

PONTIFICIA UNIVERSIDAD CATÓLICA DEL PERÚ

FACULTAD DE CIENCIAS E INGENIERÍA



PONTIFICIA
UNIVERSIDAD
CATÓLICA
DEL PERÚ

ANEXOS

DISEÑO DE UN ALGORITMO GENÉTICO PARA LA OPTIMIZACIÓN DE
DISTANCIAS EN AMBIENTES TRIDIMENSIONALES

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1 Calibración del Alfa

Anexo 1

	0.2	0.25	0.3	0.35	0.4	0.45	0.5	0.55	0.6	0.65
1	10.80	10.00	10.40	10.40	10.40	10.40	12.40	11.60	12.40	12.00
2	10.80	10.40	10.00	10.80	10.80	10.40	11.60	12.40	11.60	12.00
3	10.80	10.00	10.00	10.80	10.40	10.80	11.20	11.20	12.00	10.80
4	10.80	10.40	10.40	10.80	10.40	10.80	12.00	12.00	10.80	12.00
5	10.80	10.40	10.00	10.40	10.40	10.40	10.40	11.20	11.60	10.80
6	10.80	10.40	10.00	10.80	10.80	10.40	11.60	12.40	9.60	11.60
7	10.80	10.40	10.00	10.40	10.40	10.40	12.00	11.20	12.00	11.60
8	10.80	10.00	10.00	10.40	10.40	10.40	11.60	10.80	11.60	11.60
9	10.80	10.00	10.00	10.40	10.40	10.40	11.60	11.20	12.00	11.20
10	10.80	10.40	10.00	10.80	10.40	10.40	11.60	10.80	11.20	11.60
11	10.80	10.00	10.40	10.40	10.80	10.80	10.40	10.80	10.80	11.60
12	10.80	10.00	10.40	10.40	10.40	10.40	12.00	11.20	12.00	10.80
13	10.80	10.00	10.40	10.80	10.80	10.40	11.60	10.80	10.80	11.60
14	10.80	10.40	10.40	10.40	10.80	10.80	11.20	11.20	10.40	10.80
15	10.80	10.00	10.00	10.40	10.40	10.40	12.80	12.00	10.80	12.00
16	10.80	10.00	10.00	10.40	10.80	10.80	10.80	10.80	11.60	11.60
17	10.80	10.00	10.40	10.40	10.40	10.80	12.00	12.40	12.00	12.40
18	10.80	10.40	10.00	10.40	10.80	10.80	11.20	11.20	12.80	10.80
19	10.80	10.00	10.40	10.80	10.80	10.40	12.00	12.00	10.80	11.60
20	10.80	10.00	10.40	10.40	10.40	10.40	11.60	12.40	11.20	10.80
21	10.80	10.00	10.00	10.40	10.40	10.80	11.60	12.00	12.00	10.80
22	10.80	10.00	10.00	10.80	10.80	10.40	11.60	11.60	12.00	10.80
23	10.80	10.00	10.00	10.40	10.40	10.80	11.20	11.60	11.60	11.60
24	10.80	10.40	10.00	10.40	10.80	10.80	10.80	11.60	12.80	12.00
25	10.80	10.40	10.00	10.40	10.40	10.40	12.00	11.20	11.20	10.80
26	10.80	10.00	10.40	10.00	10.40	10.40	12.00	11.60	12.40	11.20
27	10.80	10.40	10.00	10.80	10.80	10.80	11.60	10.40	11.20	12.00
28	10.80	10.40	10.00	10.80	10.80	10.40	11.60	11.20	11.60	12.00
29	10.80	10.00	10.40	10.40	10.40	10.80	11.60	12.00	12.00	12.00
30	10.80	10.00	10.40	10.00	10.40	10.40	10.80	11.60	10.80	10.80
31	10.80	10.00	10.40	10.40	10.80	10.80	12.00	11.60	11.60	10.80
32	10.80	10.00	10.00	10.40	10.40	10.80	11.20	10.40	11.60	10.80
33	10.80	10.40	10.40	10.80	10.80	10.40	11.60	11.60	10.80	11.60
34	10.80	10.40	10.00	10.40	10.40	10.00	12.00	10.40	10.80	11.60
35	10.80	10.40	10.00	10.80	10.40	10.80	12.00	10.80	11.20	12.00
36	10.80	10.40	10.00	10.80	10.40	10.80	12.40	11.20	11.20	11.60
37	10.80	10.00	10.40	10.00	10.40	10.80	11.20	11.60	12.00	11.20
38	10.80	10.40	10.00	10.40	10.80	10.40	10.80	11.20	11.20	11.60
39	10.80	10.00	10.40	10.40	10.80	10.40	11.60	11.20	11.60	11.20
40	10.80	10.00	10.00	10.40	10.40	10.80	12.00	10.80	12.40	11.60

Anexo 2

	0.2	0.22	0.24	0.26	0.28	0.3	0.32	0.34	0.36	0.38
1	10.80	10.80	10.80	10.40	10.00	10.00	10.40	10.40	10.40	10.40
2	10.80	10.80	10.80	10.00	10.00	10.40	10.00	10.40	10.40	10.80
3	10.80	10.80	10.80	10.00	10.00	10.00	10.00	10.40	10.40	10.40
4	10.80	10.80	10.80	10.00	10.40	10.40	10.00	10.40	10.80	10.80
5	10.80	10.80	10.80	10.40	10.00	10.00	10.00	10.40	10.00	10.40
6	10.80	10.80	10.80	10.40	10.00	10.40	10.00	10.80	10.40	10.40
7	10.80	10.80	10.80	10.40	10.00	10.00	10.40	10.40	10.40	10.40
8	10.80	10.80	10.80	10.00	10.40	10.40	10.00	10.40	10.40	10.40
9	10.80	10.80	10.80	10.40	10.00	10.40	10.00	10.40	10.80	10.40
10	10.80	10.80	10.80	10.00	10.00	10.40	10.00	10.80	10.40	10.40
11	10.80	10.80	10.80	10.00	10.00	10.40	10.40	10.40	10.40	10.40
12	10.80	10.80	10.80	10.00	10.00	10.40	10.00	10.40	10.40	10.80
13	10.80	10.80	10.80	10.00	10.40	10.40	10.40	10.40	10.80	10.40
14	10.80	10.80	10.80	10.00	10.00	10.00	10.00	10.40	10.40	10.40
15	10.80	10.80	10.80	10.00	10.00	10.00	10.00	10.40	10.80	10.40
16	10.80	10.80	10.80	10.40	10.00	10.40	10.00	10.80	10.40	10.40
17	10.80	10.80	10.80	10.40	10.40	10.00	10.40	10.40	10.40	10.40
18	10.80	10.80	10.80	10.00	10.40	10.00	10.00	10.80	10.40	10.80
19	10.80	10.80	10.80	10.40	10.00	10.40	10.00	10.40	10.80	10.00
20	10.80	10.80	10.80	10.00	10.00	10.40	10.00	10.40	10.80	10.40
21	10.80	10.80	10.80	10.40	10.00	10.40	10.00	10.80	10.80	10.80
22	10.80	10.80	10.80	10.00	10.00	10.40	10.00	10.40	10.40	10.40
23	10.80	10.80	10.80	10.00	10.40	10.00	10.00	10.80	10.40	10.40
24	10.80	10.80	10.80	10.00	10.00	10.00	10.00	10.80	10.40	10.80
25	10.80	10.80	10.80	10.00	10.00	10.40	10.40	10.80	10.80	10.80
26	10.80	10.80	10.80	10.00	10.00	10.00	10.00	10.40	10.40	10.40
27	10.80	10.80	10.80	10.00	10.40	10.40	10.00	10.40	10.40	10.80
28	10.80	10.80	10.80	10.00	10.00	10.00	10.40	10.80	10.40	10.40
29	10.80	10.80	10.80	10.00	10.00	10.40	10.40	10.40	10.40	10.40
30	10.80	10.80	10.80	10.40	10.40	10.40	10.00	10.80	10.40	10.40
31	10.80	10.80	10.80	10.00	10.00	10.00	10.40	10.40	10.80	10.80
32	10.80	10.80	10.80	10.40	10.40	10.40	10.40	10.40	10.40	10.40
33	10.80	10.80	10.80	10.00	10.40	10.00	10.40	10.40	10.40	10.40
34	10.80	10.80	10.80	10.00	10.00	10.00	10.00	10.40	10.40	10.80
35	10.80	10.80	10.80	10.00	10.40	10.40	10.00	10.40	10.80	10.80
36	10.80	10.80	10.80	10.00	10.40	10.00	10.00	10.40	10.40	10.40
37	10.80	10.80	10.80	10.00	10.40	10.00	10.40	10.80	10.40	10.80
38	10.80	10.80	10.80	10.40	10.40	10.00	10.00	10.80	10.40	10.40
39	10.80	10.80	10.80	10.40	10.40	10.00	10.00	10.80	10.40	10.80
40	10.80	10.80	10.80	10.00	10.00	10.40	10.40	10.80	10.40	10.40

Anexo 3

	0.25	0.26	0.27	0.28	0.29	0.3	0.31	0.32	0.33	0.34	0.35	0.36	0.37
1	10.00	10.40	10.00	10.40	10.00	10.40	10.00	10.00	10.00	10.40	10.40	10.00	10.40
2	10.00	10.00	10.40	10.00	10.40	10.00	10.40	10.40	10.40	10.40	10.40	10.40	10.40
3	10.40	10.00	10.00	10.40	10.40	10.40	10.40	10.00	10.40	10.80	10.80	10.40	10.40
4	10.40	10.40	10.00	10.40	10.00	10.40	10.00	10.40	10.40	10.80	10.40	10.40	10.40
5	10.00	10.00	10.00	10.00	10.40	10.00	10.40	10.40	10.40	10.40	10.40	10.80	10.40
6	10.40	10.00	10.00	10.40	10.40	10.00	10.40	10.00	10.00	10.80	10.40	10.80	10.40
7	10.00	10.40	10.00	10.00	10.40	10.40	10.00	10.00	10.00	10.40	10.80	10.40	10.80
8	10.00	10.00	10.00	10.40	10.40	10.00	10.00	10.40	10.40	10.80	10.40	10.40	10.40
9	10.40	10.00	10.00	10.00	10.00	10.40	10.00	10.00	10.40	10.40	10.40	10.40	10.40
10	10.40	10.40	10.40	10.40	10.40	10.00	10.00	10.00	10.00	10.40	10.80	10.40	10.40
11	10.40	10.00	10.00	10.40	10.40	10.00	10.40	10.00	10.40	10.40	10.80	10.40	10.40
12	10.00	10.00	10.00	10.40	10.40	10.40	10.00	10.40	10.00	10.40	10.00	10.80	10.40
13	10.00	10.00	10.40	10.00	10.00	10.40	10.40	10.40	10.00	10.40	10.40	10.40	10.80
14	10.00	10.00	10.00	10.40	10.40	10.40	10.40	10.00	10.00	10.40	10.40	10.40	10.00
15	10.00	10.00	10.00	10.40	10.00	10.00	10.00	10.40	10.00	10.80	10.80	10.40	10.40
16	10.40	10.00	10.40	10.00	10.00	10.00	10.40	10.40	10.40	10.40	11.20	10.40	10.40
17	10.00	10.00	10.00	10.00	10.00	10.40	10.00	10.40	10.40	10.80	10.40	10.40	10.40
18	10.00	10.00	10.40	10.00	10.00	10.00	10.40	10.00	10.00	10.80	10.40	10.00	10.00
19	10.40	10.00	10.00	10.40	10.40	10.40	10.00	10.00	10.00	10.40	10.40	10.80	10.40
20	10.40	10.40	10.00	10.00	10.00	10.40	10.40	10.40	10.00	10.40	10.80	10.40	10.40
21	10.00	10.00	10.00	10.40	10.40	10.00	10.40	10.00	10.00	10.40	10.40	10.80	10.80
22	10.00	10.40	10.40	10.40	10.00	10.00	10.40	10.40	10.40	10.40	10.80	10.80	10.40
23	10.00	10.40	10.40	10.40	10.00	10.00	10.00	10.40	10.00	10.40	10.40	10.40	10.80
24	10.00	10.40	10.40	10.00	10.40	10.40	10.40	10.00	10.00	10.40	10.40	10.40	10.40
25	10.00	10.40	10.40	10.40	10.00	10.40	10.00	10.40	10.00	10.40	10.40	10.40	10.80
26	10.40	10.00	10.00	10.40	10.00	10.40	10.40	10.00	10.00	10.40	10.40	10.40	10.40
27	10.40	10.40	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.40	10.40	10.40	10.80
28	10.00	10.00	10.00	10.00	10.40	10.00	10.00	10.00	10.40	10.40	10.40	10.40	10.40
29	10.40	10.40	10.40	10.40	10.00	10.40	10.40	10.40	10.00	10.80	10.40	10.80	10.80
30	10.00	10.40	10.40	10.40	10.40	10.40	10.00	10.40	10.40	10.40	10.40	10.80	10.40
31	10.40	10.00	10.00	10.00	10.40	10.00	10.00	10.00	10.00	10.40	10.80	10.80	10.00
32	10.40	10.00	10.00	10.00	10.00	10.00	10.00	10.40	10.00	10.80	10.40	10.40	10.40
33	10.00	10.40	10.40	10.00	10.00	10.40	10.00	10.40	10.00	10.40	10.40	10.80	10.00
34	10.00	10.40	10.40	10.40	10.40	10.40	10.40	10.40	10.40	10.40	10.80	10.40	10.40
35	10.00	10.40	10.40	10.00	10.00	10.40	10.40	10.40	10.00	10.40	10.40	10.40	10.40
36	10.40	10.00	10.00	10.00	10.00	10.40	10.40	10.00	10.00	10.40	10.80	10.40	10.80
37	10.00	10.00	10.00	10.00	10.40	10.00	10.00	10.40	10.40	10.40	10.40	10.40	10.80
38	10.40	10.00	10.40	10.00	10.40	10.00	10.00	10.00	10.00	10.80	10.80	10.40	10.40
39	10.40	10.00	10.40	10.40	10.00	10.40	10.00	10.00	10.40	10.40	10.40	10.80	10.40
40	10.40	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.80	10.40	10.40	10.40

