LAB 3 - OPTIMISATION

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1. EXPLORING OPTIMISATION OF ANALYTIC FUNCTIONS

1.1. Rastrigin

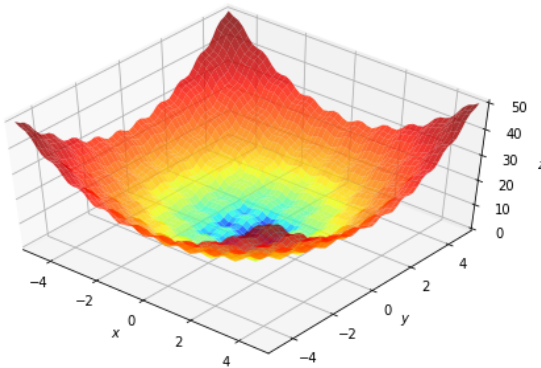The 2D Rastrigin function plot is shown in Figure 1.

Fig. 1. 2D Rastrigin Function Plot

The contour plot and loss plot for all the optimisers are shown in Figure 2 and Figure 3.
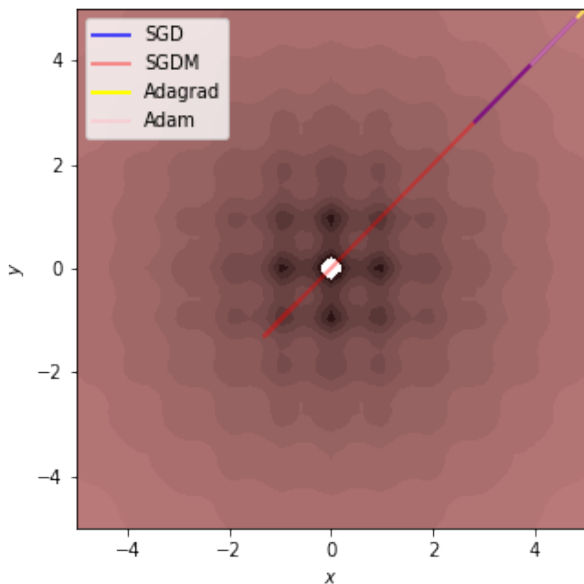

Fig. 2. Contour Plot for the Optimisers

From Figure 2, it is observed that the optimisers converge at the same epoch. From both the figures, it is evident that Adagrad optimiser performs better as compared to the other optimisers and
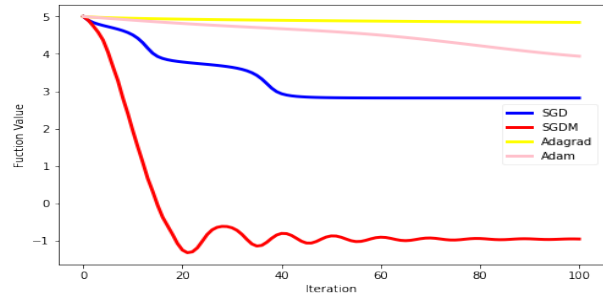

Fig. 3. Loss Curves

Adam also has comparatively better performance as compared to SGD and SGDM.

2. OPTIMISATION OF A SVM ON REAL DATA

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Accuracy for SGD Optimiser: 0.96
Accuracy for Adam Optimiser: 0.88
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Ironically, while optimising SVM on real data, SGD performed well as compared to Adam. Adam optimiser was developed to provide better performance than SGD optimiser. SGD performs better for convex and continuous optimisation. The iris dataset does not have repeating data and hence it would not memorize the data without generalisation ability. SGD is better at generalising as compared to Adam. Hence, the result we got is reasonable.