

**ANEXOS: META HEURÍSTICA DE OPTIMIZACIÓN MONO-OBJETIVO  
CONTINUA DE ALTA DIMENSIONALIDAD PARA EL ENTRENAMIENTO  
DE UNA MÁQUINA DE APRENDIZAJE EXTREMO**



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## ANEXOS

### ANEXO I. RESULTADOS AFINAMIENTO DE PARÁMETROS

Los resultados que se presentan aquí se encuentran aproximados todos a 4 dígitos y corresponden al resultado obtenido de cada configuración que se probó en cada una de las meta-heurística. Los resultados se encuentran separados en subconjuntos del conjunto de datos utilizados para el afinamiento, esto por cuestiones de espacio. Los resultados obtenidos son el promedio de 30 ejecuciones por cada conjunto de datos y configuración en el algoritmo.

#### 1.1 RESULTADOS DEL AFINAMIENTO DE PARÁMETROS PARA DECC-G

##### 1.1.1 Problemas de clasificación con TT

*Tabla 1 Resultados afinamiento parámetros - DECC-G en problemas de clasificación con TT. Conjunto de datos I.*

#	Conjunto de datos I de clasificación				
	Banknote	Blood	Car	Cardiotocography	Chart
1	0.99963	0.75013	0.83079	0.764	0.9115
2	0.99993	0.75013	0.83177	0.76529	0.90333
3	0.99978	0.74906	0.83461	0.76495	0.9085
4	0.99978	0.7504	0.83229	0.76643	0.91433
5	0.99985	0.74973	0.83472	0.76414	0.91583
6	0.99993	0.74933	0.83356	0.76271	0.91467
7	0.9997	0.74825	0.83576	0.76581	0.9105
8	0.99993	0.75	0.83131	0.76562	0.909
9	0.99985	0.74906	0.83571	0.765	0.911
10	0.99993	0.7504	0.836	0.76505	0.91167
11	0.9997	0.74933	0.82963	0.76595	0.912
12	0.99963	0.74987	0.83304	0.76648	0.912
13	0.99985	0.74892	0.82998	0.76519	0.91117
14	0.99956	0.74973	0.83235	0.76576	0.9035
15	0.99978	0.74892	0.83576	0.76429	0.91217
16	0.99978	0.75	0.83565	0.76476	0.90933
17	0.99978	0.74852	0.83194	0.76238	0.90917
18	0.99993	0.74772	0.83073	0.76633	0.911
19	0.99985	0.74852	0.83258	0.76367	0.90583
20	0.99993	0.74987	0.83513	0.7649	0.9095
21	0.99993	0.74906	0.83391	0.7641	0.91367
22	1	0.74906	0.82934	0.76557	0.9025
23	0.99993	0.74812	0.83466	0.76557	0.90817
24	0.99993	0.74812	0.82865	0.7671	0.90683
25	0.9997	0.74772	0.83119	0.768	0.91067

26	0.99963	0.74852	0.83287	0.766	0.90617
27	0.99993	0.74825	0.8283	0.76376	0.90417
28	0.99993	0.74973	0.83142	0.76386	0.90783
29	0.99978	0.7496	0.83374	0.76205	0.91283
30	0.99993	0.74812	0.83137	0.76514	0.911
31	0.9997	0.74866	0.83507	0.768	0.9115
32	0.99993	0.74906	0.83819	0.76329	0.9075
33	0.99978	0.74758	0.83524	0.76429	0.90567
34	0.99985	0.74973	0.83189	0.76667	0.9105
35	0.99985	0.74772	0.82975	0.76495	0.90767
36	0.9997	0.75013	0.83594	0.76548	0.90833
37	0.99985	0.74798	0.83252	0.76543	0.91467
38	0.9997	0.74825	0.83275	0.76343	0.91267

**Tabla 2** Resultados afinamiento parámetros - DECC-G en problemas de clasificación con TT. Conjunto de datos II.

#	Conjunto de datos II de clasificación				
	Dermatology	Fertility	Haberman	Hayes	Hill
1	0.96066	0.67667	0.73072	0.67348	0.63795
2	0.95874	0.64667	0.72549	0.67197	0.64422
3	0.96202	0.66333	0.73366	0.66667	0.63779
4	0.96148	0.64889	0.72843	0.675	0.63416
5	0.96311	0.65778	0.72876	0.6697	0.63498
6	0.95929	0.66444	0.73072	0.68485	0.64109
7	0.95902	0.67222	0.72582	0.66894	0.64142
8	0.96066	0.66667	0.72255	0.67424	0.63812
9	0.96175	0.66	0.72876	0.66061	0.63977
10	0.96148	0.65667	0.72647	0.67803	0.63845
11	0.96011	0.66	0.73497	0.675	0.64191
12	0.95902	0.67444	0.7219	0.67652	0.64059
13	0.96066	0.65333	0.72778	0.67879	0.6429
14	0.96011	0.66444	0.72941	0.67424	0.6429
15	0.96066	0.66333	0.72843	0.67121	0.64455
16	0.9612	0.66111	0.73007	0.66894	0.64307
17	0.96366	0.65222	0.73007	0.67197	0.64505
18	0.95956	0.64889	0.73137	0.67121	0.63878
19	0.96038	0.66889	0.73203	0.6697	0.63795
20	0.95984	0.66222	0.73007	0.67576	0.63911
21	0.96038	0.66778	0.73007	0.66894	0.64158
22	0.96148	0.65667	0.73007	0.68788	0.64323
23	0.96339	0.64778	0.7232	0.67879	0.63729
24	0.95984	0.64889	0.72941	0.67803	0.64356
25	0.96448	0.65333	0.73072	0.67879	0.63828
26	0.95929	0.66556	0.72745	0.67273	0.6335

27	0.9623	0.64667	0.73039	0.67727	0.6396
28	0.96066	0.66778	0.72614	0.67273	0.6368
29	0.96202	0.66778	0.73007	0.67803	0.64521
30	0.96011	0.65444	0.72647	0.67576	0.6396
31	0.9612	0.66556	0.72712	0.67727	0.64472
32	0.96339	0.66667	0.73007	0.6697	0.63449
33	0.96284	0.66556	0.72778	0.66818	0.63828
34	0.96257	0.68111	0.73137	0.66061	0.63812
35	0.96093	0.66333	0.72451	0.67197	0.63597
36	0.96284	0.67778	0.72614	0.66894	0.63993
37	0.96503	0.66	0.73072	0.65909	0.63779
38	0.96038	0.65778	0.72712	0.68939	0.63828

**Tabla 3** Resultados afinamiento parámetros - DECC-G en problemas de clasificación con TT. Conjunto de datos III.

#	Conjunto de datos III de clasificación				
	Ionosphere	Letter	Libras	Optdigits	Pen
1	0.84815	0.68784	0.776	0.8837	0.91276
2	0.84302	0.68807	0.775	0.88329	0.912
3	0.84729	0.68849	0.76867	0.88395	0.91331
4	0.84615	0.68913	0.78033	0.88067	0.91263
5	0.85014	0.68837	0.78133	0.88036	0.91283
6	0.84587	0.6885	0.768	0.88507	0.91331
7	0.84957	0.68884	0.77067	0.8798	0.91293
8	0.84274	0.68873	0.773	0.88193	0.91377
9	0.84245	0.68835	0.77067	0.88091	0.91184
10	0.84929	0.68869	0.77833	0.88353	0.91391
11	0.849	0.68904	0.771	0.88355	0.91316
12	0.8453	0.68917	0.77767	0.88494	0.91147
13	0.84815	0.68865	0.77533	0.88173	0.91351
14	0.84587	0.68825	0.778	0.88355	0.9122
15	0.851	0.68717	0.76733	0.88655	0.91452
16	0.84359	0.68813	0.771	0.8813	0.91363
17	0.85299	0.68746	0.77967	0.88065	0.91243
18	0.84644	0.68849	0.77233	0.88206	0.91259
19	0.851	0.68861	0.773	0.88117	0.91185
20	0.84957	0.68831	0.77733	0.88204	0.91306
21	0.849	0.68922	0.768	0.88065	0.91387
22	0.84872	0.6873	0.774	0.88355	0.9125
23	0.84843	0.68837	0.77367	0.8819	0.91186
24	0.84729	0.68851	0.77733	0.88216	0.91305
25	0.849	0.68939	0.76933	0.8824	0.91449
26	0.84188	0.68867	0.77333	0.88106	0.91363
27	0.84729	0.68861	0.774	0.88279	0.91197

28	0.84587	0.68774	0.76633	0.88102	0.914
29	0.85043	0.68857	0.77533	0.88368	0.91247
30	0.84929	0.68905	0.77233	0.88377	0.91387
31	0.84815	0.68871	0.77467	0.88251	0.91273
32	0.851	0.6885	0.76933	0.88395	0.91291
33	0.84758	0.68849	0.77967	0.8841	0.91333
34	0.84815	0.68827	0.76567	0.87997	0.91186
35	0.84758	0.68887	0.76733	0.8837	0.91203
36	0.8453	0.68865	0.77533	0.88382	0.91305
37	0.84758	0.68869	0.77433	0.87832	0.91276
38	0.84587	0.68897	0.781	0.88114	0.91304

**Tabla 4** Resultados afinamiento parámetros - DECC-G en problemas de clasificación con TT. Conjunto de datos IV.

#	Conjunto de datos IV de clasificación				
	QSARBiodegradation	Shuttle	SPECTF	Wilt	Zoo
1	0.85895	0.41817	0.38792	0.96855	0.72151
2	0.86	0.40827	0.39	0.96846	0.69355
3	0.85924	0.38374	0.36083	0.96846	0.72043
4	0.85667	0.42229	0.35417	0.96877	0.72258
5	0.85933	0.41651	0.37292	0.96886	0.67742
6	0.85829	0.41367	0.36917	0.96888	0.74839
7	0.86162	0.40894	0.39708	0.96877	0.70215
8	0.85733	0.39821	0.34667	0.96915	0.7
9	0.8581	0.37088	0.39167	0.96877	0.63333
10	0.86133	0.41234	0.35167	0.96869	0.74624
11	0.85971	0.36591	0.39625	0.96871	0.68387
12	0.86086	0.41683	0.35042	0.96902	0.66559
13	0.86029	0.41624	0.39042	0.96913	0.6914
14	0.86105	0.47429	0.345	0.96849	0.67312
15	0.85933	0.4104	0.36792	0.96892	0.66344
16	0.85724	0.39254	0.37375	0.96869	0.64086
17	0.85686	0.47301	0.36542	0.96857	0.70645
18	0.85895	0.41009	0.4	0.96867	0.67419
19	0.8599	0.39743	0.38208	0.96898	0.67634
20	0.85876	0.39342	0.35292	0.96921	0.69677
21	0.8561	0.44626	0.39083	0.9688	0.73333
22	0.85924	0.43351	0.38042	0.96877	0.7
23	0.85981	0.47303	0.38042	0.96906	0.6871
24	0.85867	0.496	0.40375	0.96877	0.66882
25	0.86257	0.40495	0.375	0.9688	0.66667
26	0.85933	0.42534	0.35917	0.9688	0.72043
27	0.86114	0.36051	0.35667	0.96855	0.72043

28	0.86076	0.384	0.39083	0.96894	0.64946
29	0.86029	0.43374	0.36667	0.96908	0.66237
30	0.8581	0.43995	0.3375	0.96904	0.68065
31	0.85781	0.44821	0.3725	0.96888	0.74086
32	0.85714	0.48616	0.35458	0.96911	0.67097
33	0.85952	0.433	0.38708	0.96908	0.71398
34	0.85924	0.42529	0.39708	0.96855	0.6914
35	0.86105	0.38067	0.4125	0.96906	0.72903
36	0.85743	0.43059	0.38708	0.96911	0.74086
37	0.85981	0.41155	0.40792	0.96867	0.63763
38	0.85981	0.44603	0.3675	0.9683	0.67204

### 1.1.2 Problemas de clasificación con CV

*Tabla 5 Resultados afinamiento parámetros - DECC-G en problemas de clasificación con CV. Conjunto de datos I.*

