Figure 1: STOMP Optimization Process Overview

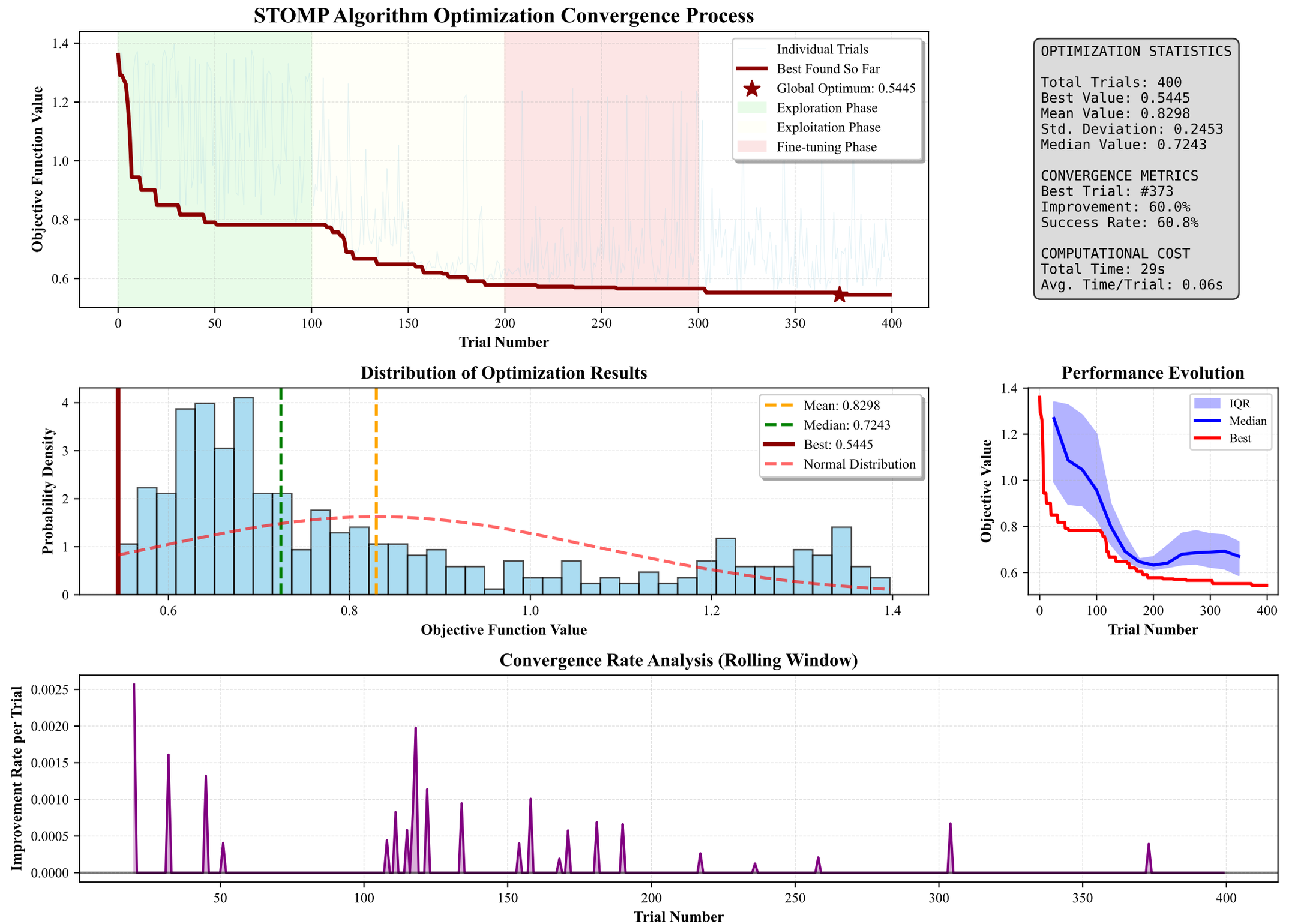
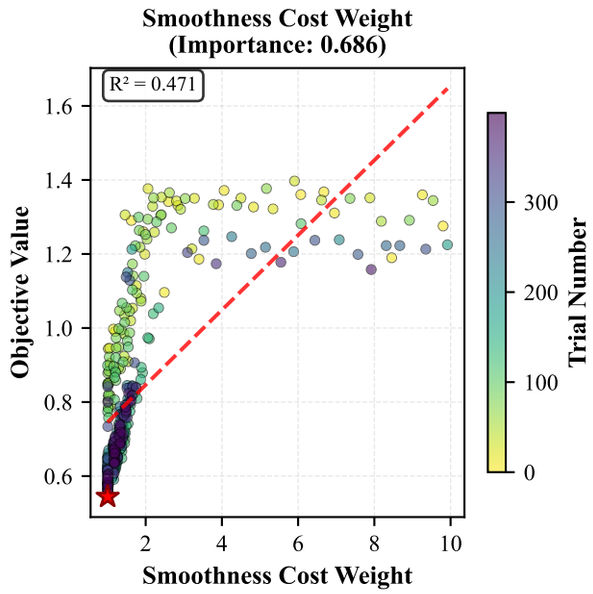
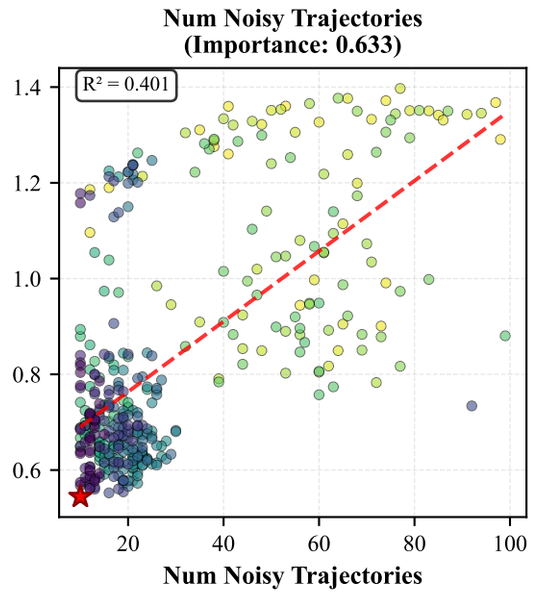
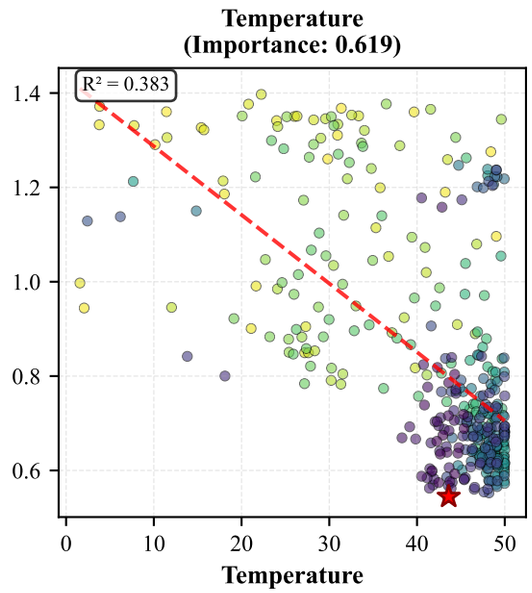
