Table 1: Performance Results for Michalewicz_10D_m10 Problem

Optimizer	Mean Final	Std Dev	Best	Worst	Mean Func	Success	Mean Time
	Value		Value	Value	Evals	Rate (%)	(s)
QQN-	-3.34e0	1.51e0	-6.26e0	-9.35e-1	1730.8	0.0	0.073
CubicQuadratio	-		C 07 0	0.19.0	1016 5	F 0	0.009
QQN- StrongWolfe	-4.71e0	1.16e0	-6.27e0	-2.13e0	1916.5	5.0	0.063
QQN-Bisection-	-4.24e0	1.09e0	-5.36e0	-2.14e0	2030.0	0.0	0.055
1	-4.24e0	1.09e0	-5.5000	-2.14e0	2030.0	0.0	0.055
QQN-Bisection-	-4.37e0	1.24e0	-6.26e0	-1.67e0	1808.5	5.0	0.047
2	-4.5760	1.2460	-0.2000	-1.0760	1000.0	5.0	0.047
QQN-	-4.14e0	1.08e0	-6.30e0	-2.32e0	2197.4	5.0	0.045
GoldenSection	-4.1460	1.0000	-0.5060	-2.5260	2131.4	5.0	0.040
L-BFGS-	-3.52e0	1.38e0	-5.59e0	-6.44e-1	3009.3	0.0	0.038
Limited	0.0200	1.0000	0.0000	0.110 1	3000.3	0.0	0.000
L-BFGS-	-4.54e0	9.46e-1	-6.26e0	-2.94e0	2566.8	0.0	0.037
Conservative	1.0 100	0.100 1	0.2000	2.0100	2000.0	0.0	0.00.
L-BFGS-	-1.30e0	9.34e-1	-3.26e0	3.39e-1	3050.9	0.0	0.021
Aggressive							
L-BFGS-	-4.11e0	7.64e-1	-5.98e0	-2.73e0	925.2	0.0	0.020
MoreThuente							
Adam	-5.84e0	5.72e-1	-6.27e0	-4.65e0	508.9	20.0	0.012
Adam-	-5.74e0	6.30e-1	-6.28e0	-4.40e0	450.1	30.0	0.012
AMSGrad							
GD-	-4.56e0	7.54e-1	-6.26e0	-2.97e0	174.7	0.0	0.006
WeightDecay							
Trust Region-	-3.71e0	9.15e-1	-5.42e0	-2.14e0	644.0	0.0	0.005
Conservative							
Adam-	-5.31e0	5.80e-1	-6.25e0	-4.38e0	179.3	0.0	0.004
WeightDecay							
Adam-Robust	-5.03e0	7.58e-1	-6.26e0	-3.55e0	111.0	0.0	0.003
Adam-Fast	-6.12e0	4.94e-1	-6.77e0	-4.58e0	106.2	35.0	0.002
GD-Momentum	-3.79e0	1.08e0	-5.24e0	-1.13e0	37.3	0.0	0.001
GD-	-4.52e0	7.73e-1	-6.23e0	-2.85e0	27.6	0.0	0.001
AdaptiveMoment		0.70 1	1110	0.07.0	0.4.0	0.0	0.001
L-BFGS	-3.66e-1	3.76e-1	-1.14e0	6.67e-2	64.8	0.0	0.001
Trust Region-	-3.69e0	9.58e-1	-5.30e0	-2.10e0	114.2	0.0	0.001
Precise GD-Nesterov	9.7460	1 10-0	-6.19e0	-1.81e0	26.9	0.0	0.001
GD-Nesterov GD	-3.74e0 -3.59e0	1.19e0 7.26e-1	-6.19e0 -5.04e0	-1.81e0 -2.59e0	$\frac{26.9}{17.2}$	0.0	0.001 0.000
Trust Region-	-3.26e0	7.20e-1 9.04e-1	-5.04e0 -5.27e0	-2.59e0 -1.43e0	28.7	0.0	0.000
Adaptive	-3.2000	∂.U4E-1	-5.2760	-1.4560	20.1	0.0	0.000
Trust Region-	-2.49e0	1.15e0	-4.98e0	-5.97e-1	9.8	0.0	0.000
Standard	-2.4900	1.1960	-4. <i>3</i> 0EU	-0.316-1	<i>9</i> .0	0.0	0.000
Trust Region-	-1.68e0	6.53 e-1	-3.16e0	-5.90e-1	5.3	0.0	0.000
Aggressive	1.0000	0.000-1	0.1000	0.000-1	0.0	0.0	0.000