#	Conjunto de datos I de clasificación				
	Banknote	Blood	Car	Cardiotocography	Chart
1	0.99963	0.75013	0.83079	0.764	0.9115
2	0.99993	0.75013	0.83177	0.76529	0.90333
3	0.99978	0.74906	0.83461	0.76495	0.9085
4	0.99978	0.7504	0.83229	0.76643	0.91433
5	0.99985	0.74973	0.83472	0.76414	0.91583
6	0.99993	0.74933	0.83356	0.76271	0.91467
7	0.9997	0.74825	0.83576	0.76581	0.9105
8	0.99993	0.75	0.83131	0.76562	0.909
9	0.99985	0.74906	0.83571	0.765	0.911
10	0.99993	0.7504	0.836	0.76505	0.91167
11	0.9997	0.74933	0.82963	0.76595	0.912
12	0.99963	0.74987	0.83304	0.76648	0.912
13	0.99985	0.74892	0.82998	0.76519	0.91117
14	0.99956	0.74973	0.83235	0.76576	0.9035
15	0.99978	0.74892	0.83576	0.76429	0.91217
16	0.99978	0.75	0.83565	0.76476	0.90933
17	0.99978	0.74852	0.83194	0.76238	0.90917
18	0.99993	0.74772	0.83073	0.76633	0.911
19	0.99985	0.74852	0.83258	0.76367	0.90583
20	0.99993	0.74987	0.83513	0.7649	0.9095
21	0.99993	0.74906	0.83391	0.7641	0.91367
22	1	0.74906	0.82934	0.76557	0.9025
23	0.99993	0.74812	0.83466	0.76557	0.90817
24	0.99993	0.74812	0.82865	0.7671	0.90683
25	0.9997	0.74772	0.83119	0.768	0.91067
26	0.99963	0.74852	0.83287	0.766	0.90617

27	0.99993	0.74825	0.8283	0.76376	0.90417
28	0.99993	0.74973	0.83142	0.76386	0.90783
29	0.99978	0.7496	0.83374	0.76205	0.91283
30	0.99993	0.74812	0.83137	0.76514	0.911
31	0.9997	0.74866	0.83507	0.768	0.9115
32	0.99993	0.74906	0.83819	0.76329	0.9075
33	0.99978	0.74758	0.83524	0.76429	0.90567
34	0.99985	0.74973	0.83189	0.76667	0.9105
35	0.99985	0.74772	0.82975	0.76495	0.90767
36	0.9997	0.75013	0.83594	0.76548	0.90833
37	0.99985	0.74798	0.83252	0.76543	0.91467
38	0.9997	0.74825	0.83275	0.76343	0.91267

**Tabla 6** Resultados afinamiento parámetros - DECC-G en problemas de clasificación con CV. Conjunto de datos II.

#	Conjunto de datos II de clasificación				
	Dermatology	Fertility	Haberman	Hayes	Hill
1	0.96066	0.67667	0.73072	0.67348	0.63795
2	0.95874	0.64667	0.72549	0.67197	0.64422
3	0.96202	0.66333	0.73366	0.66667	0.63779
4	0.96148	0.64889	0.72843	0.675	0.63416
5	0.96311	0.65778	0.72876	0.6697	0.63498
6	0.95929	0.66444	0.73072	0.68485	0.64109
7	0.95902	0.67222	0.72582	0.66894	0.64142
8	0.96066	0.66667	0.72255	0.67424	0.63812
9	0.96175	0.66	0.72876	0.66061	0.63977
10	0.96148	0.65667	0.72647	0.67803	0.63845
11	0.96011	0.66	0.73497	0.675	0.64191
12	0.95902	0.67444	0.7219	0.67652	0.64059
13	0.96066	0.65333	0.72778	0.67879	0.6429
14	0.96011	0.66444	0.72941	0.67424	0.6429
15	0.96066	0.66333	0.72843	0.67121	0.64455
16	0.9612	0.66111	0.73007	0.66894	0.64307
17	0.96366	0.65222	0.73007	0.67197	0.64505
18	0.95956	0.64889	0.73137	0.67121	0.63878
19	0.96038	0.66889	0.73203	0.6697	0.63795
20	0.95984	0.66222	0.73007	0.67576	0.63911
21	0.96038	0.66778	0.73007	0.66894	0.64158
22	0.96148	0.65667	0.73007	0.68788	0.64323
23	0.96339	0.64778	0.7232	0.67879	0.63729
24	0.95984	0.64889	0.72941	0.67803	0.64356
25	0.96448	0.65333	0.73072	0.67879	0.63828
26	0.95929	0.66556	0.72745	0.67273	0.6335
27	0.9623	0.64667	0.73039	0.67727	0.6396
28	0.96066	0.66778	0.72614	0.67273	0.6368
29	0.96202	0.66778	0.73007	0.67803	0.64521
30	0.96011	0.65444	0.72647	0.67576	0.6396
31	0.9612	0.66556	0.72712	0.67727	0.64472
32	0.96339	0.66667	0.73007	0.6697	0.63449
33	0.96284	0.66556	0.72778	0.66818	0.63828
34	0.96257	0.68111	0.73137	0.66061	0.63812
35	0.96093	0.66333	0.72451	0.67197	0.63597
36	0.96284	0.67778	0.72614	0.66894	0.63993
37	0.96503	0.66	0.73072	0.65909	0.63779
38	0.96038	0.65778	0.72712	0.68939	0.63828



**Tabla 7** Resultados afinamiento parámetros - DECC-G en problemas de clasificación con CV. Conjunto de datos III.

#	Conjunto de datos III de clasificación				
	Ionosphere	Letter	Libras	Optdigits	Pen
1	0.84815	0.68784	0.776	0.8837	0.91276
2	0.84302	0.68807	0.775	0.88329	0.912
3	0.84729	0.68849	0.76867	0.88395	0.91331
4	0.84615	0.68913	0.78033	0.88067	0.91263
5	0.85014	0.68837	0.78133	0.88036	0.91283
6	0.84587	0.6885	0.768	0.88507	0.91331
7	0.84957	0.68884	0.77067	0.8798	0.91293
8	0.84274	0.68873	0.773	0.88193	0.91377
9	0.84245	0.68835	0.77067	0.88091	0.91184
10	0.84929	0.68869	0.77833	0.88353	0.91391
11	0.849	0.68904	0.771	0.88355	0.91316
12	0.8453	0.68917	0.77767	0.88494	0.91147
13	0.84815	0.68865	0.77533	0.88173	0.91351
14	0.84587	0.68825	0.778	0.88355	0.9122
15	0.851	0.68717	0.76733	0.88655	0.91452
16	0.84359	0.68813	0.771	0.8813	0.91363
17	0.85299	0.68746	0.77967	0.88065	0.91243
18	0.84644	0.68849	0.77233	0.88206	0.91259
19	0.851	0.68861	0.773	0.88117	0.91185
20	0.84957	0.68831	0.77733	0.88204	0.91306
21	0.849	0.68922	0.768	0.88065	0.91387
22	0.84872	0.6873	0.774	0.88355	0.9125
23	0.84843	0.68837	0.77367	0.8819	0.91186
24	0.84729	0.68851	0.77733	0.88216	0.91305
25	0.849	0.68939	0.76933	0.8824	0.91449
26	0.84188	0.68867	0.77333	0.88106	0.91363
27	0.84729	0.68861	0.774	0.88279	0.91197
28	0.84587	0.68774	0.76633	0.88102	0.914
29	0.85043	0.68857	0.77533	0.88368	0.91247
30	0.84929	0.68905	0.77233	0.88377	0.91387
31	0.84815	0.68871	0.77467	0.88251	0.91273
32	0.851	0.6885	0.76933	0.88395	0.91291
33	0.84758	0.68849	0.77967	0.8841	0.91333
34	0.84815	0.68827	0.76567	0.87997	0.91186
35	0.84758	0.68887	0.76733	0.8837	0.91203
36	0.8453	0.68865	0.77533	0.88382	0.91305
37	0.84758	0.68869	0.77433	0.87832	0.91276
38	0.84587	0.68897	0.781	0.88114	0.91304

**Tabla 8** Resultados afinamiento parámetros - DECC-G en problemas de DECC-G en problemas de clasificación con CV. Conjunto de datos IV.

#	Conjunto de datos IV de clasificación				
	QSARBiodegradation	Shuttle	SPECTF	Wilt	Zoo
1	0.85895	0.41817	0.38792	0.96855	0.72151
2	0.86	0.40827	0.39	0.96846	0.69355
3	0.85924	0.38374	0.36083	0.96846	0.72043
4	0.85667	0.42229	0.35417	0.96877	0.72258
5	0.85933	0.41651	0.37292	0.96886	0.67742
6	0.85829	0.41367	0.36917	0.96888	0.74839
7	0.86162	0.40894	0.39708	0.96877	0.70215
8	0.85733	0.39821	0.34667	0.96915	0.7
9	0.8581	0.37088	0.39167	0.96877	0.63333
10	0.86133	0.41234	0.35167	0.96869	0.74624
11	0.85971	0.36591	0.39625	0.96871	0.68387
12	0.86086	0.41683	0.35042	0.96902	0.66559
13	0.86029	0.41624	0.39042	0.96913	0.6914
14	0.86105	0.47429	0.345	0.96849	0.67312
15	0.85933	0.4104	0.36792	0.96892	0.66344
16	0.85724	0.39254	0.37375	0.96869	0.64086
17	0.85686	0.47301	0.36542	0.96857	0.70645
18	0.85895	0.41009	0.4	0.96867	0.67419
19	0.8599	0.39743	0.38208	0.96898	0.67634
20	0.85876	0.39342	0.35292	0.96921	0.69677
21	0.8561	0.44626	0.39083	0.9688	0.73333
22	0.85924	0.43351	0.38042	0.96877	0.7
23	0.85981	0.47303	0.38042	0.96906	0.6871
24	0.85867	0.496	0.40375	0.96877	0.66882
25	0.86257	0.40495	0.375	0.9688	0.66667
26	0.85933	0.42534	0.35917	0.9688	0.72043
27	0.86114	0.36051	0.35667	0.96855	0.72043
28	0.86076	0.384	0.39083	0.96894	0.64946
29	0.86029	0.43374	0.36667	0.96908	0.66237
30	0.8581	0.43995	0.3375	0.96904	0.68065
31	0.85781	0.44821	0.3725	0.96888	0.74086
32	0.85714	0.48616	0.35458	0.96911	0.67097
33	0.85952	0.433	0.38708	0.96908	0.71398
34	0.85924	0.42529	0.39708	0.96855	0.6914
35	0.86105	0.38067	0.4125	0.96906	0.72903
36	0.85743	0.43059	0.38708	0.96911	0.74086
37	0.85981	0.41155	0.40792	0.96867	0.63763
38	0.85981	0.44603	0.3675	0.9683	0.67204

