

Supplementary Material for "Trust Region- Based Bayesian Optimisation to Discover Diverse Solutions"

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A Supplementary Results

Table 1 presents the results for 2-D benchmark functions, considering 30 runs of each algorithm. The results are formatted in a similar manner to the tables in the main paper. The mean value of the 10 diverse solutions is considered the result of each run. We consider 30 runs of each algorithm, and the table gives the mean and standard deviation of results from 30 runs in columns 'mean' and 'st.dev'. The 'stat' columns give the statistical comparisons from the Kruskal-Wallis test. In the 'stat' column, X^+ or X^- indicates that the method in the column outperforms the algorithm denoted by X or vice versa. An empty cell in the 'stat' column indicates that there is no significant difference between the methods.

Func	τ	divTuRBO1-seq (1)			divTuRBO1-int (2)			ROBOT (3)		
		mean	st.dev	stat	mean	st.dev	stat	mean	st.dev	stat
F-1	0.1	-92.63	0.00	3 ⁺	-92.63	0.00	3 ⁺	-92.62	0.00	1 ⁻ 2 ⁻
	1.0	-91.05	0.03	3 ⁻	-91.06	0.02	3 ⁻	-91.09	0.00	1 ⁺ 2 ⁺
F-2	0.1	277.50	0.33		277.60	0.33		277.61	0.00	
	1.0	48708.00	22749.12		58046.74	19854.52		49866.22	0.00	
F-3	0.1	22.42	0.07	3 ⁺	22.47	0.09	3 ⁺	22.86	0.00	1 ⁻ 2 ⁻
	1.0	35.19	1.92	3 ⁻	32.43	2.02	3 ⁻	30.06	0.00	1 ⁺ 2 ⁺
F-4	0.1	23.19	0.15	3 ⁺	23.40	0.14	3 ⁺	24.29	0.00	1 ⁻ 2 ⁻
	1.0	40.54	2.32	2 ⁻ 3 ⁻	36.19	1.28	1 ⁺ 3 ⁻	32.43	0.00	1 ⁺ 2 ⁺
F-5	0.1	52.03	0.01	3 ⁺	52.05	0.02	3 ⁺	52.21	0.00	1 ⁻ 2 ⁻
	1.0	56.09	0.01	2 ⁺ 3 ⁺	56.13	0.02	1 ⁻ 3 ⁺	56.56	0.00	1 ⁻ 2 ⁻
F-6	0.1	83.70	0.02	3 ⁺	83.70	0.03	3 ⁺	83.84	0.00	1 ⁻ 2 ⁻
	1.0	94.70	0.33		95.12	0.48	3 ⁻	94.47	0.00	2 ⁺
F-7	0.1	-83.83	0.01	3 ⁺	-83.83	0.00	3 ⁺	-83.81	0.00	1 ⁻ 2 ⁻
	1.0	-77.96	1.70		-77.89	1.10		-76.63	0.00	
F-8	0.1	-135.05	0.02		-135.06	0.02		-135.06	0.00	
	1.0	-133.17	0.35		-133.35	0.16		-133.39	0.00	
F-9	0.1	-359.38	0.01	3 ⁺	-359.36	0.01	3 ⁺	-359.25	0.00	1 ⁻ 2 ⁻