Anexo 4

	0.26	0.33		0.26	0.33		0.26	0.33
1	10.40	10.40	41	10.40	10.00	81	10.00	10.40
2	10.00	10.40	42	10.40	10.00	82	10.40	10.00
3	10.00	10.00	43	10.00	10.00	83	10.40	10.40
4	10.00	10.40	44	10.40	10.00	84	10.00	10.40
5	10.00	10.00	45	10.00	10.40	85	10.00	10.00
6	10.00	10.00	46	10.40	10.00	86	10.40	10.00
7	10.00	10.00	47	10.00	10.40	87	10.00	10.00
8	10.40	10.00	48	10.00	10.00	88	10.00	10.00
9	10.40	10.00	49	10.00	10.00	89	10.00	10.40
10	10.40	10.40	50	10.00	10.00	90	10.40	10.00
11	10.40	10.40	51	10.40	10.00	91	10.40	10.40
12	10.40	10.00	52	10.40	10.40	92	10.40	10.40
13	10.00	10.00	53	10.40	10.40	93	10.00	10.00
14	10.40	10.00	54	10.40	10.40	94	10.40	10.40
15	10.40	10.00	55	10.00	10.40	95	10.40	10.00
16	10.40	10.40	56	10.00	10.40	96	10.00	10.00
17	10.40	10.40	57	10.00	10.00	97	10.00	10.00
18	10.40	10.00	58	10.00	10.40	98	10.40	10.40
19	10.40	10.40	59	10.40	10.00	99	10.40	10.00
20	10.40	10.00	60	10.00	10.00	100	10.40	10.40
21	10.00	10.00	61	10.40	10.00			
22	10.00	10.40	62	10.40	10.40			
23	10.00	10.40	63	10.40	10.00			
24	10.00	10.00	64	10.40	10.00			
25	10.00	10.00	65	10.00	10.00			
26	10.00	10.00	66	10.00	10.40			
27	10.40	10.00	67	10.00	10.40			
28	10.40	10.40	68	10.00	10.40			
29	10.40	10.40	69	10.00	10.00			
30	10.00	10.40	70	10.40	10.00			
31	10.00	10.40	71	10.00	10.40			
32	10.00	10.00	72	10.00	10.40			
33	10.40	10.00	73	10.00	10.00			
34	10.00	10.00	74	10.00	10.00			
35	10.00	10.40	75	10.40	10.40			
36	10.40	10.00	76	10.00	10.00			
37	10.00	10.40	77	10.00	10.00			
38	10.40	10.00	78	10.00	10.00			
39	10.40	10.00	79	10.40	10.00			
40	10.40	10.00	80	10.40	10.00			

2 Calibración del Número de Iteraciones

Anexo 5

	1000		1500		2000		2500		3000	
	Fitness	Tiempo (ms)	Fitness	Tiempo (ms)	Fitness	Tiempo (ms)	Fitness	Tiempo (ms)	Fitness	Tiempo (ms)
1	10.80	1134	10.80	976	10.80	1325	10.80	1675	10.40	1958
2	11.60	863	10.80	1007	10.40	1322	10.00	1589	10.40	2002
3	11.20	794	10.40	996	10.80	1346	10.80	1687	10.80	2001
4	10.80	780	10.80	1012	10.80	1368	10.80	1655	10.40	1946
5	11.60	792	11.20	1016	10.00	1341	10.80	1654	10.80	1941
6	11.20	805	11.20	1005	11.20	1343	10.00	1693	10.80	1980
7	11.60	845	11.20	975	10.80	1377	10.40	1689	10.40	1957
8	10.80	913	11.20	1008	10.40	1337	10.40	1713	10.40	2012
9	10.40	671	10.40	1004	10.80	1370	10.80	1675	10.80	2016
10	10.80	677	10.80	983	10.40	1341	11.20	1648	10.80	1990
11	10.80	676	10.80	1007	10.80	1331	10.80	1680	10.80	2028
12	10.80	652	10.40	1029	10.80	1321	10.80	1623	10.80	2069
13	10.80	699	10.80	1010	10.80	1330	10.80	1624	10.80	2045
14	10.40	674	10.80	1006	10.80	1316	10.40	1635	10.80	1937
15	11.20	655	11.20	1016	10.80	1379	10.80	1608	10.40	1982
16	10.80	686	10.80	1002	10.80	1380	10.80	1633	10.40	1967
17	10.80	677	10.80	1013	10.80	1357	10.40	1626	10.40	2016
18	11.20	672	10.80	1037	10.80	1310	10.00	1611	10.00	1981
19	10.40	662	11.20	1010	11.20	1335	10.80	1665	10.80	1936
20	11.20	689	10.40	1010	11.20	1351	10.80	1629	10.80	1980
21	10.00	676	10.40	1006	10.80	1353	10.40	1669	10.80	1940
22	11.20	684	11.20	1023	10.80	1329	10.80	1668	10.80	1970
23	10.80	683	10.40	1002	10.80	1296	10.80	1634	10.80	1999
24	10.80	667	10.40	1013	10.40	1346	10.80	1711	10.40	2013
25	10.40	684	11.20	1020	10.40	1320	10.40	1627	10.80	1954
26	11.20	719	10.80	1016	10.80	1325	10.80	1681	10.40	2025
27	11.20	655	11.20	993	11.20	1392	10.80	1670	10.40	1985
28	10.80	693	10.80	1021	10.80	1337	10.40	1626	10.80	1974
29	11.60	690	11.20	1083	10.80	1340	10.40	1673	10.80	1953
30	10.80	686	11.20	996	10.40	1329	10.80	1579	10.40	1978
31	10.80	705	11.20	1035	10.80	1339	10.80	1677	10.80	2046
32	10.80	681	10.80	1279	10.40	1341	10.80	1645	10.40	1978
33	11.20	676	10.40	1113	10.80	1331	10.80	1647	10.40	1993
34	10.80	712	10.80	1052	10.40	1310	10.40	1658	10.80	1962
35	11.20	656	10.40	1044	10.40	1319	10.80	1688	10.80	1944
36	10.80	684	10.80	988	11.20	1350	10.40	1659	10.80	1980
37	11.20	672	10.80	1024	10.80	1364	10.80	1636	10.40	1999
38	10.00	699	10.80	1018	10.40	1364	10.80	1614	10.80	2032
39	11.20	664	10.80	1073	10.80	1352	10.80	1639	10.80	1970
40	11.20	679	10.40	1024	10.40	1345	11.20	1625	10.80	1957

	3500		4000		4500		5000		5500	
	Fitness	Tiempo (ms)	Fitness	Tiempo (ms)	Fitness	Tiempo (ms)	Fitness	Tiempo (ms)	Fitness	Tiempo (ms)
1	10.40	2279	10.00	2684	10.40	2892	10.00	3286	10.40	3799
2	10.40	2352	10.40	2589	10.40	3347	10.40	3264	10.00	3676
3	10.80	2363	10.80	2627	10.40	2926	10.80	3289	10.40	3594
4	10.80	2285	10.40	2646	10.40	3053	10.40	3246	10.40	3778
5	10.80	2309	10.00	2582	10.40	2916	10.80	3304	10.40	3584
6	10.80	2328	10.40	2635	10.40	2875	10.40	3230	10.40	3628
7	10.80	2345	10.40	2597	10.40	2925	10.00	3294	10.40	3601
8	10.80	2295	10.40	2585	10.40	2937	10.40	3237	10.40	3612
9	10.40	2307	10.40	2576	10.40	2913	10.40	3238	10.40	3650
10	10.40	2285	10.40	2612	10.40	2947	10.40	3189	10.40	3613
11	10.80	2309	10.80	2600	10.40	2908	10.40	3229	10.40	3618
12	10.80	2279	10.40	2546	10.40	2986	10.00	3257	10.40	3624
13	10.40	2282	10.40	2588	10.40	2941	10.40	3242	10.40	3613
14	10.80	2281	10.40	2656	10.40	2887	10.40	3220	10.40	3629
15	10.40	2323	10.40	2626	10.40	2914	10.40	3289	10.80	3629
16	10.40	2327	10.40	2605	10.40	2928	10.40	3216	10.40	3587
17	10.40	2291	10.40	2654	10.40	2947	10.40	3227	10.40	3584
18	10.40	2365	10.40	2615	10.80	3000	10.40	3261	10.80	3714
19	10.80	2311	10.40	2569	10.80	2905	10.40	3264	10.40	3543
20	10.80	2323	10.40	2641	10.00	2982	10.40	3326	10.40	3527
21	10.80	2258	10.80	2596	10.40	2990	10.40	3322	10.40	3620
22	10.80	2315	10.80	2607	10.40	2888	10.40	3281	10.40	3607
23	10.40	2274	10.40	2586	10.40	2875	10.80	3278	10.40	3632
24	10.80	2285	10.40	2594	10.40	2920	10.40	3325	10.80	3569
25	10.80	2324	10.40	2551	10.40	2952	10.40	3336	10.80	3612
26	10.40	2318	10.80	2602	10.40	2947	10.40	3285	10.40	3621
27	10.40	2338	10.00	2630	10.40	2904	10.40	3324	10.40	3674
28	10.80	2295	10.80	2622	10.40	2968	10.40	3288	10.40	3608
29	10.40	2411	10.40	2631	10.40	3021	10.00	3309	10.40	3649
30	10.80	2336	10.40	2580	10.40	2940	10.40	3271	10.40	3595
31	10.40	2295	10.40	2629	10.80	2930	10.40	3313	10.40	3568
32	10.40	2351	10.40	2637	10.00	2954	10.40	3330	10.40	3605
33	10.40	2389	10.80	2619	10.40	2917	10.40	3262	10.40	3612
34	10.80	2344	10.80	2640	10.80	2911	10.40	3275	10.40	3743
35	10.40	2384	10.00	2592	10.40	2898	10.40	3353	10.40	3631
36	10.80	2295	10.00	2619	10.00	2845	10.40	3235	10.40	3571
37	10.80	2672	10.40	2618	10.40	2934	10.40	3286	10.40	3677
38	10.40	2420	10.40	2625	10.80	2938	10.40	3205	10.40	3540
39	10.00	2257	10.40	2669	10.40	2918	10.40	3277	10.40	3602
40	10.40	2314	10.40	2620	10.80	2914	10.40	3242	10.40	3601

	6000		6500		7000		7500		8000	
	Fitness	Tiempo (ms)	Fitness	Tiempo (ms)	Fitness	Tiempo (ms)	Fitness	Tiempo (ms)	Fitness	Tiempo (ms)
1	10.00	3889	10.40	4289	10.40	4517	10.00	4896	10.40	5156
2	10.40	4007	10.40	4181	10.40	4595	10.40	4889	10.40	5070
3	10.40	3921	10.40	4280	10.40	4510	10.40	5751	10.40	5249
4	10.40	3907	10.40	4304	10.40	4506	10.40	4696	10.40	5212
5	10.40	3945	10.40	4196	10.40	4507	10.40	4815	10.40	5205
6	10.80	4041	10.40	4281	10.40	4495	10.40	4905	10.40	5160
7	10.40	3843	10.40	4258	10.40	4555	10.40	4775	10.00	5146
8	10.40	4025	10.40	4306	10.00	4514	10.40	4825	10.40	5215
9	10.40	4021	10.40	4170	10.40	4513	10.40	4915	10.40	5153
10	10.40	3950	10.40	4364	10.40	4610	10.40	4846	10.40	5181
11	10.40	3909	10.40	4246	10.40	4519	10.40	4818	10.40	5235
12	10.40	3943	10.40	4215	10.40	4584	10.40	4911	10.40	5254
13	10.00	3941	10.40	4277	10.40	4508	10.40	4924	10.40	5216
14	10.00	3896	10.40	4177	10.40	4539	10.40	4844	10.40	5114
15	10.40	3868	10.40	4270	10.40	4568	10.40	4809	10.00	5183
16	10.40	3935	10.40	4211	10.40	4492	10.40	4799	10.40	5253
17	10.40	3949	10.40	4285	10.40	4472	10.40	4863	10.40	5126
18	10.40	3985	10.40	4284	10.40	4617	10.40	4820	10.40	5272
19	10.40	3813	10.40	4253	10.40	4517	10.40	4881	10.40	5214
20	10.00	3913	10.40	4234	10.40	4526	10.00	4873	10.40	5238
21	10.40	3909	10.00	4219	10.40	4609	10.40	5041	10.40	5140
22	10.40	3950	10.40	4196	10.40	4547	10.40	5046	10.40	5272
23	10.40	3955	10.00	4245	10.40	4629	10.40	4949	10.40	5351
24	10.40	3902	10.40	4257	10.40	4486	10.40	4879	10.40	5170
25	10.40	4009	10.40	4130	10.40	4508	10.40	5013	10.40	5220
26	10.00	3959	10.40	4271	10.00	4536	10.40	4878	10.40	5275
27	10.40	3841	10.40	4279	10.00	4472	10.40	4856	10.00	5384
28	10.40	3914	10.40	4289	10.40	4520	10.40	4802	10.40	5207
29	10.40	3965	10.00	4118	10.00	4660	10.00	4923	10.00	5175
30	10.40	3906	10.00	4204	10.40	4558	10.40	4895	10.40	5245
31	10.40	3896	10.40	4235	10.00	4568	10.40	4937	10.40	5226
32	10.40	3940	10.40	4308	10.40	4480	10.00	4828	10.40	5253
33	10.40	3835	10.40	4232	10.40	4517	10.40	4917	10.80	5269
34	10.80	3885	10.40	4184	10.40	4583	10.40	4775	10.40	5231
35	10.40	3949	10.40	4285	10.40	4499	10.40	4821	10.40	5264
36	10.40	3815	10.40	4192	10.40	4558	10.80	4855	10.40	5380
37	10.40	3995	10.40	4229	10.40	4589	10.40	4811	10.40	5474
38	10.40	3965	10.40	4174	10.40	4559	10.40	4828	10.40	5166
39	10.40	3928	10.40	4189	10.40	4580	10.40	4895	10.40	5345
40	10.40	4034	10.00	4208	10.40	4563	10.40	4842	10.40	5322

