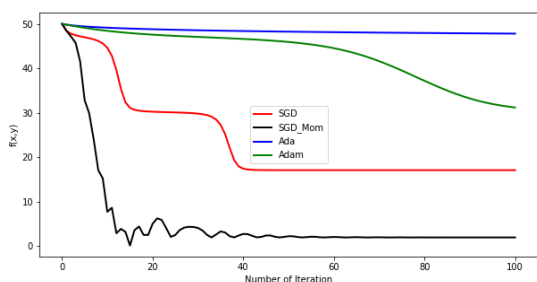


Figure 2: Function value after iteration

Shown in the Figure 2, SGD+Momentum con-

2 Exercise 2

Exercise 2.1:Iris SVM.

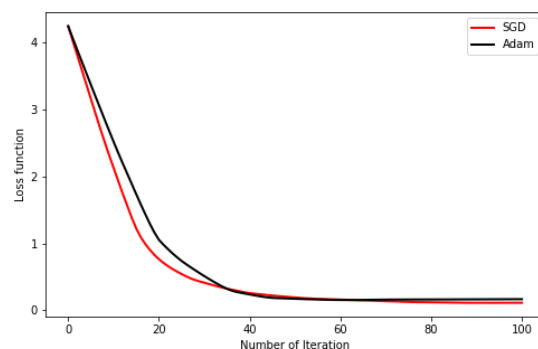


Figure 3: convergence of SVM in two methods

As shown in Figure 3, it can be seen that both SGD and Adam converge quickly, and the convergence is basically successful at 40.

	SGD	Adam	Randomly
Validation Accuracy	0.92	0.88	0.40

As shown in the graph, the table represents the mean accuracy of validation set for classifying the Iris Versicolor and Iris Virginica classes of the Iris dataset over 100 independent training. It can be seen that the average accuracy of the SVM model of the SGD method is higher than that of the SVM model trained by Adam, but both are around 90%. Counter-intuitively is randomly selected, and the accuracy of the randomly classifier is less than 50%. This can be attributed to the different element counts for each class in the validation set.