Abs distance is *abs |final solution – global minimum|*. The budget for most functions is 10,000. The budget for F8 and F9 is 40,000. The budget for F4 and F10 is 300,000. The budget for three algorithms is always the same. Each bar is the sum of 20 abs distances.

Figure 1 sum of abs distance for 20 runs (most functions)

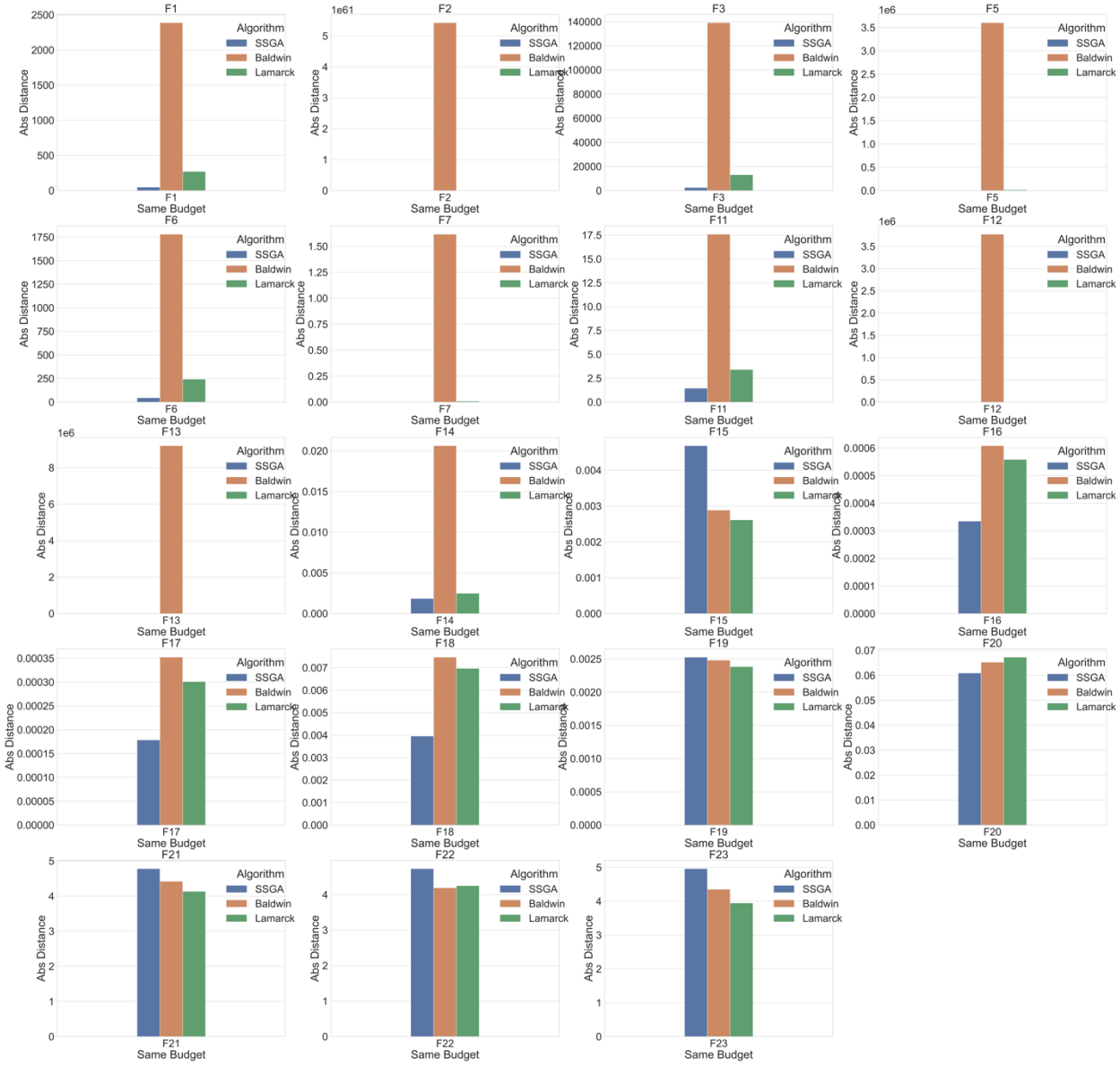


Figure 2 sum of abs distance for 20 runs(F8 and F9)