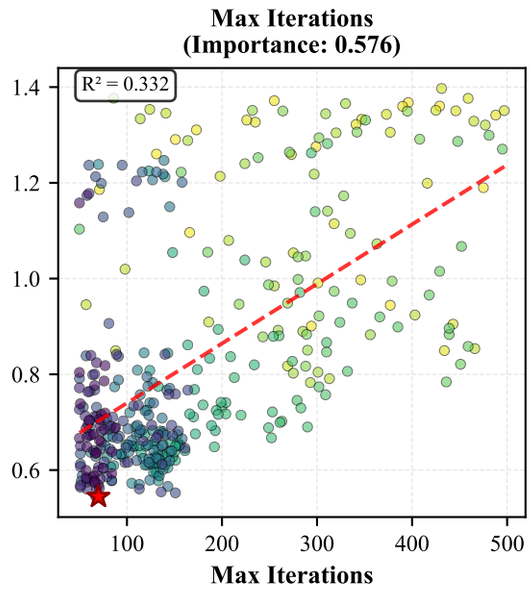


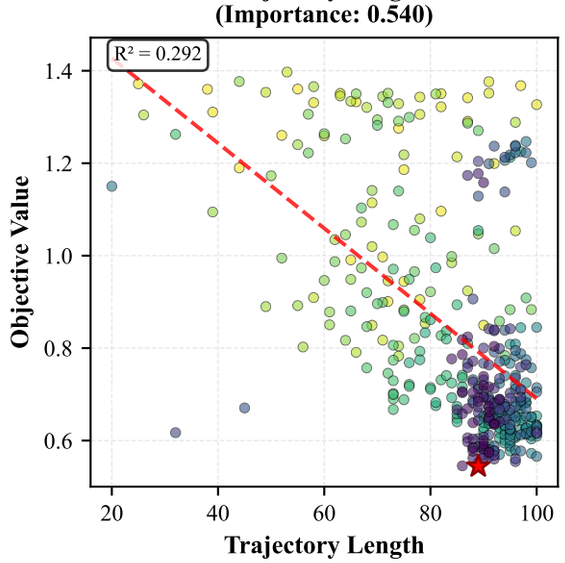
Figure 2: STOMP Parameter Analysis and Sensitivity Study

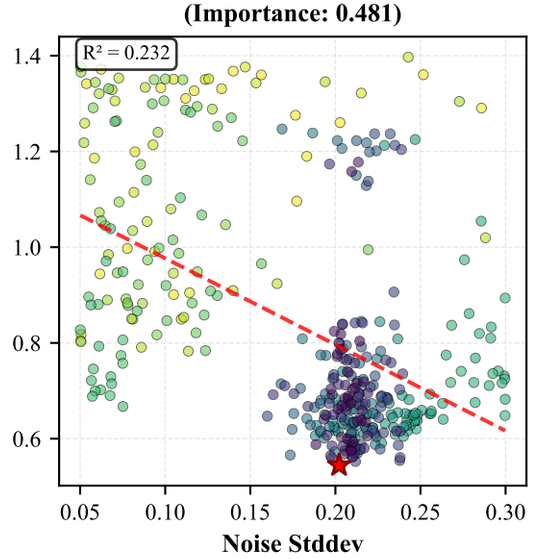


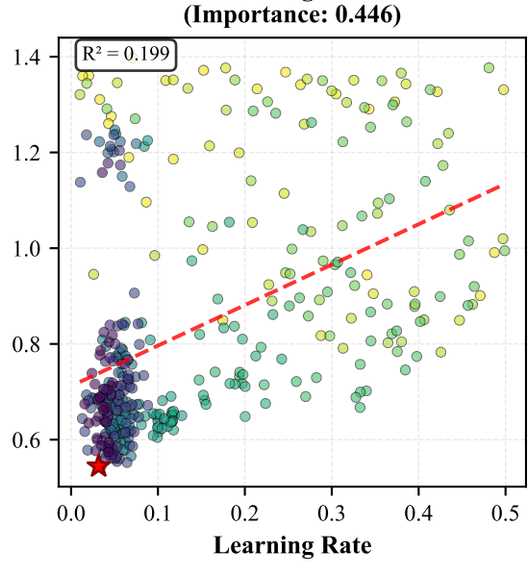


