

Table 1: Performance Results for Rastrigin\2DProblem

Optimizer	Mean Final Value	Std Dev	Best Value	Worst Value	Mean Func Evals	Success Rate (%)	Mean Time (s)
QQN-StrongWolfe	6.47	5.69	0.00	1.99×10^1	118.5	70.0	0.002
L-BFGS-Conservative	9.20	2.15	7.96	1.29×10^1	339.4	70.0	0.007
Adam-WeightDecay	8.97	1.99	7.98	1.30×10^1	252.3	65.0	0.005
QQN-Backtracking	8.41	5.46	0.00	1.69×10^1	128.3	55.0	0.003
QQN-GoldenSection	8.28	5.49	0.00	1.99×10^1	242.6	51.7	0.003
QQN-MoreThuente	8.31	4.04	0.00	1.29×10^1	106.6	50.0	0.002
QQN-Bisection-1	9.49	4.02	9.95×10^{-1}	1.99×10^1	143.6	45.0	0.003
QQN-CubicQuadraticInterpolation	9.73	5.49	9.95×10^{-1}	2.59×10^1	118.8	35.0	0.003
QQN-Bisection-2	7.30	4.36	9.95×10^{-1}	1.29×10^1	25.3	15.0	0.000
GD-Nesterov	9.13	1.69	7.97	1.32×10^1	21.8	5.0	0.001
GD-WeightDecay	9.54	2.26	7.96	1.44×10^1	26.2	5.0	0.001
Trust Region-Adaptive	1.07×10^1	4.66	7.96	2.45×10^1	241.7	5.0	0.001
L-BFGS	5.98×10^1	2.50×10^1	2.60×10^1	1.12×10^2	78.8	5.0	0.001
Trust Region-Standard	9.91	4.99	7.96	3.03×10^1	67.8	0.0	0.000
Adam-Fast	9.93	2.27	8.01	1.51×10^1	48.0	0.0	0.001
GD	9.99	2.30	8.09	1.37×10^1	13.1	0.0	0.000
GD-Momentum	1.18×10^1	3.36	8.00	1.82×10^1	18.1	0.0	0.000
Adam-AMSGrad	1.30×10^1	3.80	7.96	1.88×10^1	502.0	0.0	0.011
Adam	1.33×10^1	3.24	7.96	1.71×10^1	502.0	0.0	0.010
Trust Region-Conservative	2.50×10^1	5.05	1.56×10^1	3.20×10^1	602.0	0.0	0.004
L-BFGS-Aggressive	2.77×10^1	5.60	1.75×10^1	3.61×10^1	771.9	0.0	0.005