### 1.1.3 Problemas de regresión con TT

**Tabla 9** Resultados afinamiento parámetros - DECC-G en problemas de regresión con TT. Conjunto de datos I.

#	Conjunto de datos I de regresión			
	AutoMpg	AutoPrice	BodyFat	CPU
1	0.22196	0.00027	0.4273	0.0353
2	0.22048	0.00026	0.42178	0.03794
3	0.2211	0.00026	0.43153	0.03261
4	0.22154	0.00025	0.42576	0.04022
5	0.21979	0.00026	0.42678	0.03337
6	0.22207	0.00026	0.42357	0.04292
7	0.22068	0.00026	0.43135	0.0405
8	0.2202	0.00027	0.42681	0.03524
9	0.22132	0.00028	0.42304	0.03649
10	0.22155	0.00027	0.42377	0.03592
11	0.22116	0.00027	0.43599	0.03774
12	0.22255	0.00025	0.42244	0.04061
13	0.22149	0.00026	0.42035	0.03867
14	0.22157	0.00026	0.422	0.04053
15	0.22242	0.00027	0.42815	0.04159
16	0.22218	0.00026	0.41858	0.03697
17	0.22098	0.00026	0.4185	0.04309
18	0.22243	0.00027	0.4329	0.0321
19	0.22181	0.00027	0.42962	0.04093
20	0.22127	0.00027	0.42928	0.04866
21	0.22129	0.00028	0.42881	0.04234
22	0.22255	0.00027	0.42526	0.04476
23	0.22073	0.00026	0.42458	0.03994
24	0.2212	0.00026	0.42028	0.03877
25	0.22156	0.00026	0.42291	0.04066
26	0.22084	0.00026	0.42617	0.03673
27	0.22145	0.00027	0.42175	0.04323
28	0.2208	0.00026	0.41965	0.04474
29	0.22136	0.00028	0.43134	0.04175
30	0.22162	0.00027	0.43313	0.03359
31	0.22157	0.00028	0.42773	0.03643
32	0.22096	0.00025	0.41838	0.03896
33	0.22254	0.00027	0.42469	0.0388
34	0.22137	0.0003	0.42345	0.03816
35	0.22168	0.00027	0.4276	0.03606
36	0.22141	0.00027	0.44445	0.03444
37	0.22172	0.00027	0.43262	0.0425
38	0.22036	0.00028	0.41619	0.04146

**Tabla 10** Resultados afinamiento parámetros - DECC-G en problemas de regresión con TT. Conjunto de datos II.

#	Conjunto de datos I de regresión			
	Housing	Sensory	Servo	Veteran
1	0.18757	0.55277	0.46668	0.00386
2	0.18735	0.5525	0.46578	0.00377
3	0.18503	0.55071	0.463	0.00398
4	0.18784	0.551	0.46376	0.00396
5	0.18965	0.55047	0.4638	0.00375
6	0.19102	0.55059	0.46185	0.0038
7	0.19055	0.55202	0.46488	0.00365
8	0.18967	0.55123	0.46503	0.00386
9	0.18714	0.55149	0.4638	0.00401
10	0.18784	0.55319	0.46611	0.00395
11	0.18986	0.55235	0.46615	0.00386
12	0.18853	0.55181	0.46696	0.00393
13	0.19056	0.55218	0.4658	0.00406
14	0.18669	0.5517	0.46757	0.00378
15	0.19038	0.55389	0.46441	0.0037
16	0.18755	0.55105	0.46326	0.00353
17	0.19143	0.55192	0.46594	0.00372
18	0.18903	0.55082	0.46859	0.00385
19	0.18859	0.55242	0.46203	0.0037
20	0.18965	0.55315	0.4639	0.00384
21	0.1889	0.55064	0.46642	0.0038
22	0.19131	0.55199	0.46481	0.00384
23	0.1909	0.55124	0.46263	0.00394
24	0.19114	0.55193	0.46537	0.00378
25	0.19058	0.55066	0.4616	0.00362
26	0.18894	0.55166	0.46509	0.00381
27	0.18798	0.55365	0.46528	0.00373
28	0.18918	0.55224	0.46782	0.00395
29	0.18844	0.55232	0.46618	0.00363
30	0.18834	0.55218	0.46565	0.00392
31	0.18935	0.55155	0.46447	0.00397
32	0.1886	0.55171	0.46294	0.00382
33	0.18911	0.55203	0.4648	0.00369
34	0.19164	0.55194	0.46211	0.00387
35	0.18566	0.55164	0.46718	0.0038
36	0.19072	0.55197	0.46101	0.00393
37	0.18956	0.5526	0.46557	0.00397
38	0.18913	0.55318	0.46281	0.00385

#### 1.1.4 Problemas de regresión con CV

**Tabla 11** Resultados afinamiento parámetros - DECC-G en problemas de regresión con CV. Conjunto de datos I.

#	Conjunto de datos I de regresión			
	AutoMpg	AutoPrice	BodyFat	CPU
1	0.22196	0.00027	0.4273	0.0353
2	0.22048	0.00026	0.42178	0.03794
3	0.2211	0.00026	0.43153	0.03261
4	0.22154	0.00025	0.42576	0.04022
5	0.21979	0.00026	0.42678	0.03337
6	0.22207	0.00026	0.42357	0.04292
7	0.22068	0.00026	0.43135	0.0405
8	0.2202	0.00027	0.42681	0.03524
9	0.22132	0.00028	0.42304	0.03649
10	0.22155	0.00027	0.42377	0.03592
11	0.22116	0.00027	0.43599	0.03774
12	0.22255	0.00025	0.42244	0.04061
13	0.22149	0.00026	0.42035	0.03867
14	0.22157	0.00026	0.422	0.04053
15	0.22242	0.00027	0.42815	0.04159
16	0.22218	0.00026	0.41858	0.03697
17	0.22098	0.00026	0.4185	0.04309
18	0.22243	0.00027	0.4329	0.0321
19	0.22181	0.00027	0.42962	0.04093
20	0.22127	0.00027	0.42928	0.04866
21	0.22129	0.00028	0.42881	0.04234
22	0.22255	0.00027	0.42526	0.04476
23	0.22073	0.00026	0.42458	0.03994
24	0.2212	0.00026	0.42028	0.03877
25	0.22156	0.00026	0.42291	0.04066
26	0.22084	0.00026	0.42617	0.03673
27	0.22145	0.00027	0.42175	0.04323
28	0.2208	0.00026	0.41965	0.04474
29	0.22136	0.00028	0.43134	0.04175
30	0.22162	0.00027	0.43313	0.03359
31	0.22157	0.00028	0.42773	0.03643
32	0.22096	0.00025	0.41838	0.03896
33	0.22254	0.00027	0.42469	0.0388
34	0.22137	0.0003	0.42345	0.03816
35	0.22168	0.00027	0.4276	0.03606
36	0.22141	0.00027	0.44445	0.03444
37	0.22172	0.00027	0.43262	0.0425
38	0.22036	0.00028	0.41619	0.04146

**Tabla 12** Resultados afinamiento parámetros - DECC-G en problemas de regresión con CV. Conjunto de datos II.

#	Conjunto de datos I de regresión			
	Housing	Sensory	Servo	Veteran
1	0.18757	0.55277	0.46668	0.00386
2	0.18735	0.5525	0.46578	0.00377
3	0.18503	0.55071	0.463	0.00398
4	0.18784	0.551	0.46376	0.00396
5	0.18965	0.55047	0.4638	0.00375
6	0.19102	0.55059	0.46185	0.0038
7	0.19055	0.55202	0.46488	0.00365
8	0.18967	0.55123	0.46503	0.00386
9	0.18714	0.55149	0.4638	0.00401
10	0.18784	0.55319	0.46611	0.00395
11	0.18986	0.55235	0.46615	0.00386
12	0.18853	0.55181	0.46696	0.00393
13	0.19056	0.55218	0.4658	0.00406
14	0.18669	0.5517	0.46757	0.00378
15	0.19038	0.55389	0.46441	0.0037
16	0.18755	0.55105	0.46326	0.00353
17	0.19143	0.55192	0.46594	0.00372
18	0.18903	0.55082	0.46859	0.00385
19	0.18859	0.55242	0.46203	0.0037
20	0.18965	0.55315	0.4639	0.00384
21	0.1889	0.55064	0.46642	0.0038
22	0.19131	0.55199	0.46481	0.00384
23	0.1909	0.55124	0.46263	0.00394
24	0.19114	0.55193	0.46537	0.00378
25	0.19058	0.55066	0.4616	0.00362
26	0.18894	0.55166	0.46509	0.00381
27	0.18798	0.55365	0.46528	0.00373
28	0.18918	0.55224	0.46782	0.00395
29	0.18844	0.55232	0.46618	0.00363
30	0.18834	0.55218	0.46565	0.00392
31	0.18935	0.55155	0.46447	0.00397
32	0.1886	0.55171	0.46294	0.00382
33	0.18911	0.55203	0.4648	0.00369
34	0.19164	0.55194	0.46211	0.00387
35	0.18566	0.55164	0.46718	0.0038
36	0.19072	0.55197	0.46101	0.00393
37	0.18956	0.5526	0.46557	0.00397
38	0.18913	0.55318	0.46281	0.00385

## 1.2 RESULTADOS DEL AFINAMIENTO DE PARÁMETROS PARA MOS

### 1.2.1 Problemas de clasificación con TT

**Tabla 13** Resultados afinamiento parámetros - MOS en problemas de clasificación con TT. Conjunto de datos I.

#	Conjunto de datos I de clasificación				
	Banknote	Blood	Car	Cardiotocography	Chart
1	0.99985	0.74892	0.84149	0.76686	0.91633
2	0.99978	0.74677	0.84253	0.76167	0.90567
3	0.99956	0.75175	0.84149	0.7611	0.90683
4	1	0.7457	0.83385	0.76162	0.9055
5	1	0.7457	0.83663	0.76148	0.90767
6	0.99985	0.75013	0.83918	0.76171	0.90633
7	0.99985	0.75013	0.83918	0.76171	0.90633
8	0.99993	0.74597	0.83872	0.76071	0.91083
9	0.99963	0.74879	0.84028	0.76086	0.915
10	0.99985	0.75013	0.83918	0.76171	0.90633
11	0.99985	0.74866	0.83414	0.76124	0.9025
12	1	0.74651	0.83929	0.75805	0.90617
13	0.9997	0.75148	0.8327	0.75781	0.909
14	0.99963	0.74866	0.84167	0.75933	0.90717
15	0.99963	0.74933	0.84005	0.75914	0.90433
16	0.99956	0.7496	0.83432	0.75952	0.90183
17	0.99993	0.74892	0.84022	0.75662	0.90467
18	0.99985	0.74879	0.82963	0.76005	0.90767
19	0.99993	0.75013	0.83727	0.75838	0.90583
20	0.99956	0.74892	0.84022	0.75662	0.90467
21	0.99985	0.74987	0.84091	0.76024	0.90783
22	0.99985	0.74987	0.84091	0.76024	0.90783
23	0.99963	0.74946	0.83958	0.75733	0.89783
24	0.99926	0.74946	0.83958	0.75733	0.89633
25	0.9997	0.74946	0.83709	0.75919	0.905
26	0.9997	0.74892	0.83837	0.76405	0.91133
27	0.99985	0.75013	0.83918	0.76171	0.90633
28	0.99993	0.75013	0.83727	0.75838	0.90583
29	1	0.74664	0.83929	0.7591	0.907
30	0.99978	0.75175	0.84149	0.76138	0.9065

**Tabla 14** Resultados afinamiento parámetros - MOS en problemas de clasificación con TT. Conjunto de datos II.

#	Conjunto de datos II de clasificación				
	Dermatology	Fertility	Haberman	Hayes	Hill
1	0.96475	0.67	0.70523	0.67121	0.65825
2	0.96612	0.64333	0.72614	0.65606	0.63828
3	0.96284	0.67556	0.72451	0.66364	0.64752
4	0.96448	0.65222	0.7232	0.63864	0.6401
5	0.96093	0.64444	0.7232	0.64318	0.6363
6	0.96421	0.66889	0.72614	0.64848	0.64241
7	0.96421	0.66889	0.72614	0.64773	0.64241
8	0.96885	0.68444	0.7219	0.66288	0.64076
9	0.96503	0.68111	0.7183	0.66212	0.63944
10	0.96421	0.67	0.72614	0.64848	0.64241
11	0.96503	0.64556	0.71667	0.65076	0.64406
12	0.96393	0.67333	0.71928	0.67348	0.62838
13	0.96393	0.63556	0.72516	0.65985	0.63383
14	0.96257	0.66778	0.71993	0.66212	0.62508
15	0.96148	0.66889	0.71667	0.66439	0.62954
16	0.96066	0.64333	0.72157	0.67273	0.64208
17	0.96038	0.65333	0.7219	0.69015	0.63069
18	0.96667	0.66778	0.71863	0.65455	0.62772
19	0.96311	0.62778	0.72484	0.66439	0.62657
20	0.96038	0.65333	0.7219	0.69015	0.63069
21	0.9653	0.66667	0.70752	0.67045	0.6363
22	0.9653	0.66667	0.70752	0.67045	0.6363
23	0.96557	0.64111	0.72549	0.65076	0.63515
24	0.96557	0.64556	0.72255	0.64697	0.63515
25	0.95738	0.65444	0.72124	0.65758	0.62706
26	0.96311	0.66	0.72092	0.65833	0.64076
27	0.96421	0.67	0.72614	0.64848	0.64241
28	0.96311	0.62778	0.72484	0.66439	0.62657
29	0.96393	0.66778	0.71928	0.67197	0.63053
30	0.96257	0.67444	0.72451	0.66439	0.64769



