Table 1: Performance Results for Rastrigin_10D Problem

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Optimizer	Mean Final Value	Std Dev	Best Value	Worst Value	Mean Func Evals	Success Rate (%)	$\begin{array}{c} \text{Mean Time} \\ \text{(s)} \end{array}$
L-BFGS-	1.63e2	1.31e1	1.40e2	1.87e2	3852.0	0.0	0.031
Aggressive							
Trust Region-	1.57e2	1.05e1	1.28e2	1.71e2	3002.0	0.0	0.021
Conservative							
Trust Region-	9.70e1	1.03e1	6.33e1	1.13e2	3002.0	0.0	0.021
Precise							
L-BFGS-	4.68e1	8.45e0	4.06e1	7.77e1	2037.2	20.0	0.020
Conservative							
Adam-	4.48e1	4.03e0	4.17e1	5.47e1	718.0	55.0	0.018
AMSGrad							
Adam	4.65e1	4.42e0	4.16e1	5.97e1	731.5	30.0	0.016
Trust Region-	4.39e1	2.92e0	4.16e1	4.98e1	1397.8	40.0	0.010
Adaptive	4 50 3	4.10.0	4.00.1	F 40 3	240.0	05.0	0.000
GD-Nesterov	4.50e1	4.13e0	4.02e1	5.49e1	249.0	25.0	0.008
Adam-	4.52e1	3.97e0	4.15e1	5.48e1	253.8	35.0	0.006
WeightDecay	4 1 1 1	7.00.0	0.50.1	0.07.1	201.6	ar o	0.000
L-BFGS-	4.11e1	7.33e0	2.56e1	6.07e1	291.6	65.0	0.006
MoreThuente	F 11 1	1 61 1	0.00.1	0.06.1	016.4	45.0	0.005
QQN-Bisection-	5.11e1	1.61e1	3.88e1	8.86e1	216.4	45.0	0.005
1 00N	4 59 .1	1 10 1	0.11.1	7.00.1	075 4	50.0	0.005
QQN- GoldenSection	4.53e1	1.18e1	2.11e1	7.26e1	275.4	50.0	0.005
	4 50-1	7.84e0	9 91 -1	E 97-1	102 5	60.0	0.002
QQN-	4.52e1	7.8400	3.21e1	5.87e1	102.5	60.0	0.003
CubicQuadraticInt	erpolation 5.16e1	1.59e1	3.24e1	9.55e1	118.5	40.0	0.003
QQN- StrongWolfe	5.10e1	1.59e1	3.24 e1	9.5561	116.5	40.0	0.005
Adam-Robust	4.44e1	4.07e0	4.13e1	5.48e1	127.9	30.0	0.003
Trust Region-	4.44e1 $4.59e1$	4.07e0 6.59e0	4.13e1 4.10e1	7.11e1	346.6	$\frac{30.0}{25.0}$	0.003 0.002
Standard	4.0961	0.59e0	4.1001	7.1161	540.0	25.0	0.002
GD-	4.39e1	3.41e0	3.60e1	4.98e1	61.3	45.0	0.002
WeightDecay	4.5961	5.4160	9.0061	4.3001	01.5	40.0	0.002
Adam-Fast	4.51e1	4.26e0	3.98e1	5.44e1	71.9	30.0	0.002
L-BFGS-	4.36e1	4.20e0 $4.97e0$	3.39e1	5.44e1	122.0	50.0	0.002
Limited	4.0061	4.3760	0.0361	9.4161	122.0	50.0	0.002
L-BFGS	1.85e2	3.27e1	1.42e2	2.59e2	102.0	0.0	0.001
QQN-Bisection-	5.38e1	1.81e1	2.52e1	8.86e1	50.6	15.0	0.001
2	0.0001	1.0101	2.0201	0.0001	00.0	10.0	0.001
GD-Momentum	6.15e1	1.25e1	4.06e1	8.46e1	30.6	10.0	0.001
GD-	4.85e1	8.54e0	3.80e1	6.99e1	23.2	40.0	0.001
AdaptiveMomentu		2.0 200	2.0001	3.0001		20.0	3.001
Trust Region-	4.36e1	3.69e0	3.87e1	5.26e1	93.5	45.0	0.001
Aggressive		2.2000	0.0.01	0.2001	23.0	_3.0	0.001
GD	4.47e1	4.34e0	3.89e1	5.49e1	19.4	35.0	0.001
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