	8500		9000		9500		10000		10500	
	Fitness	Tiempo (ms)	Fitness	Tiempo (ms)	Fitness	Tiempo (ms)	Fitness	Tiempo (ms)	Fitness	Tiempo (ms)
1	10.40	5584	10.40	5745	10.40	5938	10.40	6056	10.40	6310
2	10.40	5399	10.40	5661	10.40	5891	10.40	6068	10.40	6250
3	10.00	5632	10.40	5759	10.40	5764	10.00	5959	10.00	6369
4	10.00	5412	10.40	5694	10.40	5761	10.40	6012	10.40	6238
5	10.40	5520	10.00	5689	10.00	5905	10.40	5986	10.40	6289
6	10.40	5511	10.40	5647	10.40	5841	10.00	6098	10.40	6376
7	10.40	5551	10.40	5659	10.40	5834	10.40	6092	10.40	6421
8	10.40	5480	10.40	5728	10.40	5812	10.40	6016	10.40	6392
9	10.40	5505	10.00	5704	10.40	5818	10.40	6024	10.40	6291
10	10.40	5528	10.40	5668	10.40	5802	10.40	6022	10.40	6224
11	10.40	5469	10.40	5713	10.40	5886	10.00	6111	10.40	6243
12	10.40	5461	10.40	5725	10.40	5908	10.40	6056	10.40	6242
13	10.40	5547	10.40	5750	10.00	5792	10.40	6114	10.40	6326
14	10.40	5442	10.40	5732	10.40	5873	10.40	6003	10.40	6242
15	10.40	5511	10.40	5618	10.40	5862	10.40	6061	10.00	6212
16	10.40	5455	10.40	5623	10.40	5908	10.40	6092	10.40	6200
17	10.00	5518	10.00	5583	10.40	5938	10.40	6031	10.00	6220
18	10.40	5545	10.40	5672	10.40	5808	10.40	6071	10.40	6255
19	10.40	5489	10.40	5698	10.40	5803	10.00	6043	10.40	6287
20	10.40	5592	10.40	5599	10.40	5801	10.40	6011	10.40	6232
21	10.40	5437	10.40	5677	10.40	5860	10.40	6095	10.40	6202
22	10.40	5450	10.40	5623	10.40	5794	10.40	6035	10.40	6253
23	10.40	5529	10.40	5661	10.40	5827	10.40	6056	10.40	6173
24	10.40	5446	10.40	5654	10.00	5833	10.40	6105	10.40	6237
25	10.40	5466	10.40	5647	10.40	5902	10.40	6087	10.40	6288
26	10.40	5561	10.40	5687	10.00	5900	10.40	6027	10.40	6228
27	10.00	5486	10.00	5611	10.40	5820	10.40	6087	10.00	6329
28	10.40	5535	10.40	5636	10.40	5896	10.40	6008	10.40	6325
29	10.40	5462	10.40	5590	10.40	5905	10.40	6072	10.40	6195
30	10.40	5469	10.40	5640	10.40	5812	10.40	6013	10.40	6282
31	10.40	5516	10.40	5677	10.40	5859	10.40	6034	10.40	6207
32	10.40	5541	10.40	5621	10.40	5904	10.40	6077	10.40	6243
33	10.40	5507	10.40	5654	10.00	5846	10.00	6039	10.40	6281
34	10.40	5424	10.40	5582	10.40	5816	10.00	6041	10.40	6271
35	10.40	5513	10.40	5725	10.40	5789	10.40	6161	10.40	6258
36	10.40	5470	10.00	5650	10.40	5909	10.40	6028	10.40	6172
37	10.40	5597	10.00	5639	10.40	5829	10.40	6026	10.40	6346
38	10.40	5521	10.40	5675	10.40	5880	10.40	6010	10.40	6207
39	10.40	5542	10.40	5621	10.40	5889	10.40	6050	10.40	6231
40	10.40	5472	10.00	5694	10.40	5882	10.40	6065	10.40	6304

3 Calibración del Porcentaje de Casamiento

Anexo 6

	Tam Población	Max Casamiento	Fitness Grasp	Fitness Genetico	Num Casamiento	Porcentaje de exitoso
1	31	6200	11.60	10.00	3125	50.40%
2	30	6000	11.20	10.00	3060	51.00%
3	30	6000	11.60	10.40	3306	55.10%
4	30	6000	10.80	10.80	2898	48.30%
5	30	6000	10.80	10.00	2931	48.85%
6	30	6000	11.20	10.00	3175	52.92%
7	30	6000	11.60	10.80	3184	53.07%
8	31	6200	11.20	10.40	2657	42.85%
9	31	6200	11.60	10.40	2654	42.81%
10	31	6200	11.60	10.00	3120	50.32%
11	31	6200	11.60	10.00	2973	47.95%
12	30	6000	11.60	10.40	3160	52.67%
13	30	6000	10.80	10.00	2838	47.30%
14	32	6400	11.20	10.40	3264	51.00%
15	30	6000	12.00	10.00	3315	55.25%
16	30	6000	11.60	10.40	3613	60.22%
17	30	6000	12.80	10.80	2812	46.87%
18	30	6000	12.00	10.40	3083	51.38%
19	32	6400	11.60	10.80	2672	41.75%
20	31	6200	12.00	10.40	2799	45.15%
21	32	6400	12.00	10.40	3518	54.97%
22	30	6000	11.60	10.00	2823	47.05%
23	32	6400	12.00	10.80	2956	46.19%
24	32	6400	11.60	10.40	3149	49.20%
25	31	6200	11.20	10.00	2950	47.58%
26	30	6000	11.60	10.40	3451	57.52%
27	30	6000	10.80	10.00	3288	54.80%
28	30	6000	11.60	10.40	3219	53.65%
29	30	6000	11.20	10.00	3089	51.48%
30	32	6400	12.80	10.00	3215	50.23%
31	31	6200	13.20	10.40	3207	51.73%
32	30	6000	11.60	10.40	3486	58.10%
33	32	6400	12.00	10.40	3302	51.59%
34	30	6000	11.60	10.00	3094	51.57%
35	32	6400	11.60	10.80	3392	53.00%
36	32	6400	10.40	10.40	3609	56.39%
37	31	6200	10.80	10.00	3300	53.23%
38	30	6000	10.40	10.40	3054	50.90%
39	30	6000	10.80	10.40	3204	53.40%
40	30	6000	12.00	10.00	3480	58.00%

Porcentaje de casamiento: 5%

	Tam Población	Max Casamiento	Fitness Grasp	Fitness Genetico	Num Casamiento	Porcentaje de exitoso
1	32	12800	11.60	10.40	5906	46.14%
2	31	12400	10.80	10.40	6738	54.34%
3	33	13200	10.80	10.80	6516	49.36%
4	31	12400	11.60	11.20	6871	55.41%
5	34	13600	11.60	10.00	6381	46.92%
6	30	12000	11.20	10.00	6361	53.01%
7	32	12800	11.20	10.40	5489	42.88%
8	30	12000	11.20	10.00	5312	44.27%
9	31	12400	11.60	10.00	6504	52.45%
10	30	12000	11.60	10.00	7499	62.49%
11	30	12000	11.60	10.40	6126	51.05%
12	33	13200	11.60	10.00	5730	43.41%
13	33	13200	11.60	10.00	6707	50.81%
14	33	13200	10.80	10.00	6981	52.89%
15	32	12800	12.40	10.40	5873	45.88%
16	30	12000	11.60	10.40	5491	45.76%
17	30	12000	12.00	10.40	6629	55.24%
18	30	12000	12.00	10.00	6865	57.21%
19	32	12800	12.40	11.20	6467	50.52%
20	32	12800	12.80	10.40	5772	45.09%
21	33	13200	10.80	10.00	7340	55.61%
22	31	12400	11.20	10.00	6156	49.65%
23	30	12000	10.80	10.00	7023	58.53%
24	30	12000	10.40	10.40	6582	54.85%
25	30	12000	11.20	10.00	6406	53.38%
26	32	12800	12.80	11.20	6425	50.20%
27	31	12400	12.00	10.80	6710	54.11%
28	32	12800	11.60	10.40	6147	48.02%
29	32	12800	11.60	10.00	7510	58.67%
30	34	13600	11.20	10.00	6149	45.21%
31	31	12400	10.80	10.00	5718	46.11%
32	32	12800	12.40	10.00	7044	55.03%
33	33	13200	11.60	10.40	6392	48.42%
34	32	12800	11.60	10.40	6217	48.57%
35	31	12400	12.40	10.00	6451	52.02%
36	32	12800	12.40	11.20	6629	51.79%
37	30	12000	10.80	10.00	5380	44.83%
38	31	12400	11.60	10.40	7562	60.98%
39	30	12000	11.60	10.00	6052	50.43%
40	30	12000	12.40	10.80	6287	52.39%

Porcentaje de casamiento: 10%

	Tam Población	Max Casamiento	Fitness Grasp	Fitness Genetico	Num Casamiento	Porcentaje de exitoso
1	34	20400	12.00	10.80	9688	47.49%
2	31	18600	10.40	10.00	6282	33.77%
3	32	19200	12.00	10.80	7135	37.16%
4	32	19200	12.80	10.40	7605	39.61%
5	34	20400	11.60	10.40	10029	49.16%
6	30	18000	11.60	10.00	6951	38.62%
7	31	18600	10.80	10.00	7007	37.67%
8	30	18000	12.00	10.00	6657	36.98%
9	34	20400	12.80	10.40	10787	52.88%
10	32	19200	10.80	10.40	5520	28.75%
11	30	18000	11.60	10.00	6371	35.39%
12	30	18000	11.60	10.40	6658	36.99%
13	32	19200	12.00	10.80	6788	35.35%
14	30	18000	10.80	10.40	6484	36.02%
15	33	19800	12.00	10.00	6938	35.04%
16	32	19200	11.60	10.80	7125	37.11%
17	32	19200	10.40	10.40	6387	33.27%
18	30	18000	12.00	10.00	7320	40.67%
19	32	19200	12.00	10.40	6559	34.16%
20	31	18600	11.20	10.00	6697	36.01%
21	31	18600	11.20	10.40	6658	35.80%
22	32	19200	11.60	10.40	6772	35.27%
23	32	19200	11.60	10.00	6396	33.31%
24	32	19200	10.80	10.40	5613	29.23%
25	30	18000	11.20	10.00	6348	35.27%
26	30	18000	10.40	10.00	6946	38.59%
27	31	18600	11.20	10.40	6257	33.64%
28	30	18000	10.80	10.00	6830	37.94%
29	32	19200	12.00	10.00	6799	35.41%
30	30	18000	10.00	10.00	5601	31.12%
31	31	18600	10.80	10.40	7565	40.67%
32	31	18600	10.80	10.00	6050	32.53%
33	30	18000	10.40	10.00	5729	31.83%
34	33	19800	10.40	10.00	6900	34.85%
35	34	20400	11.20	10.00	9598	47.05%
36	31	18600	10.80	10.00	6403	34.42%
37	34	20400	10.80	10.40	8060	39.51%
38	31	18600	11.20	10.00	7419	39.89%
39	30	18000	10.80	10.40	6539	36.33%
40	33	19800	11.20	10.00	6807	34.38%

