

Table 1: Performance Results for IllConditionedRosenbrock\5Dnalpha100Problem

Optimizer	Mean Final Value	Std Dev	Best Value	Worst Value	Mean Func Evals	Success Rate (%)	Mean Time (s)
QQN-StrongWolfe	$9.36 \times 10^{-1}$	1.45	$3.97 \times 10^{-18}$	4.10	518.2	30.0	0.014
QQN-Backtracking	$5.13 \times 10^{-1}$	$7.26 \times 10^{-1}$	$2.56 \times 10^{-17}$	2.37	671.8	10.0	0.018
GD-WeightDecay	1.20	1.50	$1.50 \times 10^{-1}$	5.62	96.2	0.0	0.003
QQN-Bisection-1	2.17	1.36	$4.92 \times 10^{-2}$	4.51	467.2	0.0	0.011
QQN-Bisection-2	2.19	$9.27 \times 10^{-1}$	$1.02 \times 10^{-1}$	3.97	581.0	0.0	0.012
QQN-GoldenSection	2.80	1.37	$1.36 \times 10^{-3}$	4.57	911.9	0.0	0.014
QQN-CubicQuadraticInterpolation	3.59	$4.77 \times 10^{-1}$	2.63	4.58	387.5	0.0	0.013
L-BFGS-Conservative	3.94	$8.75 \times 10^{-1}$	1.13	4.69	718.2	0.0	0.009
GD-Nesterov	3.97	4.41	$3.68 \times 10^{-1}$	$1.25 \times 10^1$	184.1	0.0	0.006
GD	5.07	$1.39 \times 10^{-1}$	4.75	5.31	32.5	0.0	0.001
Adam-Fast	$1.45 \times 10^1$	2.27	$1.01 \times 10^1$	$2.07 \times 10^1$	39.2	0.0	0.001
GD-Momentum	$3.23 \times 10^1$	4.99	$2.29 \times 10^1$	$4.04 \times 10^1$	21.1	0.0	0.001
Adam-WeightDecay	$6.20 \times 10^1$	$2.38 \times 10^1$	$2.88 \times 10^1$	$1.16 \times 10^2$	502.0	0.0	0.011
QQN-MoreThuente	$1.72 \times 10^2$	$6.98 \times 10^1$	$7.43 \times 10^1$	$3.24 \times 10^2$	484.4	0.0	0.008
L-BFGS	$1.77 \times 10^2$	$1.99 \times 10^2$	$2.18 \times 10^1$	$7.49 \times 10^2$	126.3	0.0	0.002
Adam-AMSGrad	$4.71 \times 10^2$	$7.69 \times 10^1$	$3.27 \times 10^2$	$5.89 \times 10^2$	502.0	0.0	0.011
Adam	$4.99 \times 10^2$	$1.08 \times 10^2$	$3.25 \times 10^2$	$7.38 \times 10^2$	502.0	0.0	0.010
L-BFGS-Aggressive	$8.27 \times 10^2$	$3.96 \times 10^2$	$1.46 \times 10^1$	$1.30 \times 10^3$	772.1	0.0	0.006
Trust Region-Standard	$8.51 \times 10^2$	$1.33 \times 10^2$	$6.38 \times 10^2$	$1.13 \times 10^3$	602.0	0.0	0.004
Trust Region-Adaptive	$1.02 \times 10^3$	$1.56 \times 10^2$	$6.91 \times 10^2$	$1.37 \times 10^3$	602.0	0.0	0.004
Trust Region-Conservative	$1.05 \times 10^3$	$1.73 \times 10^2$	$7.93 \times 10^2$	$1.43 \times 10^3$	602.0	0.0	0.004