**Tabla 15** Resultados afinamiento parámetros - MOS en problemas de clasificación con TT. Conjunto de datos III.

#	Conjunto de datos III de clasificación				
	Ionosphere	Letter	Libras	Optdigits	Pen
1	0.85698	0.69071	0.78067	0.8805	0.91359
2	0.851	0.68592	0.76967	0.8767	0.90574
3	0.84701	0.68506	0.779	0.87377	0.90894
4	0.85128	0.68319	0.76667	0.87642	0.91022
5	0.851	0.68293	0.76333	0.87876	0.90985
6	0.83932	0.68182	0.76767	0.87455	0.9052
7	0.83932	0.68182	0.76767	0.87455	0.9052
8	0.84957	0.68291	0.76967	0.87603	0.90673
9	0.84758	0.6821	0.77033	0.87218	0.90821
10	0.83932	0.68182	0.76767	0.87455	0.9052
11	0.85527	0.68081	0.76133	0.87594	0.90345
12	0.849	0.68153	0.77633	0.87468	0.89983
13	0.84217	0.68229	0.772	0.87294	0.9034
14	0.84387	0.67937	0.76533	0.87368	0.90155
15	0.84188	0.67971	0.77367	0.87201	0.90155
16	0.8453	0.67902	0.76633	0.8749	0.90484
17	0.84986	0.68022	0.766	0.87188	0.90338
18	0.84701	0.67986	0.76867	0.87416	0.90628
19	0.84359	0.68073	0.761	0.8737	0.90125
20	0.84986	0.68022	0.766	0.87188	0.90338
21	0.84217	0.68105	0.76167	0.87327	0.90255
22	0.84217	0.68105	0.76167	0.87327	0.90255
23	0.84644	0.67959	0.76333	0.87407	0.90426
24	0.84615	0.67959	0.76333	0.87373	0.90426
25	0.84387	0.68227	0.76467	0.87416	0.90536
26	0.84615	0.68334	0.76667	0.87796	0.90794
27	0.83932	0.68182	0.76767	0.87455	0.9052
28	0.84359	0.68073	0.761	0.8737	0.90125
29	0.84815	0.6812	0.77967	0.87416	0.89983
30	0.84929	0.68529	0.77967	0.87433	0.90894

**Tabla 16** Resultados afinamiento parámetros - MOS en problemas de clasificación con TT. Conjunto de datos IV.

#	Conjunto de datos IV de clasificación				
	QSARBiodegradation	Shuttle	SPECTF	Wilt	Zoo
1	0.85952	0.43485	0.33917	0.96863	0.85806
2	0.86076	0.57875	0.35125	0.96871	0.73871
3	0.85857	0.546	0.33833	0.96791	0.68387
4	0.85705	0.5113	0.34375	0.96851	0.72688
5	0.85733	0.5113	0.33458	0.96851	0.68817
6	0.85952	0.481	0.38458	0.96789	0.68925
7	0.85952	0.48209	0.38458	0.96789	0.68172
8	0.85533	0.40876	0.35458	0.96826	0.70323
9	0.86076	0.53751	0.36958	0.96725	0.72258
10	0.85952	0.47954	0.38458	0.96789	0.69785
11	0.8579	0.49392	0.33375	0.96689	0.66022
12	0.85152	0.57805	0.33875	0.96776	0.70215
13	0.85495	0.51975	0.36542	0.96756	0.72581
14	0.85752	0.47737	0.32208	0.96747	0.70753
15	0.85762	0.45428	0.33875	0.96747	0.69892
16	0.85733	0.37934	0.33625	0.96663	0.67204
17	0.85686	0.47117	0.35417	0.96749	0.64194
18	0.85648	0.49906	0.38708	0.96735	0.69785
19	0.85581	0.57937	0.36625	0.96731	0.73548
20	0.85686	0.43258	0.35417	0.96749	0.64194
21	0.85876	0.4642	0.3875	0.96685	0.67849
22	0.85876	0.46934	0.3875	0.96685	0.67849
23	0.85533	0.48906	0.315	0.96737	0.76129
24	0.85533	0.50719	0.3175	0.96737	0.76129
25	0.85705	0.50259	0.35625	0.96669	0.7043
26	0.85838	0.52418	0.37875	0.96758	0.66774
27	0.85952	0.481	0.38458	0.96789	0.68925
28	0.85581	0.54555	0.36625	0.96731	0.73548
29	0.85152	0.54579	0.34208	0.96776	0.70645
30	0.85638	0.49989	0.33542	0.96791	0.66129

## 1.2.2 Problemas de clasificación con CV

**Tabla 17** Resultados afinamiento parámetros - MOS en problemas de clasificación con CV. Conjunto de datos I.

#	Conjunto de datos I de clasificación				
	Banknote	Blood	Car	Cardiotocography	Chart
1	0.9997	0.74892	0.83837	0.76405	0.91133
2	0.99978	0.74677	0.84253	0.76167	0.90567
3	0.99956	0.75175	0.84149	0.7611	0.90683
4	1	0.7457	0.83385	0.76162	0.9055
5	1	0.7457	0.83663	0.76148	0.90767
6	0.99985	0.75013	0.83918	0.76171	0.90633
7	0.99985	0.75013	0.83918	0.76171	0.90633
8	0.99993	0.74597	0.83872	0.76071	0.91083
9	0.99963	0.74879	0.84028	0.76086	0.915
10	0.99985	0.75013	0.83918	0.76171	0.90633
11	0.99985	0.74866	0.83414	0.76124	0.9025
12	1	0.74651	0.83929	0.75805	0.90617
13	0.9997	0.75148	0.8327	0.75781	0.909
14	0.99963	0.74866	0.84167	0.75933	0.90717
15	0.99963	0.74933	0.84005	0.75914	0.90433
16	0.99956	0.7496	0.83432	0.75952	0.90183
17	0.99993	0.74892	0.84022	0.75662	0.90467
18	0.99985	0.74879	0.82963	0.76005	0.90767
19	0.99993	0.75013	0.83727	0.75838	0.90583
20	0.99956	0.74892	0.84022	0.75662	0.90467
21	0.99985	0.74987	0.84091	0.76024	0.90783
22	0.99985	0.74987	0.84091	0.76024	0.90783
23	0.99963	0.74946	0.83958	0.75733	0.89783
24	0.99926	0.74946	0.83958	0.75733	0.89633
25	0.9997	0.74946	0.83709	0.75919	0.905
26	0.9997	0.74892	0.83837	0.76405	0.91133
27	0.99985	0.75013	0.83918	0.76171	0.90633
28	0.99993	0.75013	0.83727	0.75838	0.90583
29	1	0.74664	0.83929	0.7591	0.907
30	0.99978	0.75175	0.84149	0.76138	0.9065

**Tabla 18** Resultados afinamiento parámetros - MOS en problemas de clasificación con CV. Conjunto de datos II

#	Conjunto de datos II de clasificación				
	Dermatology	Fertility	Haberman	Hayes	Hill
1	0.96311	0.66	0.72092	0.65758	0.64076
2	0.96612	0.64333	0.72614	0.65606	0.63828
3	0.96284	0.67556	0.72451	0.66364	0.64752
4	0.96448	0.65222	0.7232	0.63864	0.6401
5	0.96093	0.64444	0.7232	0.64318	0.6363
6	0.96421	0.66889	0.72614	0.64848	0.64241
7	0.96421	0.66889	0.72614	0.64773	0.64241
8	0.96885	0.68444	0.7219	0.66288	0.64076
9	0.96503	0.68111	0.7183	0.66212	0.63944
10	0.96421	0.67	0.72614	0.64848	0.64241
11	0.96503	0.64556	0.71667	0.65076	0.64406
12	0.96393	0.67333	0.71928	0.67348	0.62838
13	0.96393	0.63556	0.72516	0.65985	0.63383
14	0.96257	0.66778	0.71993	0.66212	0.62508
15	0.96148	0.66889	0.71667	0.66439	0.62954
16	0.96066	0.64333	0.72157	0.67273	0.64208
17	0.96038	0.65333	0.7219	0.69015	0.63069
18	0.96667	0.66778	0.71863	0.65455	0.62772
19	0.96311	0.62778	0.72484	0.66439	0.62657
20	0.96038	0.65333	0.7219	0.69015	0.63069
21	0.9653	0.66667	0.70752	0.67045	0.6363
22	0.9653	0.66667	0.70752	0.67045	0.6363
23	0.96557	0.64111	0.72549	0.65076	0.63515
24	0.96557	0.64556	0.72255	0.64697	0.63515
25	0.95738	0.65444	0.72124	0.65758	0.62706
26	0.96311	0.66	0.72092	0.65833	0.64076
27	0.96421	0.67	0.72614	0.64848	0.64241
28	0.96311	0.62778	0.72484	0.66439	0.62657
29	0.96393	0.66778	0.71928	0.67197	0.63053
30	0.96257	0.67444	0.72451	0.66439	0.64769

**Tabla 19** Resultados afinamiento parámetros - MOS en problemas de clasificación con CV. Conjunto de datos III

#	Conjunto de datos III de clasificación				
	Ionosphere	Letter	Libras	Optdigits	Pen
1	0.84615	0.68334	0.76667	0.87796	0.90794
2	0.851	0.68592	0.76967	0.8767	0.90574
3	0.84701	0.68506	0.779	0.87377	0.90894
4	0.85128	0.68319	0.76667	0.87642	0.91022
5	0.851	0.68293	0.76333	0.87876	0.90985
6	0.83932	0.68182	0.76767	0.87455	0.9052
7	0.83932	0.68182	0.76767	0.87455	0.9052
8	0.84957	0.68291	0.76967	0.87603	0.90673
9	0.84758	0.6821	0.77033	0.87218	0.90821
10	0.83932	0.68182	0.76767	0.87455	0.9052
11	0.85527	0.68081	0.76133	0.87594	0.90345
12	0.849	0.68153	0.77633	0.87468	0.89983
13	0.84217	0.68229	0.772	0.87294	0.9034
14	0.84387	0.67937	0.76533	0.87368	0.90155
15	0.84188	0.67971	0.77367	0.87201	0.90155
16	0.8453	0.67902	0.76633	0.8749	0.90484
17	0.84986	0.68022	0.766	0.87188	0.90338
18	0.84701	0.67986	0.76867	0.87416	0.90628
19	0.84359	0.68073	0.761	0.8737	0.90125
20	0.84986	0.68022	0.766	0.87188	0.90338
21	0.84217	0.68105	0.76167	0.87327	0.90255
22	0.84217	0.68105	0.76167	0.87327	0.90255
23	0.84644	0.67959	0.76333	0.87407	0.90426
24	0.84615	0.67959	0.76333	0.87373	0.90426
25	0.84387	0.68227	0.76467	0.87416	0.90536
26	0.84615	0.68334	0.76667	0.87796	0.90794
27	0.83932	0.68182	0.76767	0.87455	0.9052
28	0.84359	0.68073	0.761	0.8737	0.90125
29	0.84815	0.6812	0.77967	0.87416	0.89983
30	0.84929	0.68529	0.77967	0.87433	0.90894