Porcentaje de casamiento: 15%

	Tam Población	Max Casamiento	Fitness Grasp	Fitness Genetico	Num Casamiento	Porcentaje de exitoso
1	34	27200	10.80	10.40	10799	39.70%
2	33	26400	11.60	10.00	8048	30.48%
3	32	25600	10.80	10.80	9499	37.11%
4	34	27200	12.40	10.80	11083	40.75%
5	35	28000	11.60	10.00	14076	50.27%
6	31	24800	12.00	10.40	9514	38.36%
7	34	27200	11.20	10.00	10271	37.76%
8	33	26400	12.40	10.40	9070	34.36%
9	33	26400	11.60	10.80	8257	31.28%
10	32	25600	13.20	10.40	10121	39.54%
11	35	28000	11.60	10.00	15379	54.93%
12	31	24800	10.40	10.40	9748	39.31%
13	34	27200	12.00	12.00	11480	42.21%
14	33	26400	12.80	10.40	11355	43.01%
15	34	27200	11.60	10.40	11126	40.90%
16	30	24000	10.40	10.40	10575	44.06%
17	32	25600	11.20	10.00	9150	35.74%
18	32	25600	12.00	10.00	8726	34.09%
19	36	28800	12.40	10.00	12520	43.47%
20	34	27200	11.60	10.00	10370	38.13%
21	33	26400	11.60	10.00	9457	35.82%
22	32	25600	11.60	10.00	9670	37.77%
23	35	28000	12.00	10.40	13899	49.64%
24	35	28000	12.40	10.00	14012	50.04%
25	30	24000	11.20	10.40	9259	38.58%
26	30	24000	10.80	10.80	9905	41.27%
27	33	26400	11.60	10.40	8873	33.61%
28	34	27200	10.80	10.00	9121	33.53%
29	32	25600	11.60	10.00	9591	37.46%
30	31	24800	12.80	10.40	9689	39.07%
31	33	26400	11.60	10.00	9907	37.53%
32	30	24000	11.20	10.40	11044	46.02%
33	34	27200	12.00	10.40	9735	35.79%
34	32	25600	12.00	10.40	11100	43.36%
35	30	24000	10.80	10.00	9631	40.13%
36	35	28000	11.60	10.00	13684	48.87%
37	32	25600	12.00	10.40	10169	39.72%
38	33	26400	10.40	10.00	9800	37.12%
39	34	27200	11.60	10.40	10711	39.38%
40	33	26400	12.00	10.40	9323	35.31%

Porcentaje de casamiento: 20%

	Tam Población	Max Casamiento	Fitness Grasp	Fitness Genetico	Num Casamiento	Porcentaje de exitoso
1	36	36000	10.40	10.40	16605	46.13%
2	33	33000	11.20	10.40	13798	41.81%
3	32	32000	11.60	10.40	14216	44.43%
4	34	34000	10.40	10.00	14072	41.39%
5	34	34000	12.00	10.80	13411	39.44%
6	36	36000	11.20	10.40	18447	51.24%
7	34	34000	11.60	10.40	15751	46.33%
8	33	33000	10.80	10.00	13801	41.82%
9	31	31000	11.20	11.20	13399	43.22%
10	36	36000	11.20	10.00	17601	48.89%
11	34	34000	12.80	10.40	13983	41.13%
12	31	31000	11.60	10.00	11538	37.22%
13	31	31000	12.00	10.40	13648	44.03%
14	33	33000	11.20	10.40	13034	39.50%
15	34	34000	10.80	10.00	13011	38.27%
16	33	33000	11.60	10.40	15545	47.11%
17	33	33000	11.20	10.00	14728	44.63%
18	36	36000	11.60	10.80	15778	43.83%
19	32	32000	11.60	10.40	14199	44.37%
20	34	34000	11.60	10.40	11751	34.56%
21	33	33000	12.80	10.40	14008	42.45%
22	35	35000	12.00	10.40	14051	40.15%
23	32	32000	13.20	11.20	13619	42.56%
24	32	32000	10.40	10.40	15195	47.48%
25	32	32000	11.20	10.00	14713	45.98%
26	32	32000	10.80	10.40	13471	42.10%
27	35	35000	12.00	10.40	15226	43.50%
28	32	32000	12.00	10.80	14678	45.87%
29	34	34000	11.60	10.00	13298	39.11%
30	31	31000	10.40	10.00	13802	44.52%
31	31	31000	11.60	10.00	13178	42.51%
32	35	35000	11.60	10.80	13600	38.86%
33	36	36000	12.00	10.40	15820	43.94%
34	33	33000	10.80	10.00	15138	45.87%
35	35	35000	10.00	10.00	12678	36.22%
36	32	32000	12.00	10.00	13656	42.68%
37	30	30000	12.00	11.20	14931	49.77%
38	35	35000	11.60	10.00	14850	42.43%
39	36	36000	12.80	10.40	18769	52.14%
40	35	35000	10.80	10.40	13917	39.76%

Porcentaje de casamiento: 25%

	Tam Población	Max Casamiento	Fitness Grasp	Fitness Genetico	Num Casamiento	Porcentaje de exitoso
1	32	38400	11.20	10.00	17203	44.80%
2	36	43200	12.40	10.40	18455	42.72%
3	35	42000	12.00	10.40	17325	41.25%
4	35	42000	10.80	10.40	18361	43.72%
5	37	44400	11.60	10.00	21638	48.73%
6	35	42000	11.60	10.40	17338	41.28%
7	30	918	12.00	10.00	311	33.88%
8	31	37200	10.40	10.00	19360	52.04%
9	37	44400	12.40	10.00	21072	47.46%
10	32	38400	11.60	11.20	17502	45.58%
11	34	40800	11.20	10.00	18991	46.55%
12	38	45600	10.80	10.00	21916	48.06%
13	35	42000	10.80	10.00	17312	41.22%
14	37	44400	11.60	10.40	21604	48.66%
15	34	40800	10.40	10.00	16884	41.38%
16	31	948.6	12.40	10.40	304	32.05%
17	34	40800	11.60	10.40	17722	43.44%
18	35	42000	10.80	10.40	18328	43.64%
19	34	40800	12.40	10.00	18457	45.24%
20	35	42000	11.60	10.80	17691	42.12%
21	37	44400	11.20	10.40	22330	50.29%
22	32	38400	12.40	11.20	19305	50.27%
23	35	42000	11.20	10.40	15383	36.63%
24	31	37200	12.00	11.60	16772	45.09%
25	34	40800	12.00	10.40	15751	38.61%
26	36	43200	10.40	10.40	18319	42.41%
27	34	40800	11.60	10.00	17586	43.10%
28	36	43200	12.80	10.80	17580	40.69%
29	34	40800	11.20	10.40	17992	44.10%
30	37	44400	10.80	10.40	21835	49.18%
31	33	39600	11.60	10.40	17934	45.29%
32	36	43200	11.20	10.40	14994	34.71%
33	33	39600	12.00	10.40	17661	44.60%
34	36	43200	12.00	10.40	17577	40.69%
35	36	43200	11.60	10.40	18540	42.92%
36	34	40800	10.80	10.40	18874	46.26%
37	34	40800	11.60	10.40	18010	44.14%
38	32	38400	12.00	10.40	18336	47.75%
39	37	44400	11.60	10.80	20244	45.59%
40	34	40800	11.20	11.20	18748	45.95%

Porcentaje de casamiento: 30%

	Tam Población	Max Casamiento	Fitness Grasp	Fitness Genetico	Num Casamiento	Porcentaje de exitoso
1	31	43400	11.60	10.00	16030	36.94%
2	34	47600	12.00	10.40	21828	45.86%
3	33	46200	12.00	10.80	20467	44.30%
4	35	49000	12.00	10.80	20869	42.59%
5	33	46200	11.20	10.40	23014	49.81%
6	32	44800	11.60	10.00	20719	46.25%
7	32	1142.4	12.00	10.00	463	40.53%
8	35	49000	12.00	10.00	21352	43.58%
9	35	49000	12.00	10.00	21482	43.84%
10	36	50400	11.60	10.40	21711	43.08%
11	35	49000	11.60	11.20	21785	44.46%
12	36	50400	12.00	10.80	21309	42.28%
13	31	1106.7	12.00	10.80	282	25.48%
14	34	47600	12.00	10.40	22436	47.13%
15	35	49000	11.60	10.40	20763	42.37%
16	34	47600	11.60	10.00	21790	45.78%
17	34	47600	11.60	10.00	19618	41.21%
18	33	46200	10.80	10.40	20768	44.95%
19	33	46200	12.00	10.00	18749	40.58%
20	30	1071	12.80	10.00	289	26.98%
21	32	1142.4	12.00	10.40	355	31.07%
22	35	49000	11.60	10.40	21050	42.96%
23	32	44800	12.80	10.40	19410	43.33%
24	37	51800	10.40	10.40	21954	42.38%
25	32	44800	12.80	10.40	22583	50.41%
26	34	47600	11.60	10.80	21728	45.65%
27	33	46200	11.60	10.40	18236	39.47%
28	36	50400	11.60	10.40	23005	45.64%
29	37	51800	12.40	10.40	18373	35.47%
30	33	46200	11.60	10.00	22292	48.25%
31	30	1071	12.00	11.20	253	23.62%
32	36	50400	11.60	10.40	21412	42.48%
33	33	46200	12.40	10.40	22379	48.44%
34	33	46200	11.60	10.40	22770	49.29%
35	31	1106.7	11.20	10.40	308	27.83%
36	33	46200	11.60	10.40	19861	42.99%
37	33	46200	11.60	10.40	21650	46.86%
38	36	50400	11.20	10.40	22576	44.79%
39	32	44800	11.60	10.00	20198	45.08%
40	33	46200	11.20	10.40	21232	45.96%

Porcentaje de casamiento: 35%

	Tam Población	Max Casamient o	Fitness Grasp	Fitness Genetico	Num Casamient o	Porcentaje de exitoso
1	35	56000	11.20	10.00	26350	47.05%
2	34	54400	11.20	10.40	25035	46.02%
3	37	59200	11.20	10.40	26383	44.57%
4	32	51200	12.00	10.00	20280	39.61%
5	34	54400	12.00	10.40	22794	41.90%
6	36	57600	11.60	10.40	25926	45.01%
7	35	56000	10.80	10.00	27368	48.87%
8	36	57600	11.20	10.00	23368	40.57%
9	34	54400	12.40	10.80	25204	46.33%
10	34	54400	11.20	10.00	26053	47.89%
11	34	54400	10.80	10.00	26567	48.84%
12	37	59200	11.60	10.40	25576	43.20%
13	37	59200	12.00	10.00	21209	35.83%
14	34	54400	10.00	10.00	26920	49.49%
15	31	49600	11.60	10.40	21946	44.25%
16	34	54400	11.20	10.00	26135	48.04%
17	36	57600	12.00	10.00	23288	40.43%
18	36	57600	10.80	10.40	23391	40.61%
19	40	64000	11.20	10.40	30146	47.10%
20	33	52800	11.20	10.00	25678	48.63%
21	33	1346.4	10.40	10.00	442	32.83%
22	33	52800	10.80	10.00	26372	49.95%
23	36	57600	11.60	10.80	25757	44.72%
24	36	57600	12.40	10.00	26074	45.27%
25	35	56000	11.60	10.40	24694	44.10%
26	37	59200	10.40	10.00	24375	41.17%
27	33	1346.4	11.60	10.80	390	28.97%
28	36	57600	10.80	10.40	25486	44.25%
29	33	52800	11.60	10.40	26243	49.70%
30	37	59200	10.80	10.00	23523	39.73%
31	41	65600	12.00	10.40	26567	40.50%
32	34	54400	11.20	10.00	25279	46.47%
33	33	52800	11.60	10.40	24491	46.38%
34	34	54400	11.60	10.80	25886	47.58%
35	40	64000	11.20	10.00	30627	47.85%
36	34	54400	11.60	10.40	24509	45.05%
37	34	54400	10.40	10.40	23568	43.32%
38	35	56000	12.00	10.40	26254	46.88%
39	35	56000	11.60	10.80	26319	47.00%
40	37	59200	12.00	10.40	24115	40.73%

Porcentaje de casamiento: 40%

	Tam Población	Max Casamiento	Fitness Grasp	Fitness Genetico	Num Casamiento	Porcentaje de exitoso
1	36	64800	12.40	10.40	30319	46.79%
2	38	68400	10.80	10.00	32259	47.16%
3	38	68400	11.20	10.00	32304	47.23%
4	34	61200	12.00	10.00	28498	46.57%
5	38	68400	11.60	10.00	31277	45.73%
6	34	61200	11.60	10.40	28556	46.66%
7	33	59400	11.60	10.40	26502	44.62%
8	34	61200	12.40	10.40	30829	50.37%
9	33	59400	11.60	10.00	24747	41.66%
10	40	72000	11.60	10.00	32691	45.40%
11	35	63000	12.40	11.20	28528	45.28%
12	35	63000	12.00	10.40	30065	47.72%
13	37	66600	11.60	10.00	28555	42.88%
14	33	1514.7	12.40	10.40	477	31.49%
15	37	66600	11.60	10.40	29749	44.67%
16	34	61200	11.60	10.40	29869	48.81%
17	40	72000	11.60	10.40	30338	42.14%
18	39	70200	11.60	10.00	34496	49.14%
19	33	59400	10.80	10.80	26441	44.51%
20	37	66600	11.60	10.00	29565	44.39%
21	37	66600	12.00	10.40	28615	42.97%
22	33	59400	10.80	10.40	24973	42.04%
23	38	68400	11.60	10.00	33042	48.31%
24	34	61200	11.20	10.00	28361	46.34%
25	34	61200	12.00	10.40	23638	38.62%
26	32	1468.8	11.60	10.00	400	27.23%
27	37	66600	11.60	10.00	28436	42.70%
28	33	59400	12.00	10.00	25244	42.50%
29	33	59400	12.00	10.00	24239	40.81%
30	34	61200	11.20	11.20	27971	45.70%
31	34	61200	10.40	10.00	29725	48.57%
32	34	61200	11.20	10.40	30712	50.18%
33	41	73800	12.00	11.60	31813	43.11%
34	42	75600	11.20	10.40	33367	44.14%
35	42	75600	12.00	10.00	34094	45.10%
36	35	63000	11.20	10.40	27923	44.32%
37	37	66600	11.60	10.80	29633	44.49%
38	35	63000	10.80	10.00	27612	43.83%
39	38	68400	12.80	10.40	30775	44.99%
40	38	68400	11.20	10.00	32310	47.24%

