

Table 1: Performance Results for Schwefel_10D Problem

Optimizer	Mean Final Value	Std Dev	Best Value	Worst Value	Mean Func Evals	Success Rate (%)	Mean Time (s)
QQN-StrongWolfe	8.35e2	1.64e3	-2.28e3	2.96e3	395.5	50.0	0.017
L-BFGS-Limited	3.55e3	3.01e1	3.42e3	3.55e3	577.7	0.0	0.017
QQN-GoldenSection	3.55e3	9.37e-13	3.55e3	3.55e3	147.8	0.0	0.002
QQN-CubicQuadraticInterpolation	3.55e3	1.43e-3	3.55e3	3.55e3	56.9	0.0	0.001
QQN-Bisection-2	3.55e3	9.09e-13	3.55e3	3.55e3	52.0	0.0	0.001
QQN-Bisection-1	3.55e3	9.09e-13	3.55e3	3.55e3	52.0	0.0	0.001
L-BFGS	3.55e3	1.15e-2	3.55e3	3.55e3	300.9	0.0	0.008
L-BFGS-Conservative	3.55e3	2.96e-7	3.55e3	3.55e3	2188.9	0.0	0.063
L-BFGS-MoreThuente	3.55e3	1.12e-3	3.55e3	3.55e3	159.3	0.0	0.004
GD-WeightDecay	3.55e3	6.30e-8	3.55e3	3.55e3	1194.6	0.0	0.040
GD-Momentum	3.55e3	6.50e-7	3.55e3	3.55e3	380.3	0.0	0.012
GD-Nesterov	3.55e3	8.72e-7	3.55e3	3.55e3	392.1	0.0	0.013
Adam-Fast	3.55e3	1.08e-7	3.55e3	3.55e3	1628.7	0.0	0.035
L-BFGS-Aggressive	3.55e3	4.65e-2	3.55e3	3.55e3	101.0	0.0	0.002
GD-AdaptiveMomentum	3.55e3	5.29e-2	3.55e3	3.55e3	164.1	0.0	0.006
GD	3.55e3	8.86e-3	3.55e3	3.55e3	1668.0	0.0	0.047
Trust Region-Aggressive	3.56e3	1.17e0	3.56e3	3.56e3	888.8	0.0	0.007
Trust Region-Standard	3.73e3	2.12e0	3.73e3	3.74e3	3002.0	0.0	0.022
Trust Region-Adaptive	4.48e3	1.82e0	4.48e3	4.49e3	3002.0	0.0	0.022
Adam-WeightDecay	4.55e3	1.50e0	4.55e3	4.56e3	2502.0	0.0	0.060
Trust Region-Precise	4.67e3	1.71e0	4.67e3	4.67e3	3002.0	0.0	0.022
Adam	4.67e3	2.21e0	4.67e3	4.68e3	2502.0	0.0	0.054
Adam-AMSGrad	4.67e3	1.85e0	4.67e3	4.68e3	2502.0	0.0	0.061
Adam-Robust	4.69e3	1.88e0	4.68e3	4.69e3	2502.0	0.0	0.062
Trust Region-Conservative	4.72e3	1.20e0	4.72e3	4.73e3	3002.0	0.0	0.022