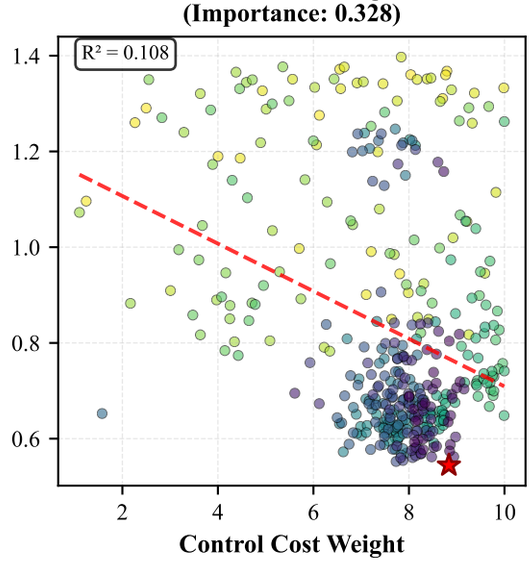


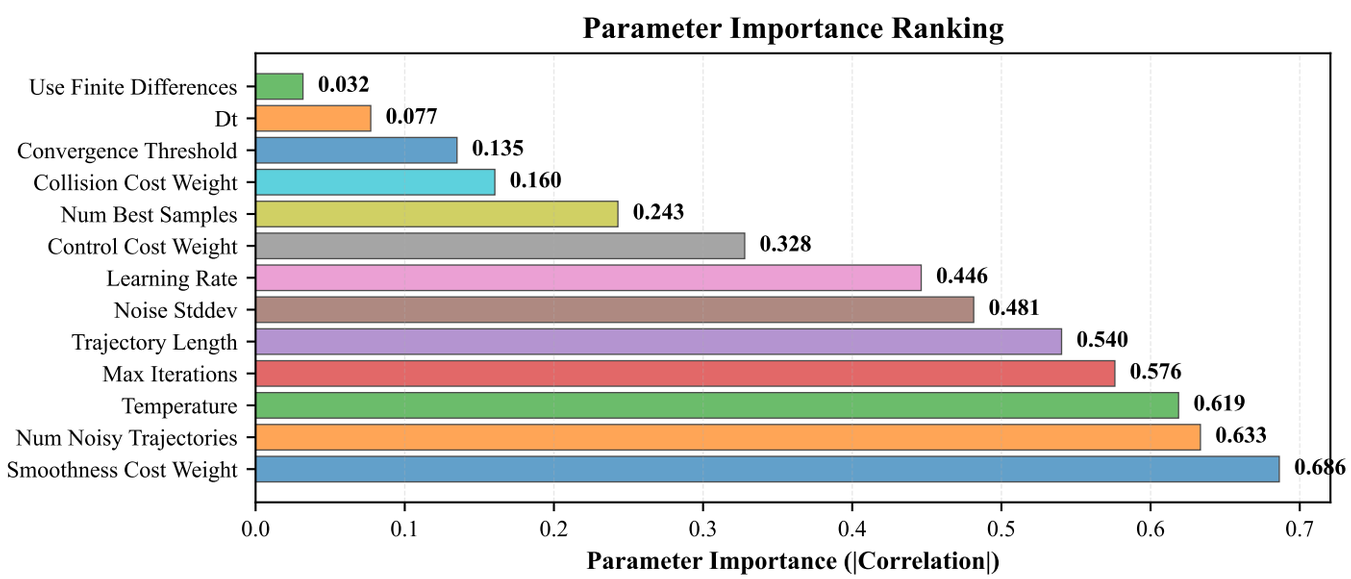












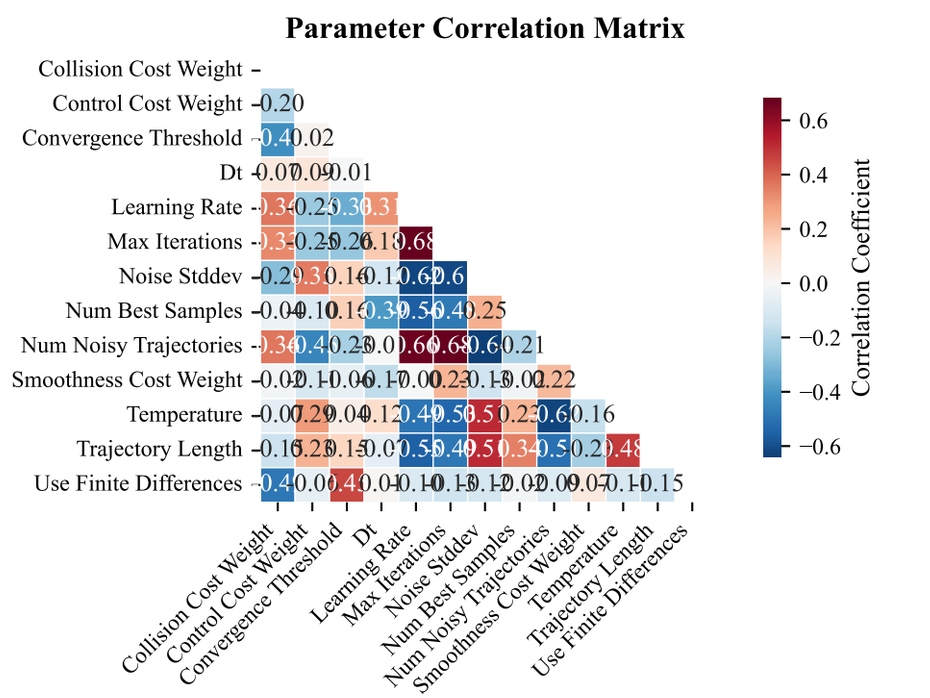
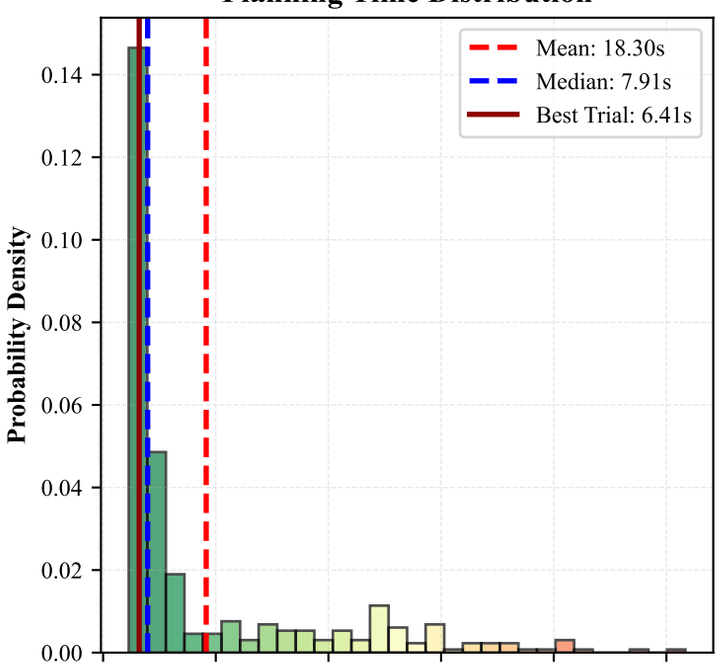
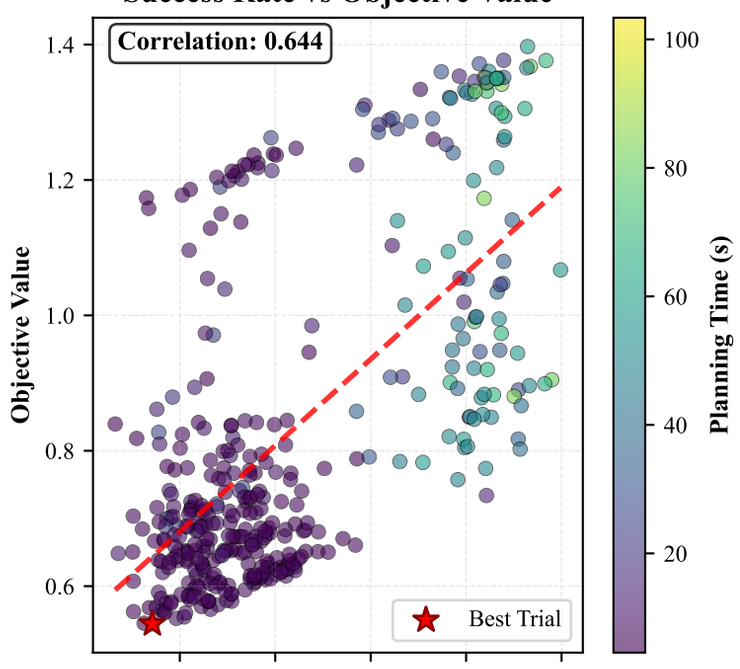
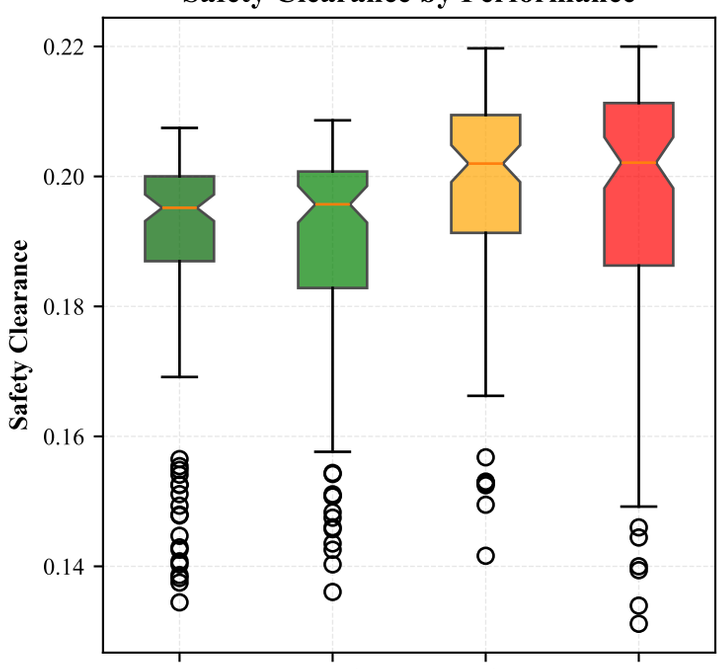