Porcentaje de casamiento: 45%

	Tam Población	Max Casamiento	Fitness Grasp	Fitness Genetico	Num Casamiento	Porcentaje de exitoso
1	35	70000	11.20	10.80	34146	48.78%
2	38	76000	11.20	10.00	36562	48.11%
3	34	68000	12.00	10.00	31875	46.88%
4	35	70000	11.60	10.00	31445	44.92%
5	39	78000	11.60	10.00	37925	48.62%
6	37	74000	12.00	11.20	35055	47.37%
7	38	76000	12.80	11.20	37393	49.20%
8	31	62000	11.60	10.40	30298	48.87%
9	36	72000	11.20	10.40	32372	44.96%
10	38	76000	12.00	10.80	36068	47.46%
11	35	70000	10.80	10.00	31499	45.00%
12	37	74000	10.80	10.40	35025	47.33%
13	41	82000	10.40	10.00	36676	44.73%
14	34	68000	10.40	10.40	34688	51.01%
15	36	72000	10.80	10.80	33458	46.47%
16	34	1734	12.40	10.40	618	35.64%
17	39	78000	10.40	10.40	37439	48.00%
18	39	78000	10.80	10.40	35859	45.97%
19	37	74000	12.00	10.40	33569	45.36%
20	35	70000	11.60	10.00	33584	47.98%
21	34	68000	11.60	10.00	32308	47.51%
22	36	72000	10.80	10.40	34138	47.41%
23	35	70000	12.00	11.20	33104	47.29%
24	34	68000	11.20	10.00	33509	49.28%
25	39	78000	10.40	10.40	34639	44.41%
26	36	72000	11.60	10.40	32771	45.52%
27	32	64000	10.80	10.80	30933	48.33%
28	34	68000	11.60	10.40	34081	50.12%
29	40	80000	11.60	10.40	37114	46.39%
30	37	74000	12.00	10.00	33175	44.83%
31	39	78000	11.60	10.80	37517	48.10%
32	36	72000	10.80	10.40	34621	48.08%
33	34	68000	10.80	10.80	30589	44.98%
34	41	82000	11.60	10.40	35450	43.23%
35	34	68000	11.60	10.00	31899	46.91%
36	39	78000	10.80	10.40	36053	46.22%
37	35	70000	12.40	10.40	33542	47.92%
38	33	66000	12.80	11.20	30939	46.88%
39	38	76000	10.40	10.00	36258	47.71%
40	42	84000	12.40	10.80	41748	49.70%

Porcentaje de casamiento: 50%

	Tam Población	Max Casamiento	Fitness Grasp	Fitness Genetico	Num Casamiento	Porcentaje de exitoso
1	33	1851.3	11.60	10.00	572	30.90%
2	33	1851.3	10.40	10.40	572	30.90%
3	41	90200	12.00	10.00	42407	47.01%
4	34	74800	12.80	11.20	35208	47.07%
5	36	79200	11.60	10.40	37635	47.52%
6	34	74800	11.60	10.40	31828	42.55%
7	41	90200	11.20	10.00	42118	46.69%
8	36	79200	11.60	10.00	38070	48.07%
9	36	79200	11.60	10.00	36720	46.36%
10	36	79200	12.00	10.00	37743	47.66%
11	36	79200	12.40	10.00	37774	47.69%
12	34	74800	11.20	10.00	33036	44.17%
13	33	1851.3	11.60	10.00	632	34.14%
14	35	77000	11.60	10.40	38946	50.58%
15	35	77000	12.00	10.00	38613	50.15%
16	38	83600	11.20	10.00	35747	42.76%
17	41	90200	10.80	10.40	37363	41.42%
18	34	1907.4	10.40	10.00	592	31.04%
19	36	79200	10.40	10.00	36505	46.09%
20	36	79200	12.00	10.00	36292	45.82%
21	35	77000	12.00	10.80	36662	47.61%
22	36	2019.6	11.60	10.00	658	32.58%
23	34	74800	10.80	10.40	32542	43.51%
24	34	74800	11.60	10.40	33692	45.04%
25	35	77000	11.60	10.00	37555	48.77%
26	38	83600	11.60	10.40	36243	43.35%
27	40	88000	10.80	10.40	39946	45.39%
28	42	92400	12.00	11.20	44711	48.39%
29	40	88000	12.80	10.00	39929	45.37%
30	38	83600	12.00	10.80	37529	44.89%
31	38	83600	12.00	10.00	36835	44.06%
32	38	83600	10.80	10.80	36818	44.04%
33	35	1963.5	12.40	10.80	743	37.84%
34	37	81400	11.20	10.80	39137	48.08%
35	38	83600	12.40	10.00	37567	44.94%
36	34	74800	11.60	10.00	33489	44.77%
37	38	83600	11.20	10.40	36025	43.09%
38	35	77000	12.00	10.40	37255	48.38%
39	36	79200	11.20	10.40	37000	46.72%
40	38	83600	12.00	10.00	34239	40.96%

Porcentaje de casamiento: 55%

	Tam Población	Max Casamien o	Fitness Grasp	Fitness Genetico	Num Casamien o	Porcentaje de exitoso
1	36	86400	10.00	10.00	40117	46.43%
2	35	84000	11.20	10.00	42786	50.94%
3	38	91200	10.80	10.00	42283	46.36%
4	37	88800	12.00	10.40	41182	46.38%
5	38	91200	10.80	10.00	39871	43.72%
6	39	93600	11.60	10.00	46685	49.88%
7	35	84000	11.60	10.40	38430	45.75%
8	39	93600	11.20	10.40	45264	48.36%
9	36	86400	12.80	10.40	42248	48.90%
10	36	86400	10.80	10.00	42387	49.06%
11	39	93600	12.00	10.40	47187	50.41%
12	38	91200	11.20	10.00	42896	47.04%
13	38	91200	12.40	10.80	42367	46.46%
14	38	91200	10.80	10.40	40709	44.64%
15	37	88800	11.20	10.00	41402	46.62%
16	38	91200	12.40	10.40	39737	43.57%
17	37	88800	11.60	10.40	42515	47.88%
18	38	91200	10.00	10.00	40792	44.73%
19	40	96000	11.20	10.00	46144	48.07%
20	37	88800	10.80	10.00	42281	47.61%
21	35	84000	12.00	10.00	42446	50.53%
22	38	91200	10.80	10.00	38727	42.46%
23	35	84000	11.60	11.20	41966	49.96%
24	39	93600	10.80	10.40	46188	49.35%
25	38	91200	11.20	10.40	36495	40.02%
26	32	1958.4	11.20	10.40	742	37.89%
27	35	2142	11.20	10.00	746	34.83%
28	37	2264.4	10.80	10.40	797	35.20%
29	35	2142	10.40	10.40	761	35.53%
30	36	86400	12.00	10.40	41663	48.22%
31	37	88800	12.80	10.00	40818	45.97%
32	35	2142	10.80	10.40	799	37.30%
33	41	98400	10.80	10.00	45648	46.39%
34	37	88800	10.40	10.40	39099	44.03%
35	36	86400	11.60	11.60	35340	40.90%
36	39	93600	11.60	10.40	46985	50.20%
37	36	86400	11.60	10.40	41838	48.42%
38	38	91200	11.60	10.40	41662	45.68%
39	37	88800	12.40	10.40	41108	46.29%
40	37	88800	11.60	10.40	41475	46.71%

Porcentaje de casamiento: 60%

	Tam Población	Max Casamiento	Fitness Grasp	Fitness Genetico	Num Casamiento	Porcentaje de exitoso
1	40	104000	12.40	10.40	49573	47.67%
2	40	104000	10.40	10.40	46746	44.95%
3	39	101400	12.40	10.00	47330	46.68%
4	41	106600	11.60	10.80	49332	46.28%
5	37	96200	11.60	10.00	39553	41.12%
6	41	106600	12.40	10.40	49129	46.09%
7	32	2121.6	11.60	11.60	522	24.60%
8	38	98800	11.60	10.40	44875	45.42%
9	34	88400	11.60	10.80	41466	46.91%
10	36	93600	10.80	10.00	45336	48.44%
11	41	106600	12.00	10.40	47222	44.30%
12	32	2121.6	11.20	11.20	635	29.93%
13	40	104000	12.00	10.40	47160	45.35%
14	40	104000	11.60	10.00	48431	46.57%
15	40	104000	10.00	10.00	49769	47.85%
16	33	2187.9	11.20	10.40	896	40.95%
17	38	98800	12.00	10.00	45314	45.86%
18	40	104000	11.20	10.00	48010	46.16%
19	41	106600	11.60	10.40	49280	46.23%
20	42	109200	12.80	10.00	50383	46.14%
21	37	96200	11.60	10.40	41990	43.65%
22	36	93600	11.20	10.40	45693	48.82%
23	41	106600	10.80	10.40	49422	46.36%
24	38	98800	10.80	10.00	45220	45.77%
25	41	106600	10.40	10.40	49313	46.26%
26	39	101400	10.80	10.00	48102	47.44%
27	43	111800	11.60	10.00	53196	47.58%
28	39	101400	11.60	10.40	50220	49.53%
29	41	106600	10.80	10.80	49024	45.99%
30	42	109200	10.80	10.40	54514	49.92%
31	39	101400	11.20	10.80	49627	48.94%
32	40	104000	10.80	10.80	50521	48.58%
33	39	101400	11.60	10.40	49588	48.90%
34	37	96200	11.20	10.40	46798	48.65%
35	41	106600	11.60	10.00	45772	42.94%
36	36	2386.8	10.40	10.40	761	31.88%
37	40	104000	11.60	10.00	48364	46.50%
38	39	101400	11.60	10.00	50341	49.65%
39	38	98800	11.60	10.40	44898	45.44%
40	35	91000	11.20	10.40	42262	46.44%

Porcentaje de casamiento: 65%

Porcentaje de casamiento: 70%

	Tam Población	Max Casamiento	Fitness Grasp	Fitness Genetico	Num Casamiento	Porcentaje de exitoso
1	44	123200	12.00	10.40	56460	45.83%
2	39	109200	12.80	11.60	51493	47.15%
3	35	2499	11.60	11.60	833	33.33%
4	39	109200	12.00	10.40	53400	48.90%
5	36	100800	11.20	11.20	50323	49.92%
6	40	112000	10.80	10.40	54494	48.66%
7	41	114800	11.20	10.40	53022	46.19%
8	39	109200	10.80	10.40	53822	49.29%
9	47	131600	12.40	10.00	62093	47.18%
10	34	95200	10.40	10.40	45182	47.46%
11	45	126000	11.60	10.40	60995	48.41%
12	41	114800	12.00	11.20	53724	46.80%
13	39	109200	10.40	10.00	54138	49.58%
14	40	2856	10.80	10.80	883	30.92%
15	40	112000	12.00	10.40	53084	47.40%
16	38	106400	10.80	10.00	49341	46.37%
17	37	103600	11.60	10.40	49954	48.22%
18	41	114800	12.00	10.00	52895	46.08%
19	40	112000	11.60	10.00	50212	44.83%
20	41	114800	13.20	10.40	50887	44.33%
21	42	117600	11.20	10.40	54751	46.56%
22	40	112000	11.20	10.00	51948	46.38%
23	42	117600	11.20	10.40	56526	48.07%
24	40	112000	11.60	10.40	52830	47.17%
25	36	100800	11.20	10.00	50516	50.12%
26	37	103600	12.00	10.00	49872	48.14%
27	39	109200	12.00	10.40	54406	49.82%
28	41	114800	10.80	10.40	50516	44.00%
29	42	117600	12.00	10.40	57048	48.51%
30	35	98000	10.40	10.00	45417	46.34%
31	43	120400	11.60	10.40	58452	48.55%
32	40	112000	11.20	10.00	53273	47.57%
33	37	103600	12.80	10.80	49392	47.68%
34	43	120400	10.40	10.00	55236	45.88%
35	40	112000	12.40	10.00	53960	48.18%
36	42	117600	10.80	10.40	56578	48.11%
37	43	120400	12.00	10.00	54304	45.10%
38	42	117600	11.20	10.00	57217	48.65%
39	42	117600	12.00	10.00	55223	46.96%
40	37	103600	11.20	10.40	49818	48.09%

	Tam Población	Max Casamiento	Fitness Grasp	Fitness Genetico	Num Casamiento	Porcentaje de exitoso
1	44	132000	10.40	10.40	66722	50.55%
2	34	2601	11.60	10.00	852	32.76%
3	39	2983.5	11.20	10.00	932	31.24%
4	38	2907	10.80	10.40	991	34.09%
5	34	2601	12.00	10.40	758	29.14%
6	37	2830.5	10.80	10.40	938	33.14%
7	39	117000	11.20	10.40	57563	49.20%
8	41	123000	11.60	10.40	57686	46.90%
9	35	105000	12.80	10.00	49467	47.11%
10	40	120000	12.00	10.40	57342	47.79%
11	40	3060	10.80	10.40	1002	32.75%
12	42	126000	12.00	10.80	58503	46.43%
13	40	120000	11.20	10.00	56882	47.40%
14	45	135000	11.60	10.40	65397	48.44%
15	35	2677.5	12.80	11.20	795	29.69%
16	34	2601	11.60	10.40	857	32.95%
17	36	108000	11.60	10.40	50626	46.88%
18	38	114000	11.60	10.80	54260	47.60%
19	35	105000	12.00	10.40	50292	47.90%
20	36	2754	12.00	10.40	953	34.60%
21	44	132000	11.60	10.00	65251	49.43%
22	44	132000	10.40	10.00	60256	45.65%
23	39	117000	10.40	10.00	55262	47.23%
24	40	120000	12.00	10.00	56283	46.90%
25	36	108000	11.20	10.80	53781	49.80%
26	41	123000	12.00	10.40	59117	48.06%
27	43	129000	12.40	10.40	60823	47.15%
28	41	123000	10.80	10.00	58376	47.46%
29	33	2524.5	12.40	10.40	772	30.58%
30	38	114000	10.80	10.00	51867	45.50%
31	41	123000	11.60	10.40	58186	47.31%
32	42	3213	12.40	10.80	1125	35.01%
33	40	120000	12.00	10.00	56178	46.82%
34	40	120000	10.40	10.40	57023	47.52%
35	44	132000	10.80	10.00	64102	48.56%
36	36	2754	10.80	10.40	919	33.37%
37	38	114000	12.00	10.40	53193	46.66%
38	37	111000	11.60	10.00	53228	47.95%
39	43	129000	11.60	10.40	61044	47.32%
40	40	120000	11.20	10.40	51092	42.58%

