Table 1: Performance Results for Booth_2D Problem

Optimizer	Mean Final Value	Std Dev	Best Value	Worst Value	Mean Func Evals	Success Rate (%)	Mean Time (s)
QQN-StrongWolfe	1.13e-2	7.50e-4	9.93e-3	1.29e-2	26.0	100.0	0.000
L-BFGS-MoreThuente	3.86e-2	3.42e-2	5.15e-4	1.13e-1	29.7	100.0	0.000
L-BFGS	4.05e-2	1.53e-2	1.17e-2	6.97e-2	42.4	100.0	0.001
QQN-CubicQuadraticInterpolation	2.56e-6	2.13e-6	2.81e-7	7.40e-6	56.0	100.0	0.001
L-BFGS-Limited	6.14e-2	3.83e-2	2.04e-3	1.13e-1	56.1	100.0	0.001
GD	1.17e-1	1.31e-3	1.15e-1	1.20e-1	86.0	100.0	0.002
QQN-GoldenSection	3.39e-2	1.16e-2	1.60e-2	5.86e-2	92.0	100.0	0.001
QQN-Bisection-2	1.49e-2	2.92e-3	1.15e-2	2.20e-2	100.0	100.0	0.002
QQN-Bisection-1	1.87e-2	1.86e-2	1.21e-2	9.94e-2	162.4	100.0	0.003
L-BFGS-Conservative	1.10e-1	5.23e-3	1.03e-1	1.20e-1	208.0	100.0	0.005
Adam-WeightDecay	1.19e-1	3.80e-4	1.19e-1	1.20e-1	1886.3	100.0	0.038
Trust Region-Adaptive	6.12e-2	3.24e-2	2.38e-2	1.24e-1	919.9	90.0	0.005
GD-WeightDecay	1.29e0	5.10e-1	1.15e-1	1.73e0	27.0	15.0	0.001
Trust Region-Standard	5.27e-1	1.54e-1	3.46e-1	7.93e-1	235.1	0.0	0.001
Trust Region-Aggressive	1.49e0	4.64e-1	4.00e-1	2.38e0	63.5	0.0	0.000
GD-Nesterov	2.56e0	2.92e-1	2.10e0	2.95e0	20.6	0.0	0.001
Adam-Fast	3.09e0	2.17e-1	2.74e0	3.45e0	56.3	0.0	0.001
Trust Region-Precise	1.05e1	5.90e0	2.82e0	2.22e1	3002.0	0.0	0.018
GD-Momentum	7.27e0	3.58e-1	6.20e0	8.01e0	21.2	0.0	0.001
GD-AdaptiveMomentum	9.51e0	8.38e-1	8.56e0	1.11e1	21.0	0.0	0.001
Adam-AMSGrad	1.19e1	2.01e0	8.69e0	1.53e1	2502.0	0.0	0.055
Adam	1.20e1	2.17e0	8.76e0	1.67e1	2502.0	0.0	0.048
Adam-Robust	2.03e1	2.55e0	1.43e1	2.49e1	2502.0	0.0	0.054
Trust Region-Conservative	6.49e1	6.14e0	5.04e1	7.80e1	3002.0	0.0	0.018
L-BFGS-Aggressive	7.43e1	5.77e0	6.24e1	8.60e1	3852.0	0.0	0.021