

Supplementary material for “Grab’Em: A novel graph-based method for combining feature subset selectors”

I. EXPERIMENTAL METHODOLOGY

Figure 1 show the method used for evaluating all the methods as an example of the first fold of a 10-fold cross-validation method.

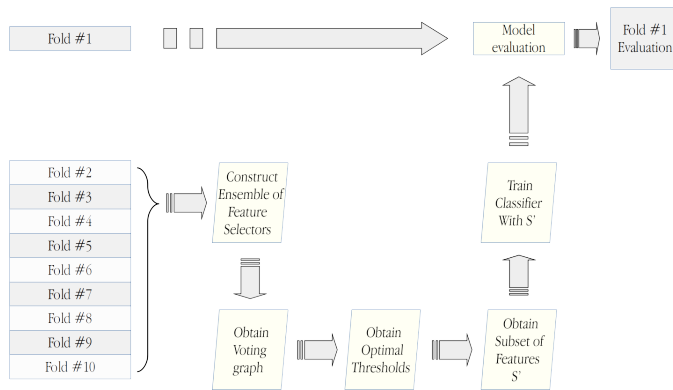


Fig. 1. Representation of the applied method for the first fold of the 10-fold cross-validation approach used.

II. TABLES: DATASETS

Datasets used for all the experiments.

TABLE I
SUMMARY OF DATASETS FOR THE DATA DIVISION TASK.

	Dataset	Instances	Features	Classes
1	abalone	4,177	10	29
2	adult	48,842	105	2
3	bank	41,188	62	2
4	barleyblumeria	4,340	64	2
5	census	299,285	409	2
6	chrom19	1,700,517	5	2
7	clave	10,800	16	2
8	cottonmeloiodogyne	4,156	64	2
9	covtype	581,012	54	7
10	default	30,000	23	2
11	dota2	102,944	116	2
12	eeg	59,069	72	16
13	exon.vs.intron-freq	506,373	64	2
14	farm-ads	4,143	54,877	2
15	gas	13,910	128	6
16	gisette	7,000	5,000	2
17	hiv1-proteasa	5,938	160	2
18	hiva	4,229	1,617	2
19	ht-sensor	928,991	11	3
20	htru2	17,898	8	2
21	isolet	7,797	617	26
22	jvowels	9,961	14	9
23	kdc-4007	4,007	24,803	8
24	krkopt	28,056	6	18
25	letter	20,000	16	26
26	localization	164,860	31	11
27	magic04	19,020	10	2
28	musk	6,598	166	2
29	ncRNA	1,963,479	20	19
30	new3s-wc	9,523	26,832	44
31	newspop	39,644	59	2
32	nomao	34,465	172	2
33	nursery	12,960	23	5
34	occupancy	20,560	5	2
35	ohscal-wc	11,162	11,465	10
36	opn310k	104,812	200	2
37	optdigits	5,620	64	10
38	p53-mutants	31,420	5,408	2
39	page-blocks	5,473	10	5
40	particle	130,064	50	2
41	pendigits	10,992	16	10
42	phoneme	5,404	5	2
43	poker	1,025,103	25	10
44	polish-1st	7,027	64	2
45	polish-2nd	10,173	64	2
46	polish-3rd	10,503	64	2
47	polish-4th	9,792	64	2
48	polish-5th	5,910	64	2
49	polya	9,255	169	2
50	popularity	39,644	59	3
51	puc-rio	165,633	21	5
52	reuters21578	8,293	18,933	65
53	satimage	6,435	36	6
54	sensorless	58,509	48	11
55	shuttle	58,000	9	7
56	skin	244,801	3	2
57	spambase	4,601	57	2
58	texture	5,500	40	11
59	theorem	6,118	56	2
60	tis	13,375	927	2
61	tvnews	129,685	231	2
62	waveform	5,000	40	3
63	wilt	4,839	5	2
64	winequality-white	4,898	11	7
65	zip	9,298	256	10

TABLE II
SUMMARY OF DATASETS FOR TESTING THE ENSEMBLES (1/2).