Porcentaje de casamiento: 75%

	Tam Población	Max Casamiento	Fitness Grasp	Fitness Genetico	Num Casamiento	Porcentaje de exitoso
1	42	134400	12.00	10.40	66169	49.23%
2	41	131200	12.00	10.40	61536	46.90%
3	41	131200	12.00	10.00	61102	46.57%
4	42	134400	12.00	10.00	60091	44.71%
5	42	134400	11.60	10.00	66379	49.39%
6	43	137600	11.60	10.40	63911	46.45%
7	38	3100.8	12.40	11.20	994	32.06%
8	35	112000	12.40	10.40	54098	48.30%
9	36	2937.6	11.60	10.40	883	30.06%
10	40	128000	10.80	10.00	61415	47.98%
11	37	3019.2	12.40	11.20	943	31.23%
12	35	2856	11.60	10.00	874	30.60%
13	35	2856	11.60	10.40	866	30.32%
14	39	124800	11.20	10.40	61759	49.49%
15	38	121600	11.60	10.00	57127	46.98%
16	41	131200	10.80	10.00	58304	44.44%
17	40	128000	11.20	10.40	58512	45.71%
18	42	134400	10.40	10.40	63993	47.61%
19	38	121600	12.00	10.00	53775	44.22%
20	39	124800	11.60	10.80	62853	50.36%
21	38	121600	10.80	10.00	56113	46.15%
22	35	2856	11.60	10.40	1006	35.22%
23	41	131200	10.40	10.40	62652	47.75%
24	36	2937.6	10.40	10.00	996	33.91%
25	40	128000	11.60	10.00	62287	48.66%
26	35	2856	12.00	10.40	998	34.94%
27	43	137600	11.20	10.40	61000	44.33%
28	37	118400	11.60	10.40	57587	48.64%
29	39	3182.4	11.20	10.00	1107	34.79%
30	39	124800	12.00	10.80	61460	49.25%
31	37	3019.2	10.80	10.80	1046	34.64%
32	40	3264	10.40	10.40	1161	35.57%
33	43	137600	11.60	10.40	64412	46.81%
34	47	150400	11.60	10.40	70252	46.71%
35	36	2937.6	11.60	10.00	1026	34.93%
36	40	3264	12.40	10.00	899	27.54%
37	39	3182.4	10.80	10.00	1102	34.63%
38	37	118400	12.00	10.40	59080	49.90%
39	43	137600	12.00	10.40	66424	48.27%
40	36	2937.6	11.60	10.00	968	32.95%

Porcentaje de casamiento: 80%

Porcentaje de casamiento: 85%

	Tam Población	Max Casamiento	Fitness Grasp	Fitness Genetico	Num Casamiento	Porcentaje de exitoso
1	40	136000	11.60	10.00	64214	47.22%
2	40	3468	10.80	10.00	1235	35.61%
3	46	156400	12.00	10.40	77743	49.71%
4	40	136000	12.80	11.20	66221	48.69%
5	47	159800	10.40	10.00	76418	47.82%
6	40	3468	11.20	10.00	1187	34.23%
7	44	149600	12.80	11.60	73228	48.95%
8	41	139400	11.20	10.00	64265	46.10%
9	42	142800	11.60	10.00	63982	44.81%
10	39	3381.3	11.20	10.00	1243	36.76%
11	44	149600	11.60	10.40	72435	48.42%
12	38	3294.6	10.80	10.40	1081	32.81%
13	41	139400	11.20	10.40	66111	47.43%
14	39	132600	10.80	10.40	64298	48.49%
15	38	129200	11.20	10.40	61549	47.64%
16	41	139400	12.00	10.40	65107	46.71%
17	42	3641.4	12.40	10.00	1266	34.77%
18	41	139400	11.20	10.00	66601	47.78%
19	41	3554.7	10.80	10.00	1175	33.05%
20	36	3121.2	12.80	10.40	1108	35.50%
21	43	146200	12.00	10.00	67991	46.51%
22	46	156400	10.80	10.40	74185	47.43%
23	40	136000	12.40	10.40	66166	48.65%
24	43	146200	11.20	10.00	69342	47.43%
25	38	129200	12.00	10.00	61702	47.76%
26	43	3728.1	11.60	10.00	1444	38.73%
27	38	129200	11.60	10.80	61735	47.78%
28	37	3207.9	11.60	10.40	1054	32.86%
29	42	3641.4	12.00	10.40	1087	29.85%
30	44	149600	10.40	10.00	72263	48.30%
31	35	3034.5	11.20	10.00	1018	33.55%
32	40	136000	12.80	11.20	65320	48.03%
33	42	3641.4	11.20	10.00	1156	31.75%
34	42	142800	10.40	10.00	69863	48.92%
35	44	149600	11.60	10.00	73387	49.06%
36	48	163200	11.20	10.00	75738	46.41%
37	38	3294.6	11.60	10.40	1021	30.99%
38	41	139400	10.80	10.00	62500	44.84%
39	34	2947.8	12.00	10.80	875	29.68%
40	41	139400	11.60	10.40	61752	44.30%

	Tam Población	Max Casamiento	Fitness Grasp	Fitness Genetico	Num Casamiento	Porcentaje de exitoso
1	44	158400	12.40	10.00	78475	49.54%
2	46	165600	10.40	10.40	80970	48.89%
3	47	169200	11.60	10.00	80494	47.57%
4	43	3947.4	10.40	10.00	1360	34.45%
5	37	3396.6	12.40	10.40	1101	32.41%
6	41	147600	11.60	10.00	69625	47.17%
7	38	3488.4	12.00	10.40	1100	31.53%
8	43	154800	11.20	10.00	70034	45.24%
9	48	172800	12.40	10.40	83789	48.49%
10	40	144000	10.40	10.40	68183	47.35%
11	47	169200	11.20	10.00	78783	46.56%
12	36	3304.8	12.00	10.00	1161	35.13%
13	42	3855.6	11.60	10.40	1419	36.80%
14	47	169200	12.00	10.40	78744	46.54%
15	39	3580.2	12.00	10.40	1218	34.02%
16	36	3304.8	12.00	10.40	1010	30.56%
17	42	3855.6	12.00	10.40	1438	37.30%
18	43	154800	11.60	10.00	72117	46.59%
19	35	3213	12.40	10.40	1020	31.75%
20	47	169200	10.40	10.00	79783	47.15%
21	37	3396.6	12.00	10.80	1264	37.21%
22	39	3580.2	10.80	10.00	1307	36.51%
23	43	154800	11.60	10.00	74788	48.31%
24	39	140400	11.20	10.00	66651	47.47%
25	44	4039.2	11.60	10.40	1225	30.33%
26	42	151200	12.80	10.00	74332	49.16%
27	41	147600	10.40	10.00	65421	44.32%
28	43	3947.4	11.60	10.00	1280	32.43%
29	34	3121.2	11.20	10.00	1120	35.88%
30	40	3672	10.40	10.40	1110	30.23%
31	39	3580.2	11.20	10.40	1050	29.33%
32	40	144000	11.60	10.40	68908	47.85%
33	34	3121.2	12.80	10.80	1000	32.04%
34	38	3488.4	12.00	10.00	1244	35.66%
35	46	165600	10.80	10.00	80318	48.50%
36	37	3396.6	11.60	10.40	1174	34.56%
37	39	3580.2	11.60	10.80	1299	36.28%
38	38	3488.4	10.80	10.40	1198	34.34%
39	47	169200	12.00	10.00	81165	47.97%
40	46	165600	10.40	10.00	77765	46.96%

Porcentaje de casamiento: 90%

	Tam Población	Max Casamiento	Fitness Grasp	Fitness Genetico	Num Casamiento	Porcentaje de exitoso
1	47	178600	11.60	10.00	85798	48.04%
2	40	152000	12.00	10.40	74917	49.29%
3	40	3876	10.40	10.40	1229	31.71%
4	45	171000	12.40	10.00	76152	44.53%
5	42	4069.8	12.00	10.40	1458	35.82%
6	40	152000	12.00	10.00	73385	48.28%
7	41	3972.9	11.20	10.00	1197	30.13%
8	41	3972.9	12.00	10.40	1352	34.03%
9	42	159600	11.20	10.40	75297	47.18%
10	39	3779.1	11.20	10.40	1302	34.45%
11	42	159600	11.20	10.40	75731	47.45%
12	42	159600	12.00	10.80	75426	47.26%
13	42	4069.8	10.80	10.00	1305	32.07%
14	44	167200	12.00	10.80	83384	49.87%
15	36	3488.4	11.60	10.40	1134	32.51%
16	44	167200	10.40	10.00	79878	47.77%
17	41	155800	11.60	10.40	72087	46.27%
18	41	155800	12.40	11.20	71601	45.96%
19	44	167200	12.00	10.80	81499	48.74%
20	40	3876	11.60	10.00	1287	33.20%
21	46	174800	12.00	10.80	83127	47.56%
22	44	167200	11.60	10.40	81181	48.55%
23	46	174800	11.60	10.40	84876	48.56%
24	48	182400	11.60	10.00	89260	48.94%
25	44	167200	11.60	10.00	83003	49.64%
26	47	178600	10.40	10.00	85792	48.04%
27	46	174800	10.80	10.40	85894	49.14%
28	41	3972.9	11.60	10.40	1251	31.49%
29	43	4166.7	10.80	10.40	1574	37.78%
30	42	4069.8	11.60	10.80	1277	31.38%
31	42	4069.8	12.00	10.80	1366	33.56%
32	42	159600	11.60	10.00	77595	48.62%
33	36	3488.4	10.80	10.00	1186	34.00%
34	44	167200	12.00	10.80	80765	48.30%
35	38	3682.2	11.20	10.40	1163	31.58%
36	40	3876	10.80	10.00	1297	33.46%
37	43	4166.7	11.60	10.40	1542	37.01%
38	37	3585.3	12.00	10.40	1304	36.37%
39	35	3391.5	10.80	10.80	1208	35.62%
40	43	163400	11.20	10.40	73687	45.10%

Porcentaje de casamiento: 95%

4 Calibración del Porcentaje de Mutación

Anexo 7

	Tam Población	Max Mutación	Fitness Grasp	Fitness Genetico	Num Mutación	Mutaciones exitosas
1	37	5920	11.60	10.00	3017	50.96%
2	31	4960	11.60	11.20	2901	58.49%
3	33	5280	12.00	10.00	2986	56.55%
4	37	5920	11.60	10.40	2914	49.22%
5	31	4960	12.00	10.40	2896	58.39%
6	38	6080	10.40	10.00	2834	46.61%
7	36	5760	12.00	10.00	2852	49.51%
8	36	5760	12.40	10.80	2875	49.91%
9	37	5920	12.00	10.40	3063	51.74%
10	37	5920	10.40	10.40	2851	48.16%
11	33	5280	11.60	10.00	2934	55.57%
12	35	5600	11.60	10.80	2893	51.66%
13	37	5920	11.60	10.00	2906	49.09%
14	33	5280	11.20	10.80	2869	54.34%
15	36	5760	12.40	10.40	2972	51.60%
16	33	5280	10.80	10.80	2808	53.18%
17	34	5440	11.20	10.80	2924	53.75%
18	36	5760	10.80	10.80	2935	50.95%
19	38	6080	11.20	10.00	3070	50.49%
20	35	5600	11.60	10.00	3115	55.63%
21	32	5120	10.80	10.00	3002	58.63%
22	35	5600	10.80	10.00	2889	51.59%
23	35	5600	11.60	10.00	3042	54.32%
24	34	5440	11.20	10.00	3062	56.29%
25	35	5600	11.60	10.40	3068	54.79%
26	36	5760	10.80	10.00	2962	51.42%
27	37	5920	10.80	10.00	3024	51.08%
28	36	5760	11.60	10.00	3032	52.64%
29	33	5280	11.60	10.00	3085	58.43%
30	31	4960	10.80	10.00	3052	61.53%
31	36	5760	11.60	11.20	2846	49.41%
32	35	5600	11.60	10.80	3004	53.64%
33	38	6080	10.80	10.00	3022	49.70%
34	36	5760	11.60	10.40	2814	48.85%
35	36	5760	12.40	12.00	3166	54.97%
36	40	6400	12.80	10.40	3004	46.94%
37	39	6240	10.80	10.00	2961	47.45%
38	32	5120	12.40	10.40	3137	61.27%
39	37	5920	11.60	10.40	2900	48.99%
40	30	4800	11.60	10.40	2864	59.67%

