

Table 1: Performance Results for LinearRegression_200samples_10features_reg0.01 Problem

Optimizer	Mean Final Value	Std Dev	Best Value	Worst Value	Mean Func Evals	Success Rate (%)	Mean Time (s)
QQN-CubicQuadraticInterpolation	4.82e-1	2.65e-5	4.82e-1	4.82e-1	54.1	100.0	0.035
QQN-StrongWolfe	4.82e-1	1.42e-5	4.82e-1	4.82e-1	62.0	100.0	0.039
QQN-Bisection-2	4.82e-1	1.86e-6	4.82e-1	4.82e-1	69.0	100.0	0.050
L-BFGS-MoreThuente	4.82e-1	8.59e-5	4.82e-1	4.82e-1	72.8	100.0	0.038
QQN-Bisection-1	4.82e-1	1.93e-6	4.82e-1	4.82e-1	89.0	100.0	0.066
GD-WeightDecay	4.82e-1	9.82e-6	4.82e-1	4.82e-1	116.7	100.0	0.109
L-BFGS-Limited	4.82e-1	9.14e-5	4.82e-1	4.82e-1	159.2	100.0	0.068
QQN-GoldenSection	4.82e-1	1.59e-5	4.82e-1	4.82e-1	180.0	100.0	0.059
L-BFGS-Aggressive	4.82e-1	2.65e-5	4.82e-1	4.82e-1	205.7	100.0	0.088
GD	4.82e-1	3.41e-6	4.82e-1	4.82e-1	343.6	100.0	0.321
L-BFGS-Conservative	4.82e-1	2.33e-5	4.82e-1	4.82e-1	436.2	100.0	0.242
L-BFGS	5.09e-1	9.28e-2	4.82e-1	8.97e-1	77.5	90.0	0.039
Adam-Fast	5.14e-1	4.25e-2	4.82e-1	5.75e-1	189.9	20.0	0.115
Trust Region-Adaptive	1.08e3	8.92e2	5.40e-1	2.10e3	1420.7	0.0	0.673
Trust Region-Standard	2.56e3	4.67e3	7.13e-1	1.23e4	372.2	0.0	0.178
Trust Region-Aggressive	3.92e4	2.34e4	1.28e0	6.10e4	111.1	0.0	0.054
Adam-WeightDecay	2.42e0	4.49e-1	1.66e0	3.54e0	2502.0	0.0	1.496
GD-Nesterov	1.80e0	1.42e-2	1.78e0	1.83e0	37.9	0.0	0.035
GD-Momentum	2.46e0	2.68e-2	2.41e0	2.51e0	38.1	0.0	0.035
GD-AdaptiveMomentum	5.05e0	5.26e-2	4.95e0	5.12e0	35.0	0.0	0.032
Trust Region-Precise	5.39e1	3.12e0	4.85e1	5.96e1	3002.0	0.0	1.419
Adam	5.34e1	2.38e0	4.86e1	5.85e1	2502.0	0.0	1.495
Adam-AMSGrad	5.39e1	1.53e0	5.00e1	5.75e1	2502.0	0.0	1.502
Adam-Robust	6.34e1	2.14e0	5.92e1	6.79e1	2502.0	0.0	1.501
Trust Region-Conservative	1.06e2	1.88e0	1.03e2	1.10e2	3002.0	0.0	1.417