

Table 1: Summary Statistics by Problem Family

Problem Family	Optimizer	Avg Success	Avg Final	Avg Func	Avg Grad	Avg Time
		Rate (%)	Value	Evals	Evals	(s)
Ackley	Trust Region-Precise	0.0	3.60e0	42.5	28.9	0.000
	GD	0.0	3.57e0	57.1	111.1	0.002
	GD-WeightDecay	0.0	3.60e0	28.0	52.0	0.001
	Adam	0.0	3.57e0	532.0	531.0	0.012
	Trust Region-Standard	0.0	4.68e0	8.9	6.6	0.000
	Adam-WeightDecay	0.0	3.58e0	194.6	193.6	0.005
	GD-Nesterov	0.0	3.61e0	20.5	37.5	0.001
	GD-AdaptiveMomentum	0.0	3.58e0	21.9	40.9	0.001
	L-BFGS-Conservative	0.0	3.57e0	242.7	145.1	0.005
	GD-Momentum	0.0	3.74e0	14.1	24.1	0.000
	Adam-Robust	0.0	3.58e0	76.2	75.2	0.002
	Trust Region-Aggressive	0.0	4.38e0	5.2	4.1	0.000
	Adam-Fast	0.0	3.61e0	80.9	79.9	0.002
	Adam-AMSGrad	0.0	3.57e0	1055.6	1054.6	0.025
	Trust Region-Conservative	0.0	3.58e0	196.4	131.5	0.001
	Trust Region-Adaptive	1.7	3.92e0	16.8	11.8	0.000
	L-BFGS-Limited	5.0	3.51e0	209.8	79.3	0.003
	QQN-StrongWolfe	6.7	3.52e0	65.0	62.1	0.002
	QQN-GoldenSection	13.3	3.42e0	172.7	38.4	0.003
	L-BFGS-Aggressive	15.0	3.68e0	2118.3	639.2	0.014
	QQN-CubicQuadraticInterpolation	16.7	3.53e0	391.7	461.3	0.012
	L-BFGS-MoreThuente	20.0	3.47e0	49.7	36.5	0.001
	L-BFGS	30.0	3.39e0	152.4	68.5	0.002
	QQN-Bisection-2	31.7	3.24e0	51.0	62.7	0.001
	QQN-Bisection-1	33.3	3.26e0	71.7	107.2	0.002
	QQN-GoldenSection	0.0	1.13e0	145.7	29.7	0.002
	Trust Region-Standard	0.0	1.38e0	5.9	4.1	0.000
	Trust Region-Precise	0.0	1.21e0	180.8	121.0	0.001
	QQN-StrongWolfe	0.0	1.13e0	110.8	114.7	0.004
	GD-Nesterov	0.0	1.42e0	20.6	37.2	0.001