Porcentaje de mutación: 4%

	Tam Población	Max Mutación	Fitness Grasp	Fitness Genetico	Num Mutación	Mutaciones exitosas
1	33	6600	11.60	10.40	3037	46.02%
2	35	7000	11.20	10.80	2852	40.74%
3	31	6200	11.60	10.00	3088	49.81%
4	36	7200	11.60	10.40	3011	41.82%
5	37	7400	12.80	10.40	3032	40.97%
6	33	6600	10.80	10.40	3079	46.65%
7	32	6400	11.60	10.00	2889	45.14%
8	33	6600	12.00	10.80	3070	46.52%
9	39	7800	11.60	10.40	3054	39.15%
10	34	6800	10.40	10.00	3055	44.93%
11	34	6800	11.20	10.40	2995	44.04%
12	36	7200	10.80	10.40	2883	40.04%
13	34	6800	12.00	10.40	2991	43.99%
14	35	7000	11.60	10.00	2955	42.21%
15	36	7200	10.80	10.00	2851	39.60%
16	36	7200	12.00	10.40	2962	41.14%
17	36	7200	12.00	10.00	3049	42.35%
18	39	7800	12.00	10.00	2981	38.22%
19	34	6800	11.60	10.40	3009	44.25%
20	31	6200	11.60	10.00	3056	49.29%
21	34	6800	11.60	10.00	3084	45.35%
22	37	7400	10.80	10.40	3137	42.39%
23	34	6800	11.20	10.00	2958	43.50%
24	36	7200	10.40	10.40	2847	39.54%
25	38	7600	12.80	10.40	2952	38.84%
26	38	7600	11.60	10.00	3006	39.55%
27	34	6800	10.40	10.00	2861	42.07%
28	32	6400	11.20	10.00	3074	48.03%
29	33	6600	10.40	10.00	3059	46.35%
30	33	6600	10.80	10.40	3113	47.17%
31	32	6400	10.80	10.00	3065	47.89%
32	41	8200	11.60	10.00	6092	74.29%
33	34	6800	10.40	10.00	2892	42.53%
34	33	6600	10.80	10.00	3030	45.91%
35	31	6200	10.80	10.40	3077	49.63%
36	36	7200	11.60	10.40	3047	42.32%
37	34	6800	11.60	10.00	2941	43.25%
38	31	6200	12.00	10.40	3049	49.18%
39	37	7400	11.60	10.40	2920	39.46%
40	34	6800	10.40	10.00	3155	46.40%

Porcentaje de mutación: 5%

	Tam Población	Max Mutación	Fitness Grasp	Fitness Genetico	Num Mutación	Mutaciones exitosas
1	32	7680	11.20	10.80	3063	39.88%
2	33	7920	11.20	10.00	3037	38.35%
3	36	8640	12.80	10.00	5808	67.22%
4	34	8160	11.20	10.40	6086	74.58%
5	35	8400	11.60	10.40	5723	68.13%
6	37	8880	11.20	10.40	5703	64.22%
7	34	8160	11.60	10.40	6040	74.02%
8	31	7440	12.40	10.00	3023	40.63%
9	40	9600	10.80	10.40	6193	64.51%
10	33	7920	11.60	10.00	3052	38.54%
11	33	7920	11.20	10.40	2862	36.14%
12	35	8400	12.00	10.00	6108	72.71%
13	34	8160	12.00	10.40	6043	74.06%
14	38	9120	11.60	10.00	5788	63.46%
15	37	8880	10.00	10.00	6116	68.87%
16	37	8880	12.80	10.40	6065	68.30%
17	34	8160	11.60	10.40	5725	70.16%
18	38	9120	11.60	10.40	5784	63.42%
19	35	8400	10.80	10.00	6040	71.90%
20	36	8640	11.60	10.00	6097	70.57%
21	33	7920	12.00	10.40	3059	38.62%
22	35	8400	11.60	10.00	5987	71.27%
23	38	9120	11.60	10.00	6128	67.19%
24	32	7680	11.60	10.00	3049	39.70%
25	35	8400	11.20	10.40	5680	67.62%
26	35	8400	12.40	10.40	6128	72.95%
27	32	7680	12.40	10.40	3090	40.23%
28	31	7440	11.60	10.80	3066	41.21%
29	38	9120	12.00	10.40	6177	67.73%
30	35	8400	12.40	10.40	6142	73.12%
31	32	7680	10.80	10.40	3095	40.30%
32	34	8160	10.80	10.40	5818	71.30%
33	34	8160	11.60	10.00	6038	74.00%
34	41	9840	10.80	10.00	6095	61.94%
35	37	8880	11.20	10.40	5842	65.79%
36	37	8880	11.60	10.00	6068	68.33%
37	31	7440	10.40	10.00	3004	40.38%
38	35	8400	12.40	11.20	5704	67.90%
39	33	7920	10.80	10.00	3135	39.58%
40	38	9120	12.00	10.40	5826	63.88%

Porcentaje de mutación: 6%

	Tam Población	Max Mutación	Fitness Grasp	Fitness Genetico	Num Mutación	Mutaciones exitosas
1	34	9520	11.60	10.80	5700	59.87%
2	35	9800	10.40	10.00	5710	58.27%
3	35	9800	13.60	10.00	6267	63.95%
4	35	9800	11.60	10.80	5697	58.13%
5	33	9240	12.00	10.00	6271	67.87%
6	35	9800	11.60	10.80	5751	58.68%
7	34	9520	10.40	10.00	5962	62.63%
8	32	8960	12.00	10.80	6070	67.75%
9	38	10640	10.40	10.00	5834	54.83%
10	33	9240	11.20	10.40	5651	61.16%
11	35	9800	10.80	10.80	6141	62.66%
12	35	9800	11.20	10.40	5960	60.82%
13	32	8960	12.00	10.00	5786	64.58%
14	36	10080	10.00	10.00	6152	61.03%
15	36	10080	11.60	11.20	5987	59.39%
16	37	10360	11.60	10.00	5742	55.42%
17	32	8960	10.80	10.00	5690	63.50%
18	35	9800	11.60	10.40	6048	61.71%
19	38	10640	12.00	10.00	6008	56.47%
20	34	9520	11.20	10.00	5765	60.56%
21	35	9800	11.60	10.40	6039	61.62%
22	34	9520	11.60	10.00	6071	63.77%
23	32	8960	11.60	10.80	5739	64.05%
24	35	9800	11.60	10.40	5933	60.54%
25	34	9520	12.80	10.80	6151	64.61%
26	37	10360	12.00	11.20	5948	57.41%
27	35	9800	10.80	10.00	6222	63.49%
28	32	8960	12.00	10.40	6049	67.51%
29	38	10640	11.60	10.40	5892	55.38%
30	36	10080	10.40	10.00	6151	61.02%
31	38	10640	11.60	10.40	6013	56.51%
32	36	10080	11.60	10.00	6095	60.47%
33	33	9240	12.00	10.40	6052	65.50%
34	35	9800	12.40	10.40	6133	62.58%
35	34	9520	11.60	10.40	5702	59.89%
36	37	10360	11.60	10.00	5739	55.40%
37	31	8680	10.40	10.00	6264	72.17%
38	36	10080	12.40	10.00	5947	59.00%
39	34	9520	10.00	10.00	6103	64.11%
40	35	9800	10.80	10.80	5676	57.92%

Porcentaje de mutación: 7%

	Tam Población	Max Mutación	Fitness Grasp	Fitness Genético	Num Mutación	Mutaciones exitosas
1	32	10240	10.80	10.00	6165	60.21%
2	31	9920	11.60	10.40	5743	57.89%
3	35	11200	11.20	10.00	6167	55.06%
4	34	10880	11.60	10.40	5935	54.55%
5	37	11840	12.80	10.40	6405	54.10%
6	35	11200	11.20	10.40	5712	51.00%
7	35	11200	11.60	10.00	5700	50.89%
8	34	10880	11.60	10.00	6100	56.07%
9	33	10560	11.20	10.00	6106	57.82%
10	33	10560	10.80	10.40	5728	54.24%
11	33	10560	12.40	11.20	5690	53.88%
12	37	11840	11.20	10.40	6167	52.09%
13	39	12480	10.80	10.40	9395	75.28%
14	33	10560	12.40	10.80	5960	56.44%
15	31	9920	11.20	10.40	6070	61.19%
16	38	12160	11.20	10.00	9244	76.02%
17	41	13120	11.60	10.00	9058	69.04%
18	34	10880	10.80	10.40	6080	55.88%
19	36	11520	10.80	10.00	6067	52.66%
20	34	10880	10.80	10.00	6057	55.67%
21	34	10880	11.60	10.40	5742	52.78%
22	35	11200	12.00	10.00	5663	50.56%
23	34	10880	10.40	10.00	5961	54.79%
24	36	11520	11.20	10.00	6070	52.69%
25	36	11520	10.40	10.40	5741	49.84%
26	37	11840	11.60	10.40	6056	51.15%
27	33	10560	10.80	10.00	6059	57.38%
28	38	12160	10.40	10.00	9163	75.35%
29	31	9920	11.60	10.80	5735	57.81%
30	39	12480	11.60	10.80	8813	70.62%
31	37	11840	11.60	10.40	6191	52.29%
32	34	10880	12.00	11.20	5728	52.65%
33	32	10240	11.20	10.40	6106	59.63%
34	35	11200	11.60	10.80	5812	51.89%
35	34	10880	10.40	10.00	6169	56.70%
36	30	9600	11.20	10.00	6156	64.13%
37	35	11200	12.00	10.40	6219	55.53%
38	36	11520	11.60	10.40	5880	51.04%
39	31	9920	11.60	10.80	5683	57.29%
40	38	12160	11.20	10.40	9211	75.75%

Porcentaje de mutación: 8%

	Tam Población	Max Mutación	Fitness Grasp	Fitness Genetico	Num Mutación	Mutaciones exitosas
1	35	12600	11.60	10.00	8589	68.17%
2	31	11160	11.20	10.00	6011	53.86%
3	34	12240	10.80	10.80	8663	70.78%
4	33	11880	10.40	10.00	5661	47.65%
5	33	11880	10.80	10.00	6136	51.65%
6	35	12600	12.40	10.80	9167	72.75%
7	30	10800	11.20	10.00	5696	52.74%
8	39	14040	11.20	10.40	9020	64.25%
9	34	12240	12.40	10.00	9115	74.47%
10	33	11880	10.80	10.80	5806	48.87%
11	38	13680	11.60	10.00	8882	64.93%
12	36	12960	11.60	10.00	8959	69.13%
13	34	12240	11.20	10.00	9137	74.65%
14	39	14040	12.00	10.00	9135	65.06%
15	37	13320	11.20	10.40	9346	70.17%
16	37	13320	12.00	10.40	9106	68.36%
17	34	12240	12.00	10.80	9012	73.63%
18	38	13680	11.20	10.00	8819	64.47%
19	37	13320	11.60	10.00	9145	68.66%
20	35	12600	12.00	10.40	9088	72.13%
21	34	12240	11.20	10.40	9218	75.31%
22	33	11880	11.20	10.40	5810	48.91%
23	32	11520	11.20	10.40	6134	53.25%
24	32	11520	11.20	10.00	5729	49.73%
25	36	12960	11.60	10.40	9093	70.16%
26	37	13320	10.80	10.40	8502	63.83%
27	35	12600	11.60	10.00	9015	71.55%
28	36	12960	11.20	10.00	9091	70.15%
29	33	11880	11.20	10.00	6016	50.64%
30	36	12960	11.20	10.00	9220	71.14%
31	35	12600	10.80	10.40	9329	74.04%
32	35	12600	11.20	10.40	9154	72.65%
33	35	12600	12.80	10.40	9249	73.40%
34	35	12600	11.60	10.40	9167	72.75%
35	36	12960	11.60	10.80	9167	70.73%
36	36	12960	11.60	10.00	8534	65.85%
37	35	12600	12.00	10.40	8637	68.55%
38	36	12960	12.00	10.40	9094	70.17%
39	36	12960	12.00	10.40	9047	69.81%
40	34	12240	12.00	10.40	9346	76.36%

Porcentaje de mutación: 9%

	Tam Población	Max Mutación	Fitness Grasp	Fitness Genetico	Num Mutación	Mutaciones exitosas
1	36	14400	12.80	10.00	9088	63.11%
2	33	13200	11.60	10.00	8619	65.30%
3	38	15200	12.00	10.40	9142	60.14%
4	34	13600	12.00	10.00	9005	66.21%
5	36	14400	10.80	10.00	9215	63.99%
6	42	16800	12.40	10.80	11972	71.26%
7	33	13200	12.40	10.80	8568	64.91%
8	30	12000	11.20	10.80	8591	71.59%
9	35	14000	11.60	10.00	9159	65.42%
10	36	14400	12.80	11.20	8889	61.73%
11	37	14800	10.80	10.80	8969	60.60%
12	34	13600	11.20	10.40	9017	66.30%
13	35	14000	10.40	10.40	9264	66.17%
14	32	12800	12.00	11.20	8598	67.17%
15	36	14400	11.60	10.00	9191	63.83%
16	35	14000	11.60	10.00	8669	61.92%
17	37	14800	10.40	10.40	9197	62.14%
18	30	12000	10.80	10.40	8852	73.77%
19	33	13200	11.60	10.40	8845	67.01%
20	35	14000	10.40	10.00	9065	64.75%
21	34	13600	11.20	10.40	9029	66.39%
22	33	13200	12.80	10.40	8487	64.30%
23	34	13600	12.00	10.00	9221	67.80%
24	40	16000	12.00	10.80	12493	78.08%
25	39	15600	10.00	10.00	8871	56.87%
26	34	13600	10.80	10.00	9061	66.63%
27	37	14800	11.60	10.40	9053	61.17%
28	32	12800	10.80	10.00	9086	70.98%
29	33	13200	11.60	10.80	9324	70.64%
30	35	14000	12.40	10.80	9125	65.18%
31	37	14800	11.20	10.00	8645	58.41%
32	33	13200	11.20	10.00	8945	67.77%
33	36	14400	10.80	10.00	9393	65.23%
34	36	14400	11.60	11.60	8546	59.35%
35	31	12400	11.20	11.20	8547	68.93%
36	31	12400	12.00	10.80	8631	69.60%
37	35	14000	12.80	10.80	8460	60.43%
38	35	14000	11.20	10.40	9063	64.74%
39	37	14800	12.00	10.40	9284	62.73%
40	33	13200	11.60	10.40	8921	67.58%