**Tabla 20** Resultados afinamiento parámetros - MOS en problemas de clasificación con CV. Conjunto de datos IV.

#	Conjunto de datos IV de clasificación				
	QSARBiodegradation	Shuttle	SPECTF	Wilt	Zoo
1	0.85838	0.50293	0.37875	0.96758	0.67204
2	0.86076	0.57875	0.35125	0.96871	0.73871
3	0.85857	0.546	0.33833	0.96791	0.68387
4	0.85705	0.5113	0.34375	0.96851	0.72688
5	0.85733	0.5113	0.33458	0.96851	0.68817
6	0.85952	0.481	0.38458	0.96789	0.68925
7	0.85952	0.48209	0.38458	0.96789	0.68172
8	0.85533	0.40876	0.35458	0.96826	0.70323
9	0.86076	0.53751	0.36958	0.96725	0.72258
10	0.85952	0.47954	0.38458	0.96789	0.69785
11	0.8579	0.49392	0.33375	0.96689	0.66022
12	0.85152	0.57805	0.33875	0.96776	0.70215
13	0.85495	0.51975	0.36542	0.96756	0.72581
14	0.85752	0.47737	0.32208	0.96747	0.70753
15	0.85762	0.45428	0.33875	0.96747	0.69892
16	0.85733	0.37934	0.33625	0.96663	0.67204
17	0.85686	0.47117	0.35417	0.96749	0.64194
18	0.85648	0.49906	0.38708	0.96735	0.69785
19	0.85581	0.57937	0.36625	0.96731	0.73548
20	0.85686	0.43258	0.35417	0.96749	0.64194
21	0.85876	0.4642	0.3875	0.96685	0.67849
22	0.85876	0.46934	0.3875	0.96685	0.67849
23	0.85533	0.48906	0.315	0.96737	0.76129
24	0.85533	0.50719	0.3175	0.96737	0.76129
25	0.85705	0.50259	0.35625	0.96669	0.7043
26	0.85838	0.52418	0.37875	0.96758	0.66774
27	0.85952	0.481	0.38458	0.96789	0.68925
28	0.85581	0.54555	0.36625	0.96731	0.73548
29	0.85152	0.54579	0.34208	0.96776	0.70645
30	0.85638	0.49989	0.33542	0.96791	0.66129

### 1.2.3 Problemas de regresión con TT

**Tabla 21** Resultados afinamiento parámetros - MOS en problemas de regresión con TT. Conjunto de datos I.

#	Conjunto de datos I de regresión			
	AutoMpg	AutoPrice	BodyFat	CPU
1	0.22	0.00024	0.42202	0.03682
2	0.22002	0.00028	0.41908	0.03057
3	0.22324	0.00028	0.44328	0.03563
4	0.22374	0.00026	0.42757	0.03601
5	0.22406	0.00026	0.41884	0.03664
6	0.22175	0.00029	0.42116	0.04127
7	0.22175	0.00028	0.42385	0.04035
8	0.22141	0.00025	0.42052	0.03776
9	0.22274	0.00026	0.43161	0.04071
10	0.22175	0.0003	0.42188	0.04562
11	0.22244	0.00025	0.39132	0.03417
12	0.22316	0.00025	0.40572	0.04722
13	0.22269	0.00026	0.39264	0.04622
14	0.22107	0.00028	0.41556	0.03761
15	0.2217	0.00027	0.421	0.0368
16	0.22239	0.00026	0.40953	0.03632
17	0.22224	0.00026	0.41626	0.04669
18	0.22152	0.00027	0.40144	0.0394
19	0.22222	0.00028	0.4224	0.03929
20	0.22224	0.00026	0.41626	0.04669
21	0.22315	0.00025	0.41514	0.04423
22	0.22315	0.00025	0.41514	0.04423
23	0.22204	0.00028	0.42186	0.05106
24	0.22263	0.00028	0.42626	0.05106
25	0.22409	0.00025	0.4161	0.03937
26	0.22313	0.00026	0.42196	0.04188
27	0.22175	0.00029	0.42116	0.04109
28	0.22222	0.00028	0.4224	0.03929
29	0.22303	0.00025	0.41322	0.0433
30	0.2237	0.00027	0.44328	0.03106

**Tabla 22** Resultados afinamiento parámetros - MOS en problemas de regresión con TT. Conjunto de datos II.

#	Conjunto de datos I de regresión			
	Housing	Sensory	Servo	Veteran
1	0.19169	0.54855	0.47084	0.00358
2	0.19096	0.54658	0.46267	0.00416
3	0.19059	0.54766	0.4669	0.00408
4	0.18979	0.54644	0.46538	0.00439
5	0.19118	0.54894	0.46779	0.00438
6	0.18855	0.54381	0.46773	0.00427
7	0.18662	0.54381	0.46773	0.00416
8	0.1884	0.5487	0.46501	0.00392
9	0.18902	0.54617	0.46403	0.00435
10	0.18855	0.54381	0.46773	0.00426
11	0.18947	0.5456	0.46748	0.00412
12	0.1899	0.54944	0.4567	0.00409
13	0.1895	0.54621	0.46367	0.00462
14	0.18822	0.54814	0.47022	0.00374
15	0.18807	0.54774	0.46654	0.00385
16	0.18727	0.54517	0.4637	0.00471
17	0.18898	0.54358	0.46614	0.00438
18	0.19083	0.54719	0.46385	0.00426
19	0.18968	0.54599	0.46383	0.00419
20	0.18898	0.54358	0.46614	0.00438
21	0.1884	0.54718	0.46164	0.0042
22	0.1884	0.54718	0.46164	0.0042
23	0.19008	0.54659	0.46867	0.00442
24	0.19008	0.54639	0.46934	0.00417
25	0.18681	0.54694	0.46338	0.00405
26	0.18934	0.54555	0.46462	0.00457
27	0.18855	0.54381	0.46773	0.00429
28	0.18968	0.54599	0.46383	0.00419
29	0.18939	0.54968	0.4567	0.00416
30	0.1908	0.54672	0.46611	0.00397



#### 1.2.4 Problemas de regresión con CV

**Tabla 23** Resultados afinamiento parámetros - MOS en problemas de regresión con CV. Conjunto de datos I.

#	Conjunto de datos I de regresión			
	AutoMpg	AutoPrice	BodyFat	CPU
1	0.22313	0.00027	0.41783	0.02952
2	0.22002	0.00028	0.41908	0.03057
3	0.22324	0.00028	0.44328	0.03563
4	0.22374	0.00026	0.42757	0.03601
5	0.22406	0.00026	0.41884	0.03664
6	0.22175	0.00029	0.42116	0.04127
7	0.22175	0.00028	0.42385	0.04035
8	0.22141	0.00025	0.42052	0.03776
9	0.22274	0.00026	0.43161	0.04071
10	0.22175	0.0003	0.42188	0.04562
11	0.22244	0.00025	0.39132	0.03417
12	0.22316	0.00025	0.40572	0.04722
13	0.22269	0.00026	0.39264	0.04622
14	0.22107	0.00028	0.41556	0.03761
15	0.2217	0.00027	0.421	0.0368
16	0.22239	0.00026	0.40953	0.03632
17	0.22224	0.00026	0.41626	0.04669
18	0.22152	0.00027	0.40144	0.0394
19	0.22222	0.00028	0.4224	0.03929
20	0.22224	0.00026	0.41626	0.04669
21	0.22315	0.00025	0.41514	0.04423
22	0.22315	0.00025	0.41514	0.04423
23	0.22204	0.00028	0.42186	0.05106
24	0.22263	0.00028	0.42626	0.05106
25	0.22409	0.00025	0.4161	0.03937
26	0.22313	0.00026	0.42196	0.04188
27	0.22175	0.00029	0.42116	0.04109
28	0.22222	0.00028	0.4224	0.03929
29	0.22303	0.00025	0.41322	0.0433
30	0.2237	0.00027	0.44328	0.03106

**Tabla 24** Resultados afinamiento parámetros - MOS en problemas de regresión con CV. Conjunto de datos II.

#	Conjunto de datos I de regresión			
	Housing	Sensory	Servo	Veteran
1	0.18908	0.54555	0.46462	0.00439
2	0.19096	0.54658	0.46267	0.00416
3	0.19059	0.54766	0.4669	0.00408
4	0.18979	0.54644	0.46538	0.00439
5	0.19118	0.54894	0.46779	0.00438
6	0.18855	0.54381	0.46773	0.00427
7	0.18662	0.54381	0.46773	0.00416
8	0.1884	0.5487	0.46501	0.00392
9	0.18902	0.54617	0.46403	0.00435
10	0.18855	0.54381	0.46773	0.00426
11	0.18947	0.5456	0.46748	0.00412
12	0.1899	0.54944	0.4567	0.00409
13	0.1895	0.54621	0.46367	0.00462
14	0.18822	0.54814	0.47022	0.00374
15	0.18807	0.54774	0.46654	0.00385
16	0.18727	0.54517	0.4637	0.00471
17	0.18898	0.54358	0.46614	0.00438
18	0.19083	0.54719	0.46385	0.00426
19	0.18968	0.54599	0.46383	0.00419
20	0.18898	0.54358	0.46614	0.00438
21	0.1884	0.54718	0.46164	0.0042
22	0.1884	0.54718	0.46164	0.0042
23	0.19008	0.54659	0.46867	0.00442
24	0.19008	0.54639	0.46934	0.00417
25	0.18681	0.54694	0.46338	0.00405
26	0.18934	0.54555	0.46462	0.00457
27	0.18855	0.54381	0.46773	0.00429
28	0.18968	0.54599	0.46383	0.00419
29	0.18939	0.54968	0.4567	0.00416
30	0.1908	0.54672	0.46611	0.00397

### 1.3 RESULTADOS DEL AFINAMIENTO DE PARÁMETROS PARA IHDELS

#### 1.3.1 Problemas de clasificación con TT

*Tabla 25 Resultados afinamiento parámetros - IHDELS en problemas de clasificación con TT. Conjunto de datos I.*

#	Conjunto de datos I de clasificación				
	Banknote	Blood	Car	Cardiotocography	Chart
1	0.99956	0.74933	0.83924	0.76367	0.90767
2	0.99978	0.74704	0.83953	0.76971	0.9105
3	0.99985	0.74691	0.83773	0.76433	0.91167
4	1	0.74933	0.84097	0.76395	0.9085
5	0.9997	0.74489	0.83819	0.76552	0.91067
6	1	0.74879	0.82627	0.75257	0.903
7	0.99985	0.74664	0.82807	0.75457	0.89433
8	0.99985	0.7496	0.83524	0.75576	0.89767
9	0.9997	0.74906	0.83038	0.75186	0.88233
10	0.99985	0.74745	0.82639	0.7539	0.89017
11	0.99985	0.74745	0.82523	0.75414	0.888
12	0.9997	0.74919	0.84039	0.76157	0.91733
13	0.99978	0.75027	0.82037	0.75176	0.9
14	0.99985	0.75054	0.84126	0.76229	0.91767
15	1	0.74812	0.84369	0.76543	0.91783
16	0.99963	0.74946	0.82917	0.75276	0.89283
17	0.99985	0.74704	0.83588	0.75086	0.90083
18	0.99993	0.75121	0.82413	0.75414	0.8995
19	0.99978	0.75067	0.83397	0.75286	0.89583
20	0.99985	0.7457	0.82841	0.75119	0.8935
21	0.99993	0.74798	0.84086	0.77067	0.91883
22	0.99985	0.75	0.83044	0.75352	0.898
23	0.99963	0.74409	0.82743	0.75181	0.8985
24	0.99993	0.74973	0.83779	0.76381	0.908
25	0.99993	0.75108	0.84265	0.76776	0.9185
26	0.9997	0.7496	0.82552	0.76833	0.917
27	0.99948	0.74973	0.82529	0.75381	0.89017
28	0.99985	0.74718	0.81956	0.75695	0.89
29	0.99985	0.74879	0.84288	0.7589	0.905
30	0.99978	0.75121	0.82726	0.75452	0.90033
31	0.99963	0.74704	0.83536	0.76533	0.91417
32	0.99985	0.74839	0.825	0.75429	0.89833
33	0.99993	0.74852	0.83657	0.76781	0.91883
34	0.99993	0.74933	0.83692	0.75805	0.8995
35	0.99993	0.74785	0.82471	0.75067	0.89917
36	0.99978	0.74704	0.83241	0.75443	0.89817
37	0.99978	0.74758	0.83814	0.76581	0.91617
38	0.99993	0.74906	0.82378	0.75329	0.893

