

Table 1: Performance Results for Schwefel<sub>5</sub>*DProblem*

Optimizer	Mean Final Value	Std Dev	Best Value	Worst Value	Mean Func Evals	Success Rate (%)	Mean Time (s)
<b>QQN-Backtracking</b>	$-2.67 \times 10^4$	$5.57 \times 10^4$	$-1.74 \times 10^5$	$1.48 \times 10^3$	473.4	15.0	0.022
QQN-StrongWolfe	$-4.36 \times 10^3$	$8.64 \times 10^3$	$-2.90 \times 10^4$	$1.48 \times 10^3$	444.5	0.0	0.019
QQN-CubicQuadraticInterpolation	$1.63 \times 10^3$	$5.88 \times 10^2$	$5.92 \times 10^2$	$2.21 \times 10^3$	182.4	0.0	0.006
QQN-Bisection-1	$1.78 \times 10^3$	$4.62 \times 10^{-13}$	$1.78 \times 10^3$	$1.78 \times 10^3$	53.5	0.0	0.001
QQN-Bisection-2	$1.78 \times 10^3$	$4.55 \times 10^{-13}$	$1.78 \times 10^3$	$1.78 \times 10^3$	52.0	0.0	0.001
QQN-MoreThuente	$1.78 \times 10^3$	$4.55 \times 10^{-13}$	$1.78 \times 10^3$	$1.78 \times 10^3$	66.4	0.0	0.001
QQN-GoldenSection	$1.78 \times 10^3$	$6.91 \times 10^{-13}$	$1.78 \times 10^3$	$1.78 \times 10^3$	151.4	0.0	0.002
GD-Momentum	$1.78 \times 10^3$	$2.42 \times 10^{-7}$	$1.78 \times 10^3$	$1.78 \times 10^3$	324.1	0.0	0.009
GD-Nesterov	$1.78 \times 10^3$	$5.51 \times 10^{-8}$	$1.78 \times 10^3$	$1.78 \times 10^3$	334.9	0.0	0.011
L-BFGS	$1.78 \times 10^3$	$6.32 \times 10^{-2}$	$1.78 \times 10^3$	$1.78 \times 10^3$	297.6	0.0	0.007
L-BFGS-Aggressive	$1.78 \times 10^3$	$1.38 \times 10^{-1}$	$1.78 \times 10^3$	$1.78 \times 10^3$	214.5	0.0	0.004
GD-WeightDecay	$1.80 \times 10^3$	$1.19 \times 10^{-1}$	$1.80 \times 10^3$	$1.80 \times 10^3$	335.0	0.0	0.011
Adam-Fast	$1.86 \times 10^3$	$5.32 \times 10^{-1}$	$1.85 \times 10^3$	$1.86 \times 10^3$	502.0	0.0	0.010
GD	$2.01 \times 10^3$	$9.58 \times 10^{-1}$	$2.01 \times 10^3$	$2.01 \times 10^3$	335.0	0.0	0.009
L-BFGS-Conservative	$2.12 \times 10^3$	3.10	$2.11 \times 10^3$	$2.12 \times 10^3$	558.8	0.0	0.016
Trust Region-Standard	$2.17 \times 10^3$	1.06	$2.17 \times 10^3$	$2.17 \times 10^3$	602.0	0.0	0.004
Trust Region-Adaptive	$2.32 \times 10^3$	1.50	$2.31 \times 10^3$	$2.32 \times 10^3$	602.0	0.0	0.004
Adam-WeightDecay	$2.35 \times 10^3$	1.18	$2.35 \times 10^3$	$2.35 \times 10^3$	502.0	0.0	0.011
Adam-AMSGrad	$2.36 \times 10^3$	1.26	$2.36 \times 10^3$	$2.36 \times 10^3$	502.0	0.0	0.012
Adam	$2.36 \times 10^3$	$9.91 \times 10^{-1}$	$2.36 \times 10^3$	$2.36 \times 10^3$	502.0	0.0	0.010
Trust Region-Conservative	$2.36 \times 10^3$	1.38	$2.36 \times 10^3$	$2.37 \times 10^3$	602.0	0.0	0.004