Figure 3: Performance Metrics and Computational Analysis







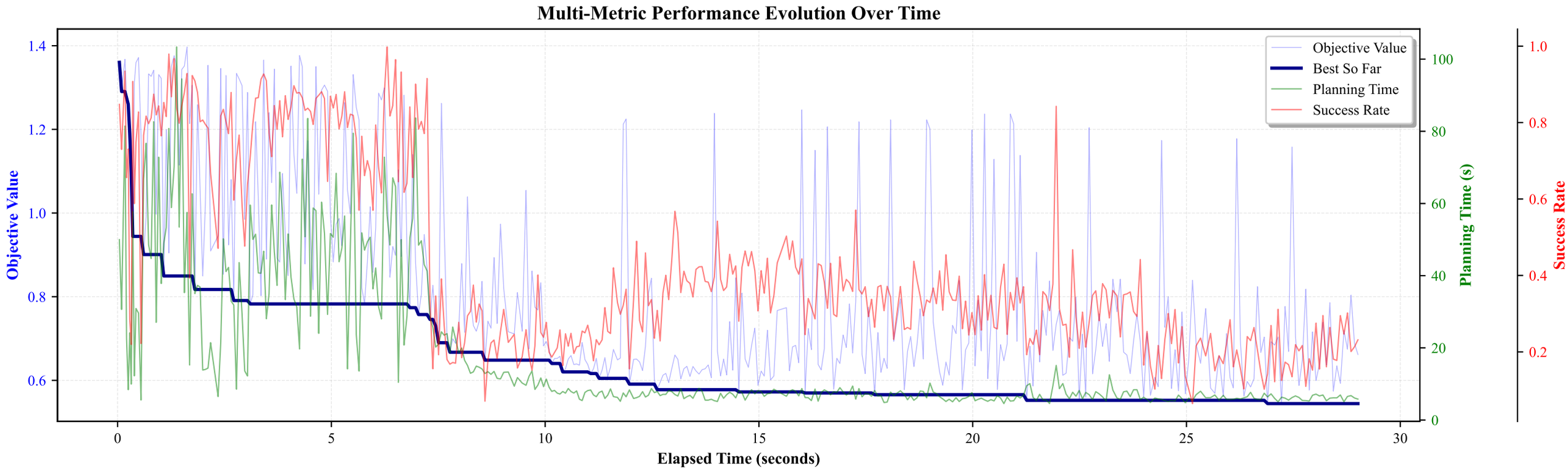
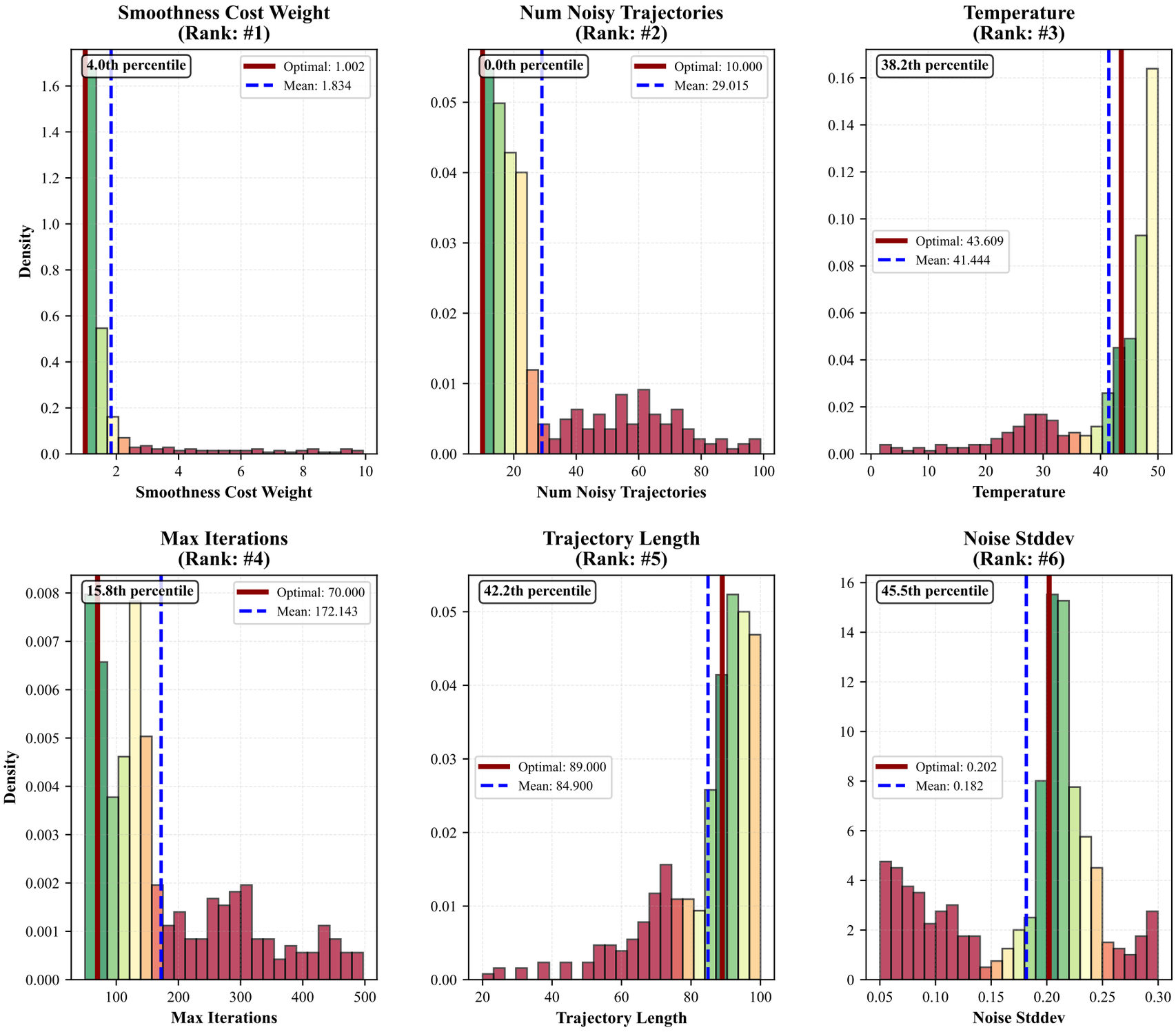


Figure 4: Optimal Configuration Analysis and Parameter Validation



Optimal Configuration Summary

Parameter	Optimal Val	Search Rang	Percentil
Max Iterations	70.0000	[50.000, 497.00	15.8%
Num Noisy Trajectorie	10.0000	[10.000, 99.000	0.0%
Num Best Samples	13.0000	[2.000, 20.000	55.8%
Learning Rate	0.0317	[0.010, 0.499]	6.5%
Temperature	43.6089	[1.573, 49.999	38.2%
Dt	0.1449	[0.011, 0.200]	50.7%
Noise Stddev	0.2022	[0.050, 0.300]	45.5%
Control Cost Weight	8.8363	[1.101, 9.996]	83.0%
Smoothness Cost Weigh	1.0024	[1.000, 9.918]	4.0%
Collision Cost Weight	27.9573	[11.164, 99.987	6.0%
Use Finite Differences	True	True: 97, False: 3	75.8%
Trajectory Length	89.0000	[20.000, 100.00	42.2%
Convergence Threshol	0.0006	[0.000, 0.001]	93.8%