39	0.99993	0.74368	0.83814	0.76743	0.9175
40	0.99978	0.74973	0.84282	0.76495	0.9135
41	0.9997	0.75067	0.83171	0.76662	0.91733
42	0.99993	0.7457	0.83154	0.75052	0.89183
43	0.9997	0.7496	0.82679	0.7491	0.88867
44	0.99993	0.74839	0.82784	0.75576	0.89567
45	0.99985	0.75161	0.82668	0.75738	0.89283
46	0.99985	0.7539	0.83154	0.75381	0.8965
47	0.99978	0.74745	0.82639	0.7539	0.89017
48	1	0.74812	0.83281	0.75562	0.8985

**Tabla 26** Resultados afinamiento parámetros - IHDELS en problemas de clasificación con TT. Conjunto de datos II.

#	Conjunto de datos II de clasificación				
	Dermatology	Fertility	Haberman	Hayes	Hill
1	0.96284	0.64667	0.72582	0.66439	0.63927
2	0.96749	0.66889	0.7219	0.65682	0.64472
3	0.96503	0.67778	0.72255	0.65909	0.64026
4	0.9653	0.67667	0.7232	0.66061	0.6429
5	0.96202	0.67778	0.7317	0.67727	0.65116
6	0.96421	0.65778	0.71569	0.66136	0.61733
7	0.96175	0.66111	0.72255	0.66515	0.60726
8	0.96038	0.65111	0.7232	0.67652	0.62129
9	0.9612	0.66333	0.72418	0.66742	0.62343
10	0.96858	0.69	0.72516	0.68333	0.60957
11	0.96557	0.65444	0.71699	0.66288	0.6137
12	0.96557	0.63111	0.72255	0.66818	0.64686
13	0.96585	0.67222	0.72843	0.66136	0.61931
14	0.96421	0.66889	0.72255	0.68636	0.63762
15	0.96858	0.64778	0.72288	0.67121	0.65594
16	0.95492	0.66444	0.7281	0.67955	0.62393
17	0.96148	0.67444	0.72647	0.66591	0.62096
18	0.9571	0.63778	0.71928	0.66061	0.62178
19	0.96066	0.66444	0.72516	0.66894	0.61799
20	0.96311	0.63667	0.72124	0.67045	0.61023
21	0.96831	0.65556	0.71961	0.69394	0.64505
22	0.96694	0.65889	0.71732	0.69545	0.61205
23	0.96667	0.65889	0.72255	0.64697	0.6203
24	0.96257	0.66556	0.72582	0.66061	0.65083
25	0.96557	0.65556	0.7219	0.66439	0.64917
26	0.9582	0.66111	0.72549	0.68182	0.64158
27	0.96612	0.67	0.72026	0.67879	0.61997
28	0.96284	0.66111	0.72516	0.66136	0.61881
29	0.96694	0.66444	0.72484	0.67652	0.63432
30	0.96284	0.64222	0.72353	0.65985	0.61865

31	0.97049	0.64889	0.72353	0.65985	0.65231
32	0.96393	0.65111	0.71863	0.66288	0.60908
33	0.9612	0.66889	0.72582	0.675	0.65644
34	0.96448	0.66556	0.72092	0.67273	0.617
35	0.96202	0.69222	0.72026	0.66288	0.6132
36	0.96257	0.66111	0.71536	0.68333	0.60825
37	0.96339	0.66444	0.72614	0.67879	0.64769
38	0.96721	0.64222	0.72092	0.65455	0.62492
39	0.96284	0.65556	0.72549	0.65833	0.64488
40	0.96339	0.66222	0.72549	0.67045	0.65033
41	0.96257	0.66222	0.72124	0.68106	0.64818
42	0.96366	0.65333	0.72124	0.65682	0.61518
43	0.96475	0.65889	0.72418	0.66212	0.59818
44	0.96339	0.68556	0.72255	0.66742	0.61535
45	0.96475	0.66222	0.71928	0.66061	0.62261
46	0.96557	0.64667	0.72451	0.67879	0.61782
47	0.96858	0.69	0.72516	0.68333	0.60957
48	0.9612	0.68556	0.72092	0.67576	0.61848

**Tabla 27** Resultados afinamiento parámetros - MOS en problemas de clasificación con TT. Conjunto de datos III.

#	Conjunto de datos III de clasificación				
	Ionosphere	Letter	Libras	Optdigits	Pen
1	0.85014	0.68699	0.762	0.88327	0.9062
2	0.84501	0.69027	0.77367	0.88548	0.91189
3	0.84758	0.69112	0.763	0.88462	0.91494
4	0.84217	0.68931	0.763	0.88594	0.91443
5	0.85442	0.69178	0.78133	0.88455	0.91494
6	0.85271	0.67168	0.75733	0.87206	0.89997
7	0.85271	0.66811	0.763	0.8695	0.89669
8	0.84644	0.6727	0.759	0.87184	0.89309
9	0.85071	0.67085	0.739	0.87065	0.89806
10	0.83875	0.66953	0.75867	0.87123	0.89381
11	0.84416	0.66925	0.75167	0.87151	0.89123
12	0.84929	0.6921	0.765	0.88807	0.91187
13	0.84416	0.67138	0.74467	0.86741	0.89821
14	0.84131	0.68319	0.78133	0.88032	0.90558
15	0.85157	0.69269	0.77767	0.88757	0.91533
16	0.84501	0.67102	0.76733	0.86893	0.89844
17	0.8453	0.67244	0.748	0.86902	0.89695
18	0.849	0.67012	0.75667	0.86824	0.89686
19	0.84131	0.66855	0.75467	0.8629	0.89859
20	0.84444	0.67294	0.744	0.87472	0.89232
21	0.85242	0.69237	0.77	0.88386	0.91682

22	0.84672	0.67276	0.753	0.86809	0.89806
23	0.83932	0.67303	0.75133	0.87418	0.89824
24	0.84758	0.69246	0.772	0.88251	0.91292
25	0.85185	0.69023	0.77233	0.88789	0.91204
26	0.84587	0.69136	0.76967	0.87681	0.91403
27	0.8396	0.66898	0.761	0.87177	0.8972
28	0.85641	0.67119	0.75433	0.87303	0.89485
29	0.85755	0.68475	0.756	0.87939	0.90798
30	0.84416	0.67138	0.74967	0.87529	0.89595
31	0.85242	0.69243	0.78233	0.88965	0.91293
32	0.84843	0.66829	0.749	0.87446	0.89849
33	0.84103	0.69168	0.78433	0.88855	0.91532
34	0.84501	0.67264	0.754	0.87255	0.9009
35	0.84359	0.67093	0.75333	0.86995	0.89713
36	0.84188	0.66995	0.75767	0.87188	0.89604
37	0.84758	0.69074	0.76733	0.88603	0.91199
38	0.84387	0.67429	0.75933	0.87308	0.896
39	0.84644	0.68971	0.77533	0.88321	0.91378
40	0.84017	0.69266	0.77967	0.88182	0.91514
41	0.85071	0.69349	0.76833	0.88091	0.91252
42	0.84786	0.66645	0.74767	0.86986	0.89854
43	0.83732	0.66833	0.75633	0.87464	0.89783
44	0.83191	0.67106	0.748	0.87069	0.89652
45	0.83846	0.66681	0.74967	0.87116	0.89649
46	0.84815	0.67055	0.74333	0.87143	0.89606
47	0.83875	0.66953	0.75867	0.87123	0.89381
48	0.83903	0.67203	0.74	0.87212	0.89767

**Tabla 28** Resultados afinamiento parámetros - IHDELS en problemas de clasificación con TT. Conjunto de datos IV.

#	Conjunto de datos IV de clasificación				
	QSARBiodegradation	Shuttle	SPECTF	Wilt	Zoo
1	0.85743	0.47143	0.33125	0.96894	0.76237
2	0.86086	0.49613	0.3575	0.96906	0.6828
3	0.86019	0.42351	0.34208	0.96948	0.72581
4	0.85648	0.50746	0.39542	0.96917	0.70323
5	0.86229	0.50089	0.31375	0.96981	0.75914
6	0.84886	0.51407	0.37458	0.96487	0.66022
7	0.852	0.48626	0.32625	0.96559	0.63871
8	0.84962	0.52254	0.39417	0.96613	0.64516
9	0.8521	0.4923	0.37208	0.9659	0.68817
10	0.85029	0.44259	0.29542	0.96592	0.7129
11	0.85114	0.45191	0.33708	0.96565	0.69247
12	0.8579	0.43446	0.35458	0.96888	0.73548

13	0.84943	0.56425	0.345	0.96557	0.63763
14	0.8599	0.51269	0.34208	0.9689	0.7172
15	0.86095	0.52875	0.3125	0.96886	0.7
16	0.85486	0.54061	0.29625	0.96578	0.70108
17	0.84895	0.52355	0.37167	0.96539	0.67957
18	0.84762	0.45217	0.32708	0.96601	0.64624
19	0.84838	0.62174	0.32625	0.96725	0.67849
20	0.85105	0.4457	0.3325	0.9652	0.74194
21	0.85857	0.45494	0.31708	0.96956	0.77419
22	0.85038	0.43453	0.36792	0.96576	0.6
23	0.85095	0.45526	0.37167	0.96592	0.67312
24	0.86124	0.40788	0.36	0.96915	0.7871
25	0.85714	0.46649	0.36	0.96964	0.73118
26	0.85924	0.43702	0.34667	0.9684	0.72366
27	0.84943	0.4944	0.3325	0.96487	0.7043
28	0.85267	0.59782	0.34083	0.96539	0.65161
29	0.85638	0.47954	0.32458	0.96762	0.76452
30	0.85057	0.37203	0.345	0.96545	0.61505
31	0.85914	0.45731	0.36292	0.97055	0.75699
32	0.85181	0.59137	0.34167	0.96563	0.66667
33	0.86286	0.50815	0.34708	0.96954	0.67634
34	0.85562	0.45845	0.32875	0.96797	0.65591
35	0.85	0.42457	0.40417	0.96679	0.68495
36	0.8521	0.51144	0.35625	0.96646	0.66452
37	0.85924	0.5187	0.36708	0.96942	0.7
38	0.84952	0.47654	0.38583	0.96592	0.73118
39	0.8579	0.41893	0.37125	0.96958	0.64516
40	0.8581	0.44437	0.37083	0.9695	0.70968
41	0.85981	0.45199	0.35583	0.96898	0.69032
42	0.84962	0.49155	0.36333	0.96549	0.67849
43	0.85257	0.34957	0.34083	0.96588	0.69032
44	0.85057	0.47305	0.32917	0.96632	0.6914
45	0.8461	0.39781	0.31208	0.96617	0.73333
46	0.85381	0.54064	0.34167	0.96621	0.71075
47	0.85029	0.44259	0.29542	0.96592	0.7129
48	0.85571	0.40915	0.325	0.96594	0.71828

