

Table 1: Performance Results for Rosenbrock\\$\_5\$D Problem

Optimizer	Mean Final Value	Std Dev	Best Value	Worst Value	Mean Func Evals	Success Rate (%)	Mean Time (s)
QQN-StrongWolfe	1.04	1.35	$2.55 \times 10^{-17}$	3.97	520.9	25.0	0.015
GD-WeightDecay	1.20	1.67	$1.35 \times 10^{-1}$	6.29	163.2	25.0	0.005
QQN-Backtracking	$4.23 \times 10^{-1}$	$7.10 \times 10^{-1}$	$3.06 \times 10^{-16}$	2.73	665.8	15.0	0.018
GD-Nesterov	3.54	4.58	$3.48 \times 10^{-1}$	$1.49 \times 10^1$	187.2	5.0	0.006
QQN-Bisection-2	2.33	1.07	$2.95 \times 10^{-1}$	3.97	608.6	0.0	0.013
QQN-Bisection-1	2.54	1.55	$2.97 \times 10^{-14}$	4.53	463.9	0.0	0.011
QQN-GoldenSection	2.62	1.40	$1.47 \times 10^{-3}$	4.59	913.9	0.0	0.015
QQN-CubicQuadraticInterpolation	3.60	$5.12 \times 10^{-1}$	2.43	4.59	391.7	0.0	0.014
L-BFGS-Conservative	4.00	$6.20 \times 10^{-1}$	2.95	5.17	708.5	0.0	0.010
GD	5.13	$1.75 \times 10^{-1}$	4.75	5.47	33.2	0.0	0.001
Adam-Fast	$1.45 \times 10^1$	2.42	9.62	$2.01 \times 10^1$	39.0	0.0	0.001
GD-Momentum	$3.48 \times 10^1$	6.05	$2.45 \times 10^1$	$4.71 \times 10^1$	20.7	0.0	0.001
Adam-WeightDecay	$6.42 \times 10^1$	$2.21 \times 10^1$	$2.23 \times 10^1$	$1.01 \times 10^2$	502.0	0.0	0.011
QQN-MoreThuente	$1.67 \times 10^2$	$7.81 \times 10^1$	$5.45 \times 10^1$	$3.35 \times 10^2$	484.3	0.0	0.009
L-BFGS	$3.02 \times 10^2$	$3.78 \times 10^2$	$2.17 \times 10^1$	$1.41 \times 10^3$	120.2	0.0	0.002
Adam	$4.69 \times 10^2$	$9.57 \times 10^1$	$3.14 \times 10^2$	$6.91 \times 10^2$	502.0	0.0	0.010
Adam-AMSGrad	$4.78 \times 10^2$	$1.10 \times 10^2$	$3.02 \times 10^2$	$6.70 \times 10^2$	502.0	0.0	0.012
Trust Region-Standard	$8.36 \times 10^2$	$1.49 \times 10^2$	$5.72 \times 10^2$	$1.21 \times 10^3$	602.0	0.0	0.004
L-BFGS-Aggressive	$8.94 \times 10^2$	$3.56 \times 10^2$	$1.41 \times 10^1$	$1.34 \times 10^3$	772.1	0.0	0.006
Trust Region-Conservative	$1.03 \times 10^3$	$1.63 \times 10^2$	$7.78 \times 10^2$	$1.42 \times 10^3$	602.0	0.0	0.004
Trust Region-Adaptive	$1.04 \times 10^3$	$1.84 \times 10^2$	$7.68 \times 10^2$	$1.35 \times 10^3$	602.0	0.0	0.004