

HIGA-MO's Coverage Characteristics

Table 1: Coverage of sets / fronts: percentage of “covered” sets (i.e., at least one individual of the final population is located in the ε -environment of that set). The characteristics are computed for each (single) set separately or considering connected sets as a combined set. Analogously for the fronts.

ID	Shape	Coverage of Local				Coverage of Pareto			
		Sets		Fronts		Sets		Fronts	
		single	conn.	single	conn.	single	conn.	single	conn.
1	Ellipse	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	Ellipse	0.667	0.667	0.667	0.667	1.000	1.000	1.000	1.000
3	Ellipse	0.750	0.750	0.750	0.750	1.000	1.000	1.000	1.000
4	Ellipse	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
5	Ellipse	0.750	0.750	0.750	0.750	1.000	1.000	1.000	1.000
6	Ellipse	0.429	0.500	0.429	0.500	1.000	1.000	1.000	1.000
7	Ellipse	0.600	0.600	0.800	0.800	1.000	1.000	1.000	1.000
8	Ellipse	0.533	0.600	0.533	0.600	0.833	1.000	0.833	1.000
9	Ellipse	0.444	0.556	0.444	0.556	1.000	1.000	1.000	1.000
10	Ellipse	0.857	0.857	0.857	0.857	1.000	1.000	1.000	1.000
11	Ellipse	0.600	0.800	0.600	0.800	1.000	1.000	1.000	1.000
12	Ellipse	0.364	0.364	0.364	0.364	1.000	1.000	1.000	1.000
13	Ellipse	0.308	0.346	0.269	0.346	1.000	1.000	1.000	1.000
14	Ellipse	0.800	0.800	0.800	0.800	1.000	1.000	1.000	1.000
15	Ellipse	0.667	0.667	0.667	0.667	1.000	1.000	1.000	1.000
16	Ellipse	0.308	0.385	0.308	0.385	1.000	1.000	1.000	1.000
17	Ellipse	0.286	0.429	0.429	0.500	0.500	0.714	0.833	0.857
18	Ellipse	0.700	0.800	0.700	0.800	1.000	1.000	1.000	1.000
19	Ellipse	0.333	0.381	0.381	0.429	1.000	1.000	1.000	1.000
20	Ellipse	0.152	0.212	0.152	0.212	0.800	1.000	0.800	1.000
21	Sphere	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
22	Sphere	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
23	Sphere	1.000	1.000	0.600	1.000	1.000	1.000	0.667	1.000
24	Sphere	1.000	1.000	0.667	0.667	1.000	1.000	0.500	0.667
25	Sphere	1.000	1.000	0.667	0.667	1.000	1.000	1.000	1.000
26	Sphere	0.667	0.778	0.333	0.889	1.000	1.000	1.000	1.000
27	Sphere	0.800	1.000	0.400	1.000	1.000	1.000	0.667	1.000
28	Sphere	0.462	1.000	0.308	1.000	1.000	1.000	0.750	1.000
29	Sphere	0.800	0.800	0.600	0.800	1.000	1.000	1.000	1.000
30	Sphere	0.800	0.900	0.300	0.900	1.000	1.000	0.667	1.000
31	Sphere	0.667	1.000	0.000	0.000	1.000	1.000	0.000	0.000
32	Sphere	0.583	0.833	0.417	0.583	1.000	1.000	0.667	1.000
33	Sphere	0.579	0.737	0.316	0.684	0.667	1.000	0.667	1.000
34	Sphere	1.000	1.000	0.750	0.750	1.000	1.000	1.000	1.000
35	Sphere	1.000	1.000	0.667	0.667	1.000	1.000	0.500	0.667
36	Sphere	0.538	0.769	0.231	1.000	1.000	1.000	1.000	1.000
37	Sphere	0.529	0.765	0.176	0.529	0.667	1.000	0.667	1.000
38	Sphere	0.625	1.000	0.000	0.000	1.000	1.000	0.000	0.000
39	Sphere	0.438	0.625	0.312	0.438	1.000	1.000	0.667	1.000
40	Sphere	0.200	0.475	0.080	0.542	0.800	1.000	0.400	1.000

HIGA-MO's Population Characteristics

Table 2: Population characteristics for all 40 benchmark problems: Percentage of individuals from HIGA-MO's final population that are located in the ε -environment of a local efficient set, a Pareto set or a set that is connected to a Pareto Set. Analogously for the fronts.

ID	Shape	Local		Pareto			
		Single Set	Front	Single Set	Front	Connected Set	Front
1	Ellipse	0.980	0.640	0.980	0.640	0.980	0.640
2	Ellipse	1.000	0.760	1.000	0.760	1.000	0.760
3	Ellipse	0.980	0.980	0.920	0.940	0.920	0.940
4	Ellipse	1.000	1.000	0.980	0.980	0.980	0.980
5	Ellipse	0.980	0.980	0.680	0.680	0.680	0.680
6	Ellipse	0.980	0.960	0.800	0.820	0.800	0.820
7	Ellipse	0.940	0.980	0.940	0.960	0.940	0.960
8	Ellipse	0.880	0.820	0.620	0.620	0.620	0.620
9	Ellipse	0.980	0.900	0.940	0.860	0.940	0.860
10	Ellipse	0.980	0.940	0.760	0.820	0.760	0.820
11	Ellipse	1.000	1.000	0.860	0.860	0.860	0.860
12	Ellipse	0.920	1.000	0.640	0.640	0.640	0.640
13	Ellipse	0.900	0.860	0.760	0.740	0.760	0.740
14	Ellipse	0.980	0.880	0.640	0.560	0.640	0.560
15	Ellipse	0.980	0.980	0.980	0.980	0.980	0.980
16	Ellipse	1.000	0.880	0.940	0.840	0.940	0.840
17	Ellipse	1.000	1.000	0.980	0.980	0.980	0.980
18	Ellipse	0.980	0.960	0.780	0.760	0.780	0.760
19	Ellipse	0.900	0.940	0.760	0.700	0.760	0.700
20	Ellipse	0.980	0.960	0.960	0.940	0.960	0.940
21	Sphere	1.000	1.000	1.000	1.000	1.000	1.000
22	Sphere	0.980	0.940	0.900	0.900	0.900	0.900
23	Sphere	0.960	0.520	0.600	0.380	0.960	0.520
24	Sphere	0.980	0.400	0.780	0.180	0.980	0.400
25	Sphere	0.980	0.920	0.720	0.720	0.720	0.720
26	Sphere	0.940	0.820	0.720	0.740	0.720	0.740
27	Sphere	0.980	0.780	0.940	0.780	0.980	0.780
28	Sphere	0.680	0.280	0.340	0.260	0.340	0.280
29	Sphere	1.000	0.800	0.760	0.760	0.760	0.760
30	Sphere	0.720	0.160	0.140	0.100	0.720	0.160
31	Sphere	0.980	0.000	0.800	0.000	0.980	0.000
32	Sphere	0.960	0.760	0.620	0.460	0.680	0.580
33	Sphere	0.960	0.520	0.480	0.260	0.580	0.340
34	Sphere	1.000	0.960	0.680	0.680	0.680	0.680
35	Sphere	0.980	0.460	0.740	0.200	0.980	0.460
36	Sphere	0.880	0.420	0.260	0.260	0.260	0.260
37	Sphere	0.760	0.140	0.120	0.060	0.620	0.140
38	Sphere	0.960	0.000	0.740	0.000	0.940	0.000
39	Sphere	0.920	0.800	0.620	0.460	0.680	0.580
40	Sphere	0.700	0.320	0.400	0.200	0.560	0.300