### 1.3.2 Problemas de clasificación con CV

**Tabla 29** Resultados afinamiento parámetros - IHDELS en problemas de clasificación con CV. Conjunto de datos I.

#	Conjunto de datos I de clasificación				
	Banknote	Blood	Car	Cardiotocography	Chart
1	0.99956	0.74933	0.83924	0.76367	0.90767
2	0.99978	0.74704	0.83953	0.76971	0.9105
3	0.99985	0.74691	0.83773	0.76433	0.91167
4	1	0.74933	0.84097	0.76395	0.9085
5	0.9997	0.74489	0.83819	0.76552	0.91067
6	1	0.74879	0.82627	0.75257	0.903
7	0.99985	0.74664	0.82807	0.75457	0.89433
8	0.99985	0.7496	0.83524	0.75576	0.89767
9	0.9997	0.74906	0.83038	0.75186	0.88233
10	0.99985	0.74745	0.82639	0.7539	0.89017
11	0.99985	0.74745	0.82523	0.75414	0.888
12	0.9997	0.74919	0.84039	0.76157	0.91733
13	0.99978	0.75027	0.82037	0.75176	0.9
14	0.99985	0.75054	0.84126	0.76229	0.91767
15	1	0.74812	0.84369	0.76543	0.91783
16	0.99963	0.74946	0.82917	0.75276	0.89283
17	0.99985	0.74704	0.83588	0.75086	0.90083
18	0.99993	0.75121	0.82413	0.75414	0.8995
19	0.99978	0.75067	0.83397	0.75286	0.89583
20	0.99985	0.7457	0.82841	0.75119	0.8935
21	0.99993	0.74798	0.84086	0.77067	0.91883
22	0.99985	0.75	0.83044	0.75352	0.898
23	0.99963	0.74409	0.82743	0.75181	0.8985
24	0.99993	0.74973	0.83779	0.76381	0.908
25	0.99993	0.75108	0.84265	0.76776	0.9185
26	0.9997	0.7496	0.82552	0.76833	0.917
27	0.99948	0.74973	0.82529	0.75381	0.89017
28	0.99985	0.74718	0.81956	0.75695	0.89
29	0.99985	0.74879	0.84288	0.7589	0.905
30	0.99978	0.75121	0.82726	0.75452	0.90033
31	0.99963	0.74704	0.83536	0.76533	0.91417
32	0.99985	0.74839	0.825	0.75429	0.89833
33	0.99993	0.74852	0.83657	0.76781	0.91883
34	0.99993	0.74933	0.83692	0.75805	0.8995
35	0.99993	0.74785	0.82471	0.75067	0.89917
36	0.99978	0.74704	0.83241	0.75443	0.89817
37	0.99978	0.74758	0.83814	0.76581	0.91617
38	0.99993	0.74906	0.82378	0.75329	0.893
39	0.99993	0.74368	0.83814	0.76743	0.9175



40	0.99978	0.74973	0.84282	0.76495	0.9135
41	0.9997	0.75067	0.83171	0.76662	0.91733
42	0.99993	0.7457	0.83154	0.75052	0.89183
43	0.9997	0.7496	0.82679	0.7491	0.88867
44	0.99993	0.74839	0.82784	0.75576	0.89567
45	0.99985	0.75161	0.82668	0.75738	0.89283
46	0.99985	0.7539	0.83154	0.75381	0.8965
47	0.99978	0.74745	0.82639	0.7539	0.89017
48	1	0.74812	0.83281	0.75562	0.8985

**Tabla 30** Resultados afinamiento parámetros - IHDELS en problemas de clasificación con CV. Conjunto de datos II.

#	Conjunto de datos II de clasificación				
	Dermatology	Fertility	Haberman	Hayes	Hill
1	0.96284	0.64667	0.72582	0.66439	0.63927
2	0.96749	0.66889	0.7219	0.65682	0.64472
3	0.96503	0.67778	0.72255	0.65909	0.64026
4	0.9653	0.67667	0.7232	0.66061	0.6429
5	0.96202	0.67778	0.7317	0.67727	0.65116
6	0.96421	0.65778	0.71569	0.66136	0.61733
7	0.96175	0.66111	0.72255	0.66515	0.60726
8	0.96038	0.65111	0.7232	0.67652	0.62129
9	0.9612	0.66333	0.72418	0.66742	0.62343
10	0.96858	0.69	0.72516	0.68333	0.60957
11	0.96557	0.65444	0.71699	0.66288	0.6137
12	0.96557	0.63111	0.72255	0.66818	0.64686
13	0.96585	0.67222	0.72843	0.66136	0.61931
14	0.96421	0.66889	0.72255	0.68636	0.63762
15	0.96858	0.64778	0.72288	0.67121	0.65594
16	0.95492	0.66444	0.7281	0.67955	0.62393
17	0.96148	0.67444	0.72647	0.66591	0.62096
18	0.9571	0.63778	0.71928	0.66061	0.62178
19	0.96066	0.66444	0.72516	0.66894	0.61799
20	0.96311	0.63667	0.72124	0.67045	0.61023
21	0.96831	0.65556	0.71961	0.69394	0.64505
22	0.96694	0.65889	0.71732	0.69545	0.61205
23	0.96667	0.65889	0.72255	0.64697	0.6203
24	0.96257	0.66556	0.72582	0.66061	0.65083
25	0.96557	0.65556	0.7219	0.66439	0.64917
26	0.9582	0.66111	0.72549	0.68182	0.64158
27	0.96612	0.67	0.72026	0.67879	0.61997
28	0.96284	0.66111	0.72516	0.66136	0.61881
29	0.96694	0.66444	0.72484	0.67652	0.63432
30	0.96284	0.64222	0.72353	0.65985	0.61865

31	0.97049	0.64889	0.72353	0.65985	0.65231
32	0.96393	0.65111	0.71863	0.66288	0.60908
33	0.9612	0.66889	0.72582	0.675	0.65644
34	0.96448	0.66556	0.72092	0.67273	0.617
35	0.96202	0.69222	0.72026	0.66288	0.6132
36	0.96257	0.66111	0.71536	0.68333	0.60825
37	0.96339	0.66444	0.72614	0.67879	0.64769
38	0.96721	0.64222	0.72092	0.65455	0.62492
39	0.96284	0.65556	0.72549	0.65833	0.64488
40	0.96339	0.66222	0.72549	0.67045	0.65033
41	0.96257	0.66222	0.72124	0.68106	0.64818
42	0.96366	0.65333	0.72124	0.65682	0.61518
43	0.96475	0.65889	0.72418	0.66212	0.59818
44	0.96339	0.68556	0.72255	0.66742	0.61535
45	0.96475	0.66222	0.71928	0.66061	0.62261
46	0.96557	0.64667	0.72451	0.67879	0.61782
47	0.96858	0.69	0.72516	0.68333	0.60957
48	0.9612	0.68556	0.72092	0.67576	0.61848

**Tabla 31** Resultados afinamiento parámetros - IHDELS en problemas de clasificación con CV. Conjunto de datos III.

#	Conjunto de datos III de clasificación				
	Ionosphere	Letter	Libras	Optdigits	Pen
1	0.85014	0.68699	0.762	0.88327	0.9062
2	0.84501	0.69027	0.77367	0.88548	0.91189
3	0.84758	0.69112	0.763	0.88462	0.91494
4	0.84217	0.68931	0.763	0.88594	0.91443
5	0.85442	0.69178	0.78133	0.88455	0.91494
6	0.85271	0.67168	0.75733	0.87206	0.89997
7	0.85271	0.66811	0.763	0.8695	0.89669
8	0.84644	0.6727	0.759	0.87184	0.89309
9	0.85071	0.67085	0.739	0.87065	0.89806
10	0.83875	0.66953	0.75867	0.87123	0.89381
11	0.84416	0.66925	0.75167	0.87151	0.89123
12	0.84929	0.6921	0.765	0.88807	0.91187
13	0.84416	0.67138	0.74467	0.86741	0.89821
14	0.84131	0.68319	0.78133	0.88032	0.90558
15	0.85157	0.69269	0.77767	0.88757	0.91533
16	0.84501	0.67102	0.76733	0.86893	0.89844
17	0.8453	0.67244	0.748	0.86902	0.89695
18	0.849	0.67012	0.75667	0.86824	0.89686
19	0.84131	0.66855	0.75467	0.8629	0.89859
20	0.84444	0.67294	0.744	0.87472	0.89232
21	0.85242	0.69237	0.77	0.88386	0.91682

22	0.84672	0.67276	0.753	0.86809	0.89806
23	0.83932	0.67303	0.75133	0.87418	0.89824
24	0.84758	0.69246	0.772	0.88251	0.91292
25	0.85185	0.69023	0.77233	0.88789	0.91204
26	0.84587	0.69136	0.76967	0.87681	0.91403
27	0.8396	0.66898	0.761	0.87177	0.8972
28	0.85641	0.67119	0.75433	0.87303	0.89485
29	0.85755	0.68475	0.756	0.87939	0.90798
30	0.84416	0.67138	0.74967	0.87529	0.89595
31	0.85242	0.69243	0.78233	0.88965	0.91293
32	0.84843	0.66829	0.749	0.87446	0.89849
33	0.84103	0.69168	0.78433	0.88855	0.91532
34	0.84501	0.67264	0.754	0.87255	0.9009
35	0.84359	0.67093	0.75333	0.86995	0.89713
36	0.84188	0.66995	0.75767	0.87188	0.89604
37	0.84758	0.69074	0.76733	0.88603	0.91199
38	0.84387	0.67429	0.75933	0.87308	0.896
39	0.84644	0.68971	0.77533	0.88321	0.91378
40	0.84017	0.69266	0.77967	0.88182	0.91514
41	0.85071	0.69349	0.76833	0.88091	0.91252
42	0.84786	0.66645	0.74767	0.86986	0.89854
43	0.83732	0.66833	0.75633	0.87464	0.89783
44	0.83191	0.67106	0.748	0.87069	0.89652
45	0.83846	0.66681	0.74967	0.87116	0.89649
46	0.84815	0.67055	0.74333	0.87143	0.89606
47	0.83875	0.66953	0.75867	0.87123	0.89381
48	0.83903	0.67203	0.74	0.87212	0.89767

**Tabla 32** Resultados afinamiento parámetros - IHDELS en problemas de clasificación con CV. Conjunto de datos IV.

#	Conjunto de datos IV de clasificación				
	QSARBiodegradation	Shuttle	SPECTF	Wilt	Zoo
1	0.85743	0.47143	0.33125	0.96894	0.76237
2	0.86086	0.49613	0.3575	0.96906	0.6828
3	0.86019	0.42351	0.34208	0.96948	0.72581
4	0.85648	0.50746	0.39542	0.96917	0.70323
5	0.86229	0.50089	0.31375	0.96981	0.75914
6	0.84886	0.51407	0.37458	0.96487	0.66022
7	0.852	0.48626	0.32625	0.96559	0.63871
8	0.84962	0.52254	0.39417	0.96613	0.64516
9	0.8521	0.4923	0.37208	0.9659	0.68817
10	0.85029	0.44259	0.29542	0.96592	0.7129
11	0.85114	0.45191	0.33708	0.96565	0.69247
12	0.8579	0.43446	0.35458	0.96888	0.73548

13	0.84943	0.56425	0.345	0.96557	0.63763
14	0.8599	0.51269	0.34208	0.9689	0.7172
15	0.86095	0.52875	0.3125	0.96886	0.7
16	0.85486	0.54061	0.29625	0.96578	0.70108
17	0.84895	0.52355	0.37167	0.96539	0.67957
18	0.84762	0.45217	0.32708	0.96601	0.64624
19	0.84838	0.62174	0.32625	0.96725	0.67849
20	0.85105	0.4457	0.3325	0.9652	0.74194
21	0.85857	0.45494	0.31708	0.96956	0.77419
22	0.85038	0.43453	0.36792	0.96576	0.6
23	0.85095	0.45526	0.37167	0.96592	0.67312
24	0.86124	0.40788	0.36	0.96915	0.7871
25	0.85714	0.46649	0.36	0.96964	0.73118
26	0.85924	0.43702	0.34667	0.9684	0.72366
27	0.84943	0.4944	0.3325	0.96487	0.7043
28	0.85267	0.59782	0.34083	0.96539	0.65161
29	0.85638	0.47954	0.32458	0.96762	0.76452
30	0.85057	0.37203	0.345	0.96545	0.61505
31	0.85914	0.45731	0.36292	0.97055	0.75699
32	0.85181	0.59137	0.34167	0.96563	0.66667
33	0.86286	0.50815	0.34708	0.96954	0.67634
34	0.85562	0.45845	0.32875	0.96797	0.65591
35	0.85	0.42457	0.40417	0.96679	0.68495
36	0.8521	0.51144	0.35625	0.96646	0.66452
37	0.85924	0.5187	0.36708	0.96942	0.7
38	0.84952	0.47654	0.38583	0.96592	0.73118
39	0.8579	0.41893	0.37125	0.96958	0.64516
40	0.8581	0.44437	0.37083	0.9695	0.70968
41	0.85981	0.45199	0.35583	0.96898	0.69032
42	0.84962	0.49155	0.36333	0.96549	0.67849
43	0.85257	0.34957	0.34083	0.96588	0.69032
44	0.85057	0.47305	0.32917	0.96632	0.6914
45	0.8461	0.39781	0.31208	0.96617	0.73333
46	0.85381	0.54064	0.34167	0.96621	0.71075
47	0.85029	0.44259	0.29542	0.96592	0.7129
48	0.85571	0.40915	0.325	0.96594	0.71828

