

Table 1: Performance Results for IllConditionedRosenbrock\10Dn\_alpha100Problem

Optimizer	Mean Final Value	Std Dev	Best Value	Worst Value	Mean Func Evals	Success Rate (%)	Mean Time (s)
GD-Nesterov	1.21	$2.34 \times 10^{-2}$	1.16	1.25	335.0	0.0	0.011
GD-WeightDecay	1.35	1.62	$1.84 \times 10^{-1}$	5.39	268.9	0.0	0.009
QQN-StrongWolfe	4.71	2.60	$8.59 \times 10^{-1}$	9.52	568.1	0.0	0.016
QQN-Backtracking	4.76	2.20	$2.29 \times 10^{-2}$	7.94	691.9	0.0	0.019
QQN-Bisection-1	5.28	2.45	1.07	9.59	475.3	0.0	0.012
QQN-Bisection-2	7.27	1.35	2.20	8.77	611.2	0.0	0.013
QQN-GoldenSection	8.17	$9.27 \times 10^{-1}$	3.54	9.55	910.4	0.0	0.015
QQN-CubicQuadraticInterpolation	8.49	$6.44 \times 10^{-1}$	6.72	9.74	396.0	0.0	0.014
L-BFGS-Conservative	8.83	$8.60 \times 10^{-1}$	7.14	$1.03 \times 10^1$	702.1	0.0	0.011
GD	$1.01 \times 10^1$	$2.27 \times 10^{-1}$	9.70	$1.06 \times 10^1$	46.8	0.0	0.001
GD-Momentum	$1.08 \times 10^1$	$2.38 \times 10^1$	$5.08 \times 10^{-1}$	$7.75 \times 10^1$	235.3	0.0	0.007
Adam-Fast	$1.21 \times 10^1$	$1.59 \times 10^1$	$1.74 \times 10^{-1}$	$4.50 \times 10^1$	217.8	0.0	0.005
L-BFGS	$1.00 \times 10^2$	$1.64 \times 10^2$	$2.22 \times 10^1$	$7.89 \times 10^2$	150.1	0.0	0.002
Adam-WeightDecay	$1.45 \times 10^2$	$3.25 \times 10^1$	$8.36 \times 10^1$	$2.05 \times 10^2$	502.0	0.0	0.011
QQN-MoreThuente	$3.35 \times 10^2$	$7.79 \times 10^1$	$2.25 \times 10^2$	$4.99 \times 10^2$	484.2	0.0	0.009
Adam	$9.87 \times 10^2$	$1.31 \times 10^2$	$8.05 \times 10^2$	$1.17 \times 10^3$	502.0	0.0	0.011
Adam-AMSGrad	$1.01 \times 10^3$	$9.09 \times 10^1$	$8.81 \times 10^2$	$1.21 \times 10^3$	502.0	0.0	0.012
L-BFGS-Aggressive	$1.14 \times 10^3$	$1.08 \times 10^3$	$4.94 \times 10^1$	$2.86 \times 10^3$	773.3	0.0	0.008
Trust Region-Standard	$1.93 \times 10^3$	$1.96 \times 10^2$	$1.64 \times 10^3$	$2.27 \times 10^3$	602.0	0.0	0.004
Trust Region-Conservative	$2.04 \times 10^3$	$2.94 \times 10^2$	$1.77 \times 10^3$	$2.75 \times 10^3$	602.0	0.0	0.004
Trust Region-Adaptive	$2.11 \times 10^3$	$3.28 \times 10^2$	$1.50 \times 10^3$	$2.82 \times 10^3$	602.0	0.0	0.004