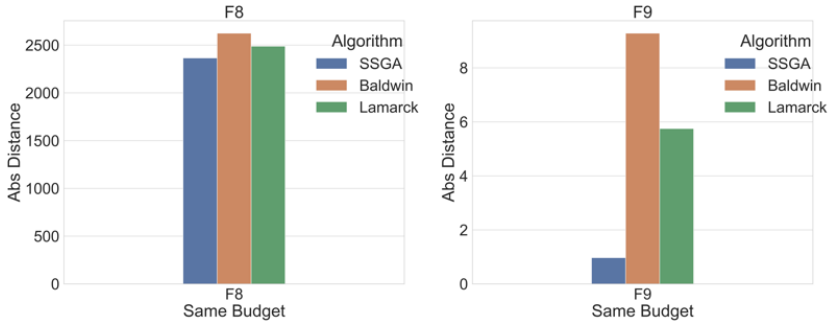
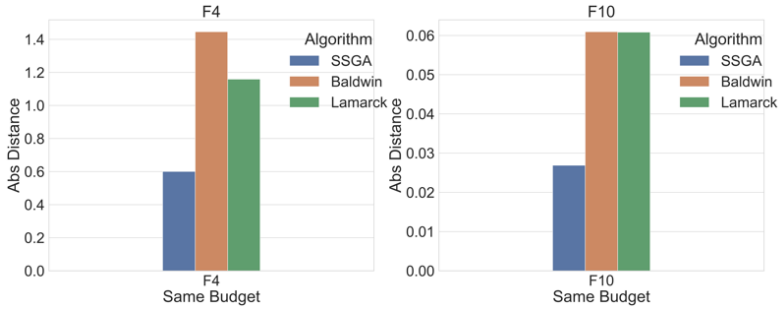


Figure 3 sum of abs distance for 20 runs (F4 and F10)



For each function and each parameter combination, we have 20 runs, and this means we have 20 final solutions. Each algorithm's 20 solutions are normalized by itself. For example, SSGA produces 20 solutions for each function and each parameter combination, then each boxen plot of SSGA is normalized(max min normalization) based on 20 solutions of SSGA. Also, they are generated based on same budget.

Figure 4 final solutions for 20 runs (F4 and F10)

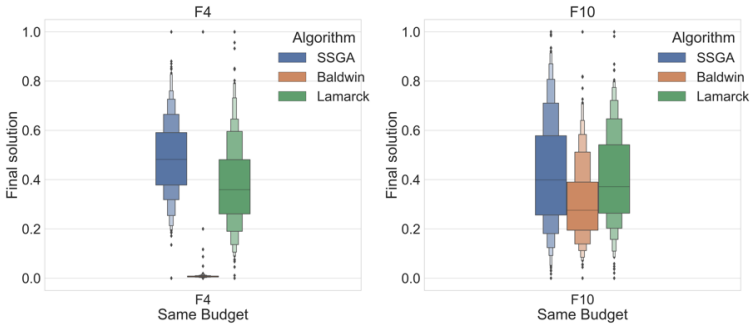


Figure 5 final solutions for 20 runs (F8 and F9)

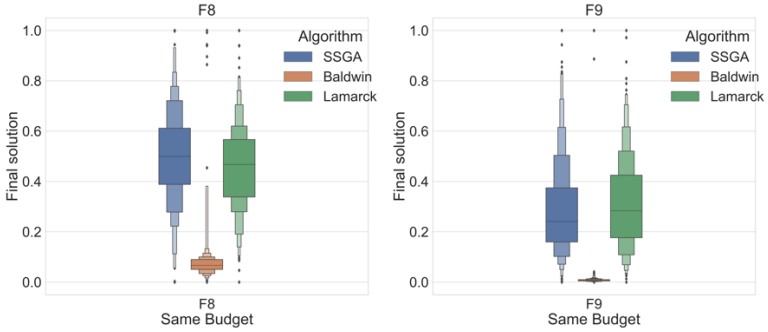


Figure 6 final solutions for 20 runs (most functions)