### 1.3.3 Problemas de regresión con TT

**Tabla 33** Resultados afinamiento parámetros - IHDELS en problemas de regresión con TT. Conjunto de datos I.

#	Conjunto de datos I de regresión			
	AutoMpg	AutoPrice	BodyFat	Cpu
1	0.22201	0.00025	0.43001	0.04215
2	0.21937	0.00027	0.41345	0.0423
3	0.22204	0.00028	0.39539	0.04716
4	0.21987	0.00027	0.43035	0.03362
5	0.2202	0.00027	0.42137	0.04176
6	0.22525	0.00025	0.41896	0.0318
7	0.22403	0.00027	0.4194	0.04143
8	0.22528	0.00024	0.39081	0.03175
9	0.22678	0.00027	0.41048	0.03587
10	0.22332	0.00028	0.40491	0.04012
11	0.22433	0.00027	0.39186	0.03071
12	0.22131	0.00026	0.43279	0.03272
13	0.22487	0.00028	0.40634	0.03869
14	0.22355	0.00027	0.42406	0.03143
15	0.22108	0.00025	0.44332	0.02809
16	0.22732	0.00025	0.41338	0.03254
17	0.2263	0.00026	0.42023	0.03172
18	0.22504	0.00026	0.4123	0.03618
19	0.22625	0.00026	0.39965	0.04065
20	0.22549	0.00027	0.41277	0.03782
21	0.22038	0.00026	0.43434	0.03647
22	0.22203	0.00027	0.40735	0.05457
23	0.22363	0.00026	0.42155	0.03685
24	0.22272	0.00027	0.42101	0.03785
25	0.21951	0.00025	0.41753	0.03811
26	0.22397	0.00028	0.42108	0.0341
27	0.22511	0.00027	0.3946	0.03658
28	0.22512	0.00026	0.41651	0.04042
29	0.22136	0.00027	0.41061	0.04896
30	0.22446	0.00025	0.40066	0.02589
31	0.22204	0.00026	0.41363	0.02898
32	0.22544	0.00027	0.3857	0.0528
33	0.22031	0.00025	0.43957	0.03808
34	0.22237	0.00027	0.38867	0.03681
35	0.22434	0.00027	0.4121	0.03925
36	0.2264	0.00025	0.39742	0.03413
37	0.22254	0.00025	0.43505	0.02683
38	0.22279	0.00028	0.40305	0.0332
39	0.22118	0.00029	0.42331	0.03328

40	0.22077	0.00025	0.40542	0.03426
41	0.22399	0.00026	0.42111	0.03983
42	0.2234	0.00025	0.40535	0.04457
43	0.22243	0.00027	0.40364	0.04405
44	0.22506	0.00025	0.4118	0.04174
45	0.22426	0.00025	0.41062	0.03933
46	0.22433	0.00029	0.38856	0.04662
47	0.22332	0.00028	0.40491	0.04012
48	0.2252	0.00027	0.39116	0.03636

**Tabla 34** Resultados afinamiento parámetros - IHDELS en problemas de regresión con TT. Conjunto de datos II.

#	Conjunto de datos II de regresión			
	Housing	Sensory	Servo	Veteran
1	0.18989	0.54892	0.47211	0.00383
2	0.19382	0.55129	0.46178	0.0043
3	0.18987	0.55452	0.46384	0.00429
4	0.1895	0.55554	0.46837	0.00414
5	0.18985	0.55212	0.47007	0.00394
6	0.18681	0.54714	0.47071	0.00446
7	0.18679	0.54716	0.46377	0.00484
8	0.18765	0.54795	0.46246	0.00447
9	0.18131	0.5444	0.4646	0.00432
10	0.1828	0.54627	0.46354	0.00436
11	0.18106	0.54734	0.46261	0.00405
12	0.19218	0.55262	0.46995	0.00422
13	0.18162	0.54931	0.46435	0.00439
14	0.18927	0.54741	0.47129	0.0047
15	0.18758	0.55004	0.46844	0.00428
16	0.18521	0.54446	0.46334	0.00416
17	0.18347	0.54589	0.46519	0.00425
18	0.18515	0.54489	0.46456	0.00439
19	0.18948	0.54749	0.47005	0.00408
20	0.18693	0.54833	0.46848	0.00452
21	0.18931	0.55438	0.4649	0.00421
22	0.18705	0.54325	0.46771	0.00439
23	0.186	0.54722	0.46562	0.00426
24	0.18713	0.5501	0.46615	0.00387
25	0.18743	0.552	0.45906	0.00454
26	0.19053	0.54951	0.47699	0.00399
27	0.18308	0.54615	0.46816	0.00426
28	0.18772	0.54701	0.46508	0.00433
29	0.18798	0.54938	0.4654	0.00434
30	0.18635	0.54257	0.46709	0.00443

31	0.19083	0.55249	0.47364	0.00382
32	0.18518	0.54255	0.46725	0.0046
33	0.18947	0.54868	0.4664	0.00394
34	0.18748	0.54618	0.46419	0.00421
35	0.18811	0.54553	0.46415	0.00438
36	0.18733	0.54445	0.46575	0.00429
37	0.19005	0.55494	0.4715	0.00437
38	0.18502	0.54569	0.46232	0.00445
39	0.19277	0.55085	0.47029	0.00412
40	0.18652	0.55245	0.46862	0.00397
41	0.1899	0.55198	0.46493	0.0041
42	0.18392	0.54538	0.46479	0.00456
43	0.18839	0.54578	0.47092	0.00439
44	0.18653	0.54954	0.46525	0.00443
45	0.18801	0.54603	0.46533	0.00404
46	0.18161	0.5471	0.47596	0.00467
47	0.1828	0.54627	0.46354	0.00436
48	0.18708	0.54163	0.46077	0.00422

### 1.3.4 Problemas de regresión con CV

*Tabla 35 Resultados afinamiento parámetros - IHDELS en problemas de regresión con CV. Conjunto de datos I.*

#	Conjunto de datos I de regresión			
	AutoMpg	AutoPrice	BodyFat	Cpu
1	0.22201	0.00025	0.43001	0.04215
2	0.21937	0.00027	0.41345	0.0423
3	0.22204	0.00028	0.39539	0.04716
4	0.21987	0.00027	0.43035	0.03362
5	0.2202	0.00027	0.42137	0.04176
6	0.22525	0.00025	0.41896	0.0318
7	0.22403	0.00027	0.4194	0.04143
8	0.22528	0.00024	0.39081	0.03175
9	0.22678	0.00027	0.41048	0.03587
10	0.22332	0.00028	0.40491	0.04012
11	0.22433	0.00027	0.39186	0.03071
12	0.22131	0.00026	0.43279	0.03272
13	0.22487	0.00028	0.40634	0.03869
14	0.22355	0.00027	0.42406	0.03143
15	0.22108	0.00025	0.44332	0.02809
16	0.22732	0.00025	0.41338	0.03254
17	0.2263	0.00026	0.42023	0.03172
18	0.22504	0.00026	0.4123	0.03618
19	0.22625	0.00026	0.39965	0.04065

20	0.22549	0.00027	0.41277	0.03782
21	0.22038	0.00026	0.43434	0.03647
22	0.22203	0.00027	0.40735	0.05457
23	0.22363	0.00026	0.42155	0.03685
24	0.22272	0.00027	0.42101	0.03785
25	0.21951	0.00025	0.41753	0.03811
26	0.22397	0.00028	0.42108	0.0341
27	0.22511	0.00027	0.3946	0.03658
28	0.22512	0.00026	0.41651	0.04042
29	0.22136	0.00027	0.41061	0.04896
30	0.22446	0.00025	0.40066	0.02589
31	0.22204	0.00026	0.41363	0.02898
32	0.22544	0.00027	0.3857	0.0528
33	0.22031	0.00025	0.43957	0.03808
34	0.22237	0.00027	0.38867	0.03681
35	0.22434	0.00027	0.4121	0.03925
36	0.2264	0.00025	0.39742	0.03413
37	0.22254	0.00025	0.43505	0.02683
38	0.22279	0.00028	0.40305	0.0332
39	0.22118	0.00029	0.42331	0.03328
40	0.22077	0.00025	0.40542	0.03426
41	0.22399	0.00026	0.42111	0.03983
42	0.2234	0.00025	0.40535	0.04457
43	0.22243	0.00027	0.40364	0.04405
44	0.22506	0.00025	0.4118	0.04174
45	0.22426	0.00025	0.41062	0.03933
46	0.22433	0.00029	0.38856	0.04662
47	0.22332	0.00028	0.40491	0.04012
48	0.2252	0.00027	0.39116	0.03636

**Tabla 36** Resultados afinamiento parámetros - IHDELS en problemas de regresión con CV. Conjunto de datos II.

#	Conjunto de datos II de regresión			
	Housing	Sensory	Servo	Veteran
1	0.18989	0.54892	0.47211	0.00383
2	0.19382	0.55129	0.46178	0.0043
3	0.18987	0.55452	0.46384	0.00429
4	0.1895	0.55554	0.46837	0.00414
5	0.18985	0.55212	0.47007	0.00394
6	0.18681	0.54714	0.47071	0.00446
7	0.18679	0.54716	0.46377	0.00484
8	0.18765	0.54795	0.46246	0.00447
9	0.18131	0.5444	0.4646	0.00432



10	0.1828	0.54627	0.46354	0.00436
11	0.18106	0.54734	0.46261	0.00405
12	0.19218	0.55262	0.46995	0.00422
13	0.18162	0.54931	0.46435	0.00439
14	0.18927	0.54741	0.47129	0.0047
15	0.18758	0.55004	0.46844	0.00428
16	0.18521	0.54446	0.46334	0.00416
17	0.18347	0.54589	0.46519	0.00425
18	0.18515	0.54489	0.46456	0.00439
19	0.18948	0.54749	0.47005	0.00408
20	0.18693	0.54833	0.46848	0.00452
21	0.18931	0.55438	0.4649	0.00421
22	0.18705	0.54325	0.46771	0.00439
23	0.186	0.54722	0.46562	0.00426
24	0.18713	0.5501	0.46615	0.00387
25	0.18743	0.552	0.45906	0.00454
26	0.19053	0.54951	0.47699	0.00399
27	0.18308	0.54615	0.46816	0.00426
28	0.18772	0.54701	0.46508	0.00433
29	0.18798	0.54938	0.4654	0.00434
30	0.18635	0.54257	0.46709	0.00443
31	0.19083	0.55249	0.47364	0.00382
32	0.18518	0.54255	0.46725	0.0046
33	0.18947	0.54868	0.4664	0.00394
34	0.18748	0.54618	0.46419	0.00421
35	0.18811	0.54553	0.46415	0.00438
36	0.18733	0.54445	0.46575	0.00429
37	0.19005	0.55494	0.4715	0.00437
38	0.18502	0.54569	0.46232	0.00445
39	0.19277	0.55085	0.47029	0.00412
40	0.18652	0.55245	0.46862	0.00397
41	0.1899	0.55198	0.46493	0.0041
42	0.18392	0.54538	0.46479	0.00456
43	0.18839	0.54578	0.47092	0.00439
44	0.18653	0.54954	0.46525	0.00443
45	0.18801	0.54603	0.46533	0.00404
46	0.18161	0.5471	0.47596	0.00467
47	0.1828	0.54627	0.46354	0.00436
48	0.18708	0.54163	0.46077	0.00422

## **ANEXO II. ARTICULO**

El artículo se presenta con el formato Lecture Notes in Computer Science y corresponde a un resumen de los resultados obtenidos en el trabajo de investigación.