	1.0	-322.55	16.84	2 ⁻ 3 ⁻	-349.52	7.11	1 ⁺ 3 ⁻	-357.35	0.00	1 ⁺ 2 ⁺
F-10	0.1	-77.90	0.26	3 ⁺	-77.82	0.29	3 ⁺	-65.48	0.00	1 ⁻ 2 ⁻
	1.0	49843.31	17491.10		55374.55	16956.90		44909.97	0.00	
F-11	0.1	-100.00	0.22	3 ⁺	-99.91	0.34	3 ⁺	-96.87	0.00	1 ⁻ 2 ⁻
	1.0	134635.53	13699.20		121179.66	20633.62		117820.19	0.00	
F-12	0.1	296.37	0.24	3 ⁺	296.37	0.31	3 ⁺	310.88	0.00	1 ⁻ 2 ⁻
	1.0	60011.57	36559.01		52314.94	41398.71		85633.27	0.00	
F-13	0.1	-51.16	0.10	3 ⁺	-51.10	0.07	3 ⁺	-49.38	0.00	1 ⁻ 2 ⁻
	1.0	6.88	10.89	3 ⁻	-0.58	4.43	3 ⁻	-22.94	0.00	1 ⁺ 2 ⁺
F-14	0.1	-57.86	0.00	3 ⁺	-57.86	0.00	3 ⁺	-57.86	0.00	1 ⁻ 2 ⁻
	1.0	-56.76	0.01	2 ⁺	-56.73	0.02	1 ⁻ 3 ⁻	-56.76	0.00	2 ⁺
F-15	0.1	-43.27	0.06	3 ⁺	-43.23	0.05	3 ⁺	-42.36	0.00	1 ⁻ 2 ⁻
	1.0	-34.45	1.97	3 ⁻	-34.42	1.84	3 ⁻	-36.45	0.00	1 ⁺ 2 ⁺
F-16	0.1	-260.19	0.01	3 ⁺	-260.18	0.01	3 ⁺	-259.86	0.00	1 ⁻ 2 ⁻
	1.0	-259.13	0.66	3 ⁻	-259.68	0.28	3 ⁻	-259.98	0.00	1 ⁺ 2 ⁺
F-17	0.1	-38.48	0.01	3 ⁺	-38.48	0.01	3 ⁺	-38.38	0.00	1 ⁻ 2 ⁻
	1.0	-36.41	0.06		-36.39	0.06		-36.41	0.00	
F-18	0.1	-38.23	0.05	3 ⁺	-38.19	0.04	3 ⁺	-37.76	0.00	1 ⁻ 2 ⁻
	1.0	-26.69	0.68	2 ⁺ 3 ⁺	-25.63	1.24	1 ⁻	-25.79	0.00	1 ⁻
F-19	0.1	40.48	0.00	3 ⁺	40.48	0.01	3 ⁺	40.49	0.00	1 ⁻ 2 ⁻
	1.0	41.13	0.10	2 ⁻ 3 ⁻	40.75	0.06	1 ⁺ 3 ⁻	40.52	0.00	1 ⁺ 2 ⁺
F-20	0.1	183.81	0.02	3 ⁺	183.82	0.02	3 ⁺	183.88	0.00	1 ⁻ 2 ⁻
	1.0	185.20	2.53	2 ⁺	186.27	2.73	1 ⁻	184.47	0.00	
F-21	0.1	310.62	0.00	3 ⁺	310.62	0.00		310.63	0.00	1 ⁻
	1.0	311.68	0.00	3 ⁺	311.69	0.02		311.71	0.00	1 ⁻
F-22	0.1	42.98	0.00	3 ⁺	42.98	0.00	3 ⁺	42.98	0.00	1 ⁻ 2 ⁻
	1.0	43.86	0.09		43.97	0.12	3 ⁻	43.83	0.00	2 ⁺
F-23	0.1	211.38	0.09	3 ⁻	211.36	0.12	3 ⁻	211.19	0.00	1 ⁺ 2 ⁺
	1.0	211.56	0.33	3 ⁻	211.51	0.17	3 ⁻	211.28	0.00	1 ⁺ 2 ⁺
F-24	0.1	49.25	0.22	3 ⁺	49.24	0.30	3 ⁺	49.77	0.00	1 ⁻ 2 ⁻
	1.0	51.12	0.21	3 ⁻	51.28	0.25	3 ⁻	50.78	0.00	1 ⁺ 2 ⁺

Table 1. Summary of mean values of the 10 diverse solutions obtained from 30 on 2-dimensional BBOB functions.