

Table 1: Performance Results for StyblinskiTang\10DProblem

Optimizer	Mean Final Value	Std Dev	Best Value	Worst Value	Mean Func Evals	Success Rate (%)	Mean Time (s)
GD	-3.80×10^2	1.15×10^1	-3.92×10^2	-3.49×10^2	141.7	42.5	0.004
Adam-Fast	-3.64×10^2	1.23×10^1	-3.77×10^2	-3.37×10^2	72.5	42.5	0.002
L-BFGS	-3.76×10^2	1.22×10^1	-3.92×10^2	-3.46×10^2	195.3	40.0	0.003
QQN-CubicQuadraticInterpolation	-3.71×10^2	2.24×10^1	-3.92×10^2	-2.96×10^2	318.6	37.5	0.012
GD-WeightDecay	-3.80×10^2	1.12×10^1	-3.92×10^2	-3.49×10^2	94.7	35.0	0.003
GD-Nesterov	-3.79×10^2	1.02×10^1	-3.92×10^2	-3.49×10^2	80.9	30.0	0.003
QQN-StrongWolfe	-3.77×10^2	1.64×10^1	-3.92×10^2	-3.21×10^2	323.4	30.0	0.010
QQN-Bisection-2	-3.80×10^2	1.03×10^1	-3.92×10^2	-3.63×10^2	297.7	25.0	0.007
QQN-MoreThuente	-3.49×10^2	5.91×10^1	-3.92×10^2	-1.60×10^2	357.4	25.0	0.010
QQN-GoldenSection	-3.74×10^2	1.30×10^1	-3.92×10^2	-3.49×10^2	581.2	16.7	0.011
L-BFGS-Conservative	-3.80×10^2	1.28×10^1	-3.92×10^2	-3.49×10^2	561.9	15.0	0.015
QQN-Bisection-1	-3.72×10^2	1.71×10^1	-3.92×10^2	-3.07×10^2	379.2	10.0	0.009
QQN-Backtracking	-3.65×10^2	1.61×10^1	-3.92×10^2	-3.35×10^2	146.8	10.0	0.005
GD-Momentum	-3.63×10^2	2.72×10^1	-3.92×10^2	-2.54×10^2	84.1	10.0	0.003
Trust Region-Standard	-2.01×10^2	8.95×10^{-1}	-2.03×10^2	-1.99×10^2	602.0	0.0	0.004
L-BFGS-Aggressive	-1.73×10^2	4.01×10^1	-2.44×10^2	-8.37×10^1	775.0	0.0	0.007
Adam-WeightDecay	-6.75×10^1	3.96	-7.57×10^1	-6.19×10^1	502.0	0.0	0.011
Trust Region-Adaptive	-5.14×10^1	9.48×10^{-1}	-5.29×10^1	-4.96×10^1	602.0	0.0	0.004
Adam-AMSGrad	-1.41×10^1	1.49	-1.64×10^1	-1.04×10^1	502.0	0.0	0.012
Adam	-1.37×10^1	2.34	-1.93×10^1	-9.78	502.0	0.0	0.011
Trust Region-Conservative	-3.34	1.12	-5.31	-1.29	602.0	0.0	0.004