Table 1: Performance Results for PenaltyI_10D_alpha1e6 Problem

Optimizer	Mean Final Value	Std Dev	Best Value	Worst Value	Mean Func Evals	Success Rate (%)	Mean Time (s)
QQN-StrongWolfe	1.10e1	3.01e0	8.12e0	2.06e1	3057.8	0.0	0.090
QQN-GoldenSection	5.63e0	1.88e-4	5.62e0	5.63e0	4382.9	0.0	0.085
QQN-Bisection-1	5.63e0	2.30e-3	5.63e0	5.63e0	2161.3	0.0	0.075
L-BFGS-Limited	5.89e0	1.07e-1	5.78e0	6.13e0	4213.4	0.0	0.043
L-BFGS-Conservative	5.73e0	1.30e-1	5.63e0	6.12e0	2611.7	0.0	0.034
L-BFGS-MoreThuente	2.89e1	6.69e0	1.06e1	3.74e1	2859.4	0.0	0.034
QQN-Bisection-2	1.86e1	5.50e0	9.12e0	2.63e1	1070.2	0.0	0.027
Trust Region-Standard	7.40e5	2.39e5	2.96e5	1.19e6	3002.0	0.0	0.021
Trust Region-Adaptive	7.20e5	1.83e5	3.49e5	1.14e6	3002.0	0.0	0.021
Trust Region-Conservative	7.72e5	1.26e5	5.48e5	1.03e6	3002.0	0.0	0.021
Trust Region-Precise	7.75e5	1.73e5	4.16e5	9.96e5	3002.0	0.0	0.021
Trust Region-Aggressive	7.20e5	1.73e5	3.91e5	1.04e6	3002.0	0.0	0.021
Adam-AMSGrad	5.66e0	1.39e-2	5.64e0	5.69e0	761.0	0.0	0.019
Adam	5.68e0	4.13e-2	5.64e0	5.80e0	764.5	0.0	0.017
Adam-WeightDecay	9.99e0	6.96e0	5.72e0	3.69e1	274.1	0.0	0.007
Adam-Robust	2.18e1	1.43e1	5.69e0	4.63e1	129.1	0.0	0.003
L-BFGS	1.71e5	2.52e5	8.62e0	6.62e5	101.3	Success	0.002
Adam-Fast	1.17e3	2.05e3	6.26e0	8.05e3	42.3	0.0	0.001
QQN-CubicQuadraticInterpolation	5.62e0	1.32e-15	5.62e0	5.62e0	38.0	0.0	0.001
L-BFGS-Aggressive	7.30e5	1.81e5	2.94e5	1.04e6	11.0	0.0	0.001
GD	6.02e0	3.78e-2	5.96e0	6.11e0	19.4	0.0	0.001
GD-AdaptiveMomentum	1.60e2	3.35e2	7.22e0	1.11e3	15.0	0.0	0.000
GD-WeightDecay	6.01e1	1.13e2	6.73e0	4.89e2	15.8	0.0	0.000
GD-Nesterov	4.81e2	6.94e2	6.89e0	2.37e3	14.9	0.0	0.000
GD-Momentum	2.58e2	6.61e2	7.18e0	3.05e3	15.4	0.0	0.000