

Table 1: Performance Results for NeuralNetwork_100samples_layers_10_20.5 Problem

Optimizer	Mean Final Value	Std Dev	Best Value	Worst Value	Mean Func Evals	Success Rate (%)	Mean Time (s)
QQN-CubicQuadraticInterpolation	3.80e-2	1.13e-4	3.77e-2	3.82e-2	1028.8	100.0	2.119
Adam-WeightDecay	3.82e-2	1.71e-5	3.81e-2	3.82e-2	1312.7	100.0	2.082
QQN-Bisection-2	3.81e-2	1.11e-4	3.78e-2	3.83e-2	1033.4	95.0	1.492
QQN-Bisection-1	3.87e-2	2.08e-3	3.78e-2	4.73e-2	1132.3	90.0	1.786
QQN-GoldenSection	3.85e-2	1.08e-3	3.78e-2	4.14e-2	3690.9	70.0	2.355
QQN-StrongWolfe	4.29e-2	6.97e-3	3.79e-2	6.26e-2	1389.3	55.0	2.526
Adam-Fast	4.46e-2	7.66e-3	3.70e-2	6.58e-2	184.6	40.0	0.295
L-BFGS-Conservative	4.85e-2	9.73e-3	3.81e-2	7.99e-2	2547.8	20.0	3.325
Adam	4.60e-2	4.49e-3	3.82e-2	5.37e-2	2484.8	15.0	3.902
L-BFGS	1.83e-1	2.57e-1	3.89e-2	9.47e-1	2108.6	0.0	2.360
L-BFGS-Limited	5.79e-2	2.39e-2	3.92e-2	1.29e-1	3421.6	0.0	3.299
GD-Nesterov	1.18e-1	5.89e-2	3.95e-2	1.72e-1	679.1	0.0	1.835
Adam-AMSGrad	4.96e-2	5.12e-3	3.99e-2	5.89e-2	2502.0	0.0	3.917
GD-Momentum	1.63e-1	2.75e-2	4.45e-2	1.78e-1	102.8	0.0	0.276
L-BFGS-Aggressive	5.55e-2	4.41e-3	4.81e-2	6.45e-2	3657.3	0.0	3.210
Adam-Robust	6.03e-2	5.21e-3	4.99e-2	6.90e-2	2502.0	0.0	4.003
L-BFGS-MoreThuente	5.96e-2	4.36e-3	5.34e-2	7.10e-2	2833.2	0.0	3.804
GD-WeightDecay	9.46e-2	3.04e-3	8.67e-2	9.85e-2	1668.0	0.0	4.605
GD	1.28e-1	3.28e-3	1.19e-1	1.33e-1	1668.0	0.0	4.558
Trust Region-Conservative	1.48e-1	5.01e-3	1.28e-1	1.53e-1	113.2	0.0	0.141
Trust Region-Precise	1.60e-1	3.72e-3	1.52e-1	1.66e-1	25.1	0.0	0.031
Trust Region-Adaptive	1.94e-1	5.68e-2	1.56e-1	3.30e-1	29.0	0.0	0.036
GD-AdaptiveMomentum	1.74e-1	5.66e-3	1.66e-1	1.86e-1	15.2	0.0	0.037
Trust Region-Standard	2.36e-1	2.65e-2	2.04e-1	3.07e-1	5.2	0.0	0.007
Trust Region-Aggressive	7.84e-1	1.55e-1	3.46e-1	1.04e0	7.8	0.0	0.010