Porcentaje de mutación: 10%

	Tam Población	Max Mutación	Fitness Grasp	Fitness Genetico	Num Mutación	Mutaciones exitosas
1	32	14080	11.60	10.00	9111	64.71%
2	34	14960	11.60	10.40	9160	61.23%
3	37	16280	10.80	10.40	12292	75.50%
4	34	14960	12.00	10.00	9074	60.66%
5	40	17600	12.00	10.00	12081	68.64%
6	34	14960	11.60	10.00	8784	58.72%
7	35	15400	11.60	11.20	8753	56.84%
8	35	15400	11.60	10.40	8766	56.92%
9	36	15840	11.60	10.80	8741	55.18%
10	35	15400	10.80	10.40	9450	61.36%
11	32	14080	11.60	10.40	8929	63.42%
12	32	14080	11.60	10.00	9083	64.51%
13	34	14960	11.20	10.40	8958	59.88%
14	30	13200	11.60	10.80	8578	64.98%
15	35	15400	10.80	10.00	9110	59.16%
16	36	15840	10.80	10.40	9117	57.56%
17	35	15400	12.80	10.40	8975	58.28%
18	34	14960	10.80	10.40	9235	61.73%
19	38	16720	12.00	10.00	11494	68.74%
20	35	15400	12.40	11.60	9294	60.35%
21	34	14960	12.00	10.40	9335	62.40%
22	38	16720	11.60	10.40	12123	72.51%
23	38	16720	10.40	10.00	12186	72.88%
24	34	14960	11.20	10.40	9326	62.34%
25	34	14960	12.00	10.40	9113	60.92%
26	36	15840	12.00	10.40	9155	57.80%
27	37	16280	11.20	10.00	11259	69.16%
28	36	15840	11.20	10.00	8849	55.86%
29	38	16720	12.40	11.20	11361	67.95%
30	32	14080	11.20	10.00	8719	61.92%
31	33	14520	11.20	10.00	9060	62.40%
32	34	14960	11.60	10.00	8768	58.61%
33	34	14960	11.20	10.40	9099	60.82%
34	36	15840	12.00	10.40	9255	58.43%
35	33	14520	11.60	10.40	8729	60.12%
36	35	15400	11.60	11.60	8503	55.21%
37	32	14080	11.60	10.00	9185	65.23%
38	32	14080	12.00	10.40	8817	62.62%
39	34	14960	10.80	10.00	9081	60.70%
40	34	14960	11.20	10.00	9151	61.17%

Porcentaje de mutación: 11%

	Tam Población	Max Mutación	Fitness Grasp	Fitness Genetico	Num Mutación	Mutaciones exitosas
1	36	17280	12.40	10.40	12017	69.54%
2	36	17280	10.80	10.40	12209	70.65%
3	36	17280	11.20	10.00	12108	70.07%
4	34	16320	11.20	10.40	11458	70.21%
5	38	18240	10.40	10.00	12214	66.96%
6	37	17760	10.80	10.40	12193	68.65%
7	36	17280	11.20	10.00	11989	69.38%
8	34	16320	12.40	10.40	11446	70.13%
9	32	15360	11.20	10.40	9083	59.13%
10	39	18720	10.80	10.00	12106	64.67%
11	33	15840	11.60	10.40	8669	54.73%
12	35	16800	11.20	10.00	11969	71.24%
13	32	15360	10.80	10.40	9328	60.73%
14	38	18240	11.60	10.40	12158	66.66%
15	35	16800	12.00	10.00	12533	74.60%
16	37	17760	10.00	10.00	12125	68.27%
17	32	15360	11.60	10.40	9126	59.41%
18	39	18720	11.60	10.00	11546	61.68%
19	35	16800	11.60	10.80	11477	68.32%
20	37	17760	10.80	10.80	12152	68.42%
21	35	16800	11.20	10.00	12197	72.60%
22	38	18240	10.80	10.40	12096	66.32%
23	37	17760	11.60	10.40	12126	68.28%
24	37	17760	12.00	10.00	12481	70.28%
25	32	15360	10.80	10.00	9091	59.19%
26	37	17760	10.80	10.00	12207	68.73%
27	38	18240	12.40	10.00	11935	65.43%
28	39	18720	10.80	10.80	11382	60.80%
29	35	16800	10.80	10.00	11967	71.23%
30	37	17760	10.80	10.00	12196	68.67%
31	36	17280	11.60	10.00	11853	68.59%
32	35	16800	10.40	10.00	12196	72.60%
33	37	17760	10.80	10.40	11552	65.05%
34	35	16800	12.00	11.60	11988	71.36%
35	37	17760	11.20	10.00	11952	67.30%
36	34	16320	10.40	10.40	12211	74.82%
37	35	16800	11.60	10.40	12466	74.20%
38	39	18720	12.00	10.40	12216	65.26%
39	36	17280	11.20	10.40	12099	70.02%
40	34	16320	11.20	10.40	12123	74.28%

Porcentaje de mutación: 12%

	Tam Población	Max Mutación	Fitness Grasp	Fitness Genetico	Num Mutación	Mutaciones exitosas
1	33	17160	12.00	10.00	12062	70.29%
2	38	19760	12.00	10.40	11625	58.83%
3	36	18720	11.60	10.00	11830	63.19%
4	34	17680	11.20	10.40	12180	68.89%
5	33	17160	12.40	10.40	11516	67.11%
6	37	19240	11.20	10.00	12197	63.39%
7	32	16640	12.80	10.80	11390	68.45%
8	38	19760	11.60	10.00	11569	58.55%
9	33	17160	11.20	10.00	12142	70.76%
10	33	17160	10.00	10.00	11539	67.24%
11	32	16640	10.40	10.00	12334	74.12%
12	34	17680	12.00	10.40	11622	65.74%
13	33	17160	11.60	10.40	11718	68.29%
14	36	18720	12.40	10.40	11323	60.49%
15	32	16640	10.80	10.00	12133	72.91%
16	34	17680	13.20	10.40	12192	68.96%
17	37	19240	12.00	10.80	12344	64.16%
18	34	17680	10.40	10.00	12292	69.52%
19	31	16120	11.60	10.40	11813	73.28%
20	35	18200	11.60	10.00	12203	67.05%
21	39	20280	11.20	10.00	14955	73.74%
22	32	16640	10.40	10.40	12089	72.65%
23	33	17160	10.80	10.40	11936	69.56%
24	35	18200	10.40	10.00	11816	64.92%
25	33	17160	13.20	11.20	11400	66.43%
26	39	20280	10.80	10.00	14500	71.50%
27	38	19760	11.60	10.40	11321	57.29%
28	33	17160	11.20	10.40	11313	65.93%
29	35	18200	11.60	10.00	11917	65.48%
30	33	17160	11.20	10.00	11997	69.91%
31	37	19240	10.40	10.00	12250	63.67%
32	37	19240	11.60	10.40	12271	63.78%
33	36	18720	10.80	10.00	11508	61.47%
34	32	16640	10.80	10.40	11855	71.24%
35	32	16640	10.80	10.40	11484	69.01%
36	35	18200	10.40	10.00	12230	67.20%
37	34	17680	10.40	10.40	12153	68.74%
38	35	18200	11.60	10.40	12189	66.97%
39	31	16120	12.00	11.20	12312	76.38%
40	33	17160	11.20	10.40	12216	71.19%

Porcentaje de mutación: 13%

5 Experimentación Numérica

Anexo 8

Juego de Datos	Fitness Promedio Grasp	Fitness Promedio Genético
1	10.92	9.20
2	7.96	7.20
3	6.80	6.52
4	10.60	9.52
5	7.16	6.80
6	10.52	9.44
7	8.44	7.36
8	11.36	10.44
9	6.68	6.08
10	7.84	7.20
11	5.60	4.72
12	6.92	6.56
13	9.00	8.84
14	8.04	6.80
15	9.44	8.56
16	5.60	5.04
17	7.00	5.76
18	9.12	8.16
19	7.24	6.84
20	6.40	5.80
21	11.04	10.12
22	9.24	8.44
23	8.28	7.32
24	5.80	5.00
25	10.00	9.24
26	6.16	5.36
27	6.00	5.64
28	12.80	11.00
29	7.76	6.76
30	12.24	10.80
31	9.08	7.28
32	5.48	4.88
33	13.00	11.88
34	10.48	9.16
35	10.20	8.88
36	12.48	10.44
37	7.08	6.16
38	7.24	6.60
39	8.52	8.00
40	7.84	7.24

Anexo 9

Datos Ordenados X_i	Valores Estandarizados Z_i	Probabilidad Acumulada $S_n(x_i)$	Probabilidad Acumulada Esperada F_i	Diferencias $ S_n(x_i) - F_i $
5.48	-1.45	0.025	0.073	0.048
5.60	-1.40	0.05	0.081	0.031
5.60	-1.40	0.075	0.081	0.006
5.80	-1.30	0.1	0.096	0.004
6.00	-1.21	0.125	0.113	0.012
6.16	-1.13	0.15	0.128	0.022
6.40	-1.02	0.175	0.153	0.022
6.68	-0.89	0.2	0.186	0.014
6.80	-0.84	0.225	0.202	0.023
6.92	-0.78	0.25	0.218	0.032
7.00	-0.74	0.275	0.229	0.046
7.08	-0.70	0.3	0.241	0.059
7.16	-0.67	0.325	0.253	0.072
7.24	-0.63	0.35	0.265	0.085
7.24	-0.63	0.375	0.265	0.110
7.76	-0.39	0.4	0.350	0.050
7.84	-0.35	0.425	0.364	0.061
7.84	-0.35	0.45	0.364	0.086
7.96	-0.29	0.475	0.385	0.090
8.04	-0.25	0.5	0.400	0.100
8.28	-0.14	0.525	0.443	0.082
8.44	-0.07	0.55	0.473	0.077
8.52	-0.03	0.575	0.488	0.087
9.00	0.19	0.6	0.577	0.023
9.08	0.23	0.625	0.592	0.033
9.12	0.25	0.65	0.599	0.051
9.24	0.31	0.675	0.621	0.054
9.44	0.40	0.7	0.656	0.044
10.00	0.66	0.725	0.746	0.021
10.20	0.76	0.75	0.775	0.025
10.48	0.89	0.775	0.813	0.038
10.52	0.91	0.8	0.818	0.018
10.60	0.94	0.825	0.827	0.002
10.92	1.09	0.85	0.863	0.013
11.04	1.15	0.875	0.875	0.000
11.36	1.30	0.9	0.903	0.003
12.24	1.71	0.925	0.956	0.031
12.48	1.82	0.95	0.966	0.016
12.80	1.97	0.975	0.976	0.001
13.00	2.07	1	0.981	0.019

Anexo 10

Datos Ordenados X_i	Valores Estandarizados Z_i	Probabilidad Acumulada $S_n(x_i)$	Probabilidad Acumulada Esperada F_i	Diferencias $ S_n(x_i) - F_i $
4.72	-1.57	0.025	0.058	0.033
4.88	-1.49	0.05	0.068	0.018
5.00	-1.42	0.075	0.077	0.002
5.04	-1.40	0.1	0.080	0.020
5.36	-1.23	0.125	0.109	0.016
5.64	-1.08	0.15	0.139	0.011
5.76	-1.02	0.175	0.154	0.021
5.80	-1.00	0.2	0.159	0.041
6.08	-0.85	0.225	0.198	0.027
6.16	-0.81	0.25	0.210	0.040
6.52	-0.62	0.275	0.269	0.006
6.56	-0.59	0.3	0.276	0.024
6.60	-0.57	0.325	0.283	0.042
6.76	-0.49	0.35	0.313	0.037
6.80	-0.47	0.375	0.321	0.054
6.80	-0.47	0.4	0.321	0.079
6.84	-0.44	0.425	0.328	0.097
7.20	-0.25	0.45	0.400	0.050
7.20	-0.25	0.475	0.400	0.075
7.24	-0.23	0.5	0.408	0.092
7.28	-0.21	0.525	0.417	0.108
7.32	-0.19	0.55	0.425	0.125
7.36	-0.17	0.575	0.433	0.142
8.00	0.17	0.6	0.568	0.032
8.16	0.26	0.625	0.602	0.023
8.44	0.41	0.65	0.658	0.008
8.56	0.47	0.675	0.681	0.006
8.84	0.62	0.7	0.732	0.032
8.88	0.64	0.725	0.739	0.014
9.16	0.79	0.75	0.785	0.035
9.20	0.81	0.775	0.791	0.016
9.24	0.83	0.8	0.797	0.003
9.44	0.94	0.825	0.826	0.001
9.52	0.98	0.85	0.837	0.013
10.12	1.30	0.875	0.903	0.028
10.44	1.47	0.9	0.929	0.029
10.44	1.47	0.925	0.929	0.004
10.80	1.66	0.95	0.952	0.002
11.00	1.77	0.975	0.962	0.013
11.88	2.24	1	0.987	0.013