Table 1: Performance Results for Trigonometric_5D Problem

Optimizer	Mean Final Value	Std Dev	Best Value	Worst Value	Mean Func Evals	Success Rate (%)	Mean Time (s)
Adam-AMSGrad	2.94e-2	3.49e-2	9.71e-7	8.56e-2	2192.1	35.0	0.053
QQN-StrongWolfe	7.54e-7	4.98e-7	1.51e-8	1.93e-6	1274.7	90.0	0.042
Adam	1.12e-2	2.74e-2	8.42e-7	8.54e-2	1728.1	85.0	0.038
L-BFGS-Aggressive	1.22e0	5.81e-1	1.48e-1	2.56e0	3851.9	0.0	0.025
Adam-Robust	1.43e-2	2.36e-2	2.34e-7	6.11e-2	978.1	20.0	0.024
L-BFGS-MoreThuente	5.44e-4	2.01e-3	1.15e-7	9.19e-3	1087.8	75.0	0.022
QQN-GoldenSection	2.34e-7	2.85e-7	3.03e-9	8.60e-7	1123.5	100.0	0.021
L-BFGS-Limited	2.14e-3	9.31e-3	7.20e-7	4.27e-2	1331.0	95.0	0.019
Adam-WeightDecay	1.95e-2	3.08e-2	3.70e-7	8.53e-2	784.6	70.0	0.018
QQN-CubicQuadraticInterpolation	4.16e-7	3.74e-7	1.09e-9	9.80e-7	389.1	100.0	0.016
QQN-Bisection-1	8.71e-4	3.70e-3	1.72e-10	1.70e-2	664.0	90.0	0.015
L-BFGS-Conservative	2.73e-3	1.19e-2	1.66e-7	5.45e-2	887.4	90.0	0.014
GD	9.83e-7	7.74e-9	9.62e-7	9.94e-7	399.2	100.0	0.011
QQN-Bisection-2	3.22e-7	3.08e-7	6.17e-10	9.20e-7	305.6	80.0	0.008
GD-WeightDecay	1.36e-2	2.77e-2	8.18e-7	8.54e-2	105.4	75.0	0.004
L-BFGS	4.77e0	8.95e0	1.26e-2	4.30e1	233.9	0.0	0.004
Trust Region-Conservative	1.91e-2	1.87e-2	8.29e-4	5.63e-2	425.6	0.0	0.003
Adam-Fast	6.17e-2	5.21e-2	7.00e-4	1.62e-1	54.8	0.0	0.001
GD-Nesterov	1.60e-2	2.60e-2	4.85e-4	7.53e-2	33.5	0.0	0.001
GD-AdaptiveMomentum	1.79e-2	3.35e-2	1.30e-4	1.56e-1	30.6	0.0	0.001
GD-Momentum	1.57e-1	1.93e-1	4.87e-3	8.47e-1	25.0	0.0	0.001
Trust Region-Precise	5.59e-2	2.09e-2	1.47e-2	9.38e-2	84.8	0.0	0.001
Trust Region-Adaptive	1.25e-1	7.39e-2	2.86e-2	3.04e-1	26.1	0.0	0.000
Trust Region-Standard	4.09e-1	1.81e-1	1.21e-1	7.66e-1	9.8	0.0	0.000
Trust Region-Aggressive	1.41e0	4.40e-1	6.56e-1	2.25e0	5.2	0.0	0.000