	Dataset	Instances	Features	Classes
1	ads	3,279	1,558	2
2	adult	48,842	105	2
3	AID1284Moredred	362	914	2
4	AID1284red	362	103	2
5	AID1608Moredred	1,033	914	2
6	AID1608red	1,033	154	2

TABLE III
SUMMARY OF DATASETS FOR TESTING THE ENSEMBLES (2/2).

	Dataset	Instances	Features	Classes
7	AID362red	4,279	144	2
8	AID373AID439red	59,795	154	2
9	AID373red	59,788	155	2
10	AID439Morered	69	914	2
11	AID439red	69	81	2
12	AID456red	9,982	153	2
13	AID604AID644_AllRed	59,782	154	2
14	AID644Morered	206	914	2
15	AID644red	206	100	2
16	AID687AID721red	33,067	153	2
17	AID687red	33,067	153	2
18	AID688red	27,189	153	2
19	AID721morered	94	914	2
20	AID721red	94	87	2
21	AID746AID1284red	59,784	154	2
22	AID746red	59,788	154	2
23	all-aml	72	7,129	2
24	anneal	898	59	5
25	antivirus	372	531	2
26	arcene	200	10,000	2
27	arrhythmia	452	279	13
28	audiology	226	93	24
29	autos	205	72	6
30	bank	41,188	62	2
31	barleyblumeria	4,340	64	2
32	basehock	1,993	4,862	2
33	card	690	51	2
34	cargo2k	3,942	97	3
35	central-nervous-system	60	7,129	2
36	cjs	2,796	100	6
37	cnae-9	1,080	856	9
38	collins	500	160	15
39	colon-tumor	62	2,000	2
40	cottonmeloidogyne	4,156	64	2
41	cyclopentane	271	128	2
42	cylinder-bands	540	564	2
43	dlbcl-stanford	47	4,026	2
44	eeg	59,069	72	16
45	eucalyptus	736	91	5
46	fbis-wc	2,463	2,000	17
47	flags	194	242	8
48	gas	13,910	128	6
49	gene	3,175	120	3
50	german	1,000	61	2
51	gina	3,468	970	2
52	hERG-121inputs	65	121	2
53	hERG-64inputs	65	64	2
54	hiv1-proteasa	5,938	160	2
55	hiva	4,229	1,617	2
56	horse	364	58	3
57	isolet	7,797	617	26
58	libra	360	90	15
59	lrs	531	101	10
60	lung-cancer-ontario	39	2,880	2
61	madelon	2,600	500	2
62	mfeat-fac	2,000	216	10
63	mfeat-fou	2,000	76	10
64	mfeat-kar	2,000	64	10
65	mfeat-pix	2,000	240	10
66	mice-prot	1,080	80	8
67	mushroom	8,124	117	2
68	musk	6,598	166	2
69	newspop	39,644	59	2
70	optdigits	5,620	64	10
71	ovarian-cancer	253	15,154	2
72	ozone1hr	2,536	72	2
73	ozone8hr	2,534	72	2
74	pcmac	1,943	3,289	2
75	polish-1st	7,027	64	2
76	polish-2nd	10,173	64	2
77	polish-3rd	10,503	64	2
78	polish-4th	9,792	64	2
79	polish-5th	5,910	64	2
80	polya	9,255	169	2
81	profb	672	67	2
82	promoters	106	114	2
83	prostate	136	12,600	2
84	re0-wc	1,504	2,886	13
85	re1-wc	1,657	3,758	25
86	secom	1,567	590	2
87	semeion	1,593	265	2
88	soybean	683	82	19
89	spambase	4,601	57	2
90	spectrometer	531	101	48
91	student-weekend	649	57	5
92	student-workday	649	57	5
93	theorem	6,118	56	2
94	voice	126	310	2
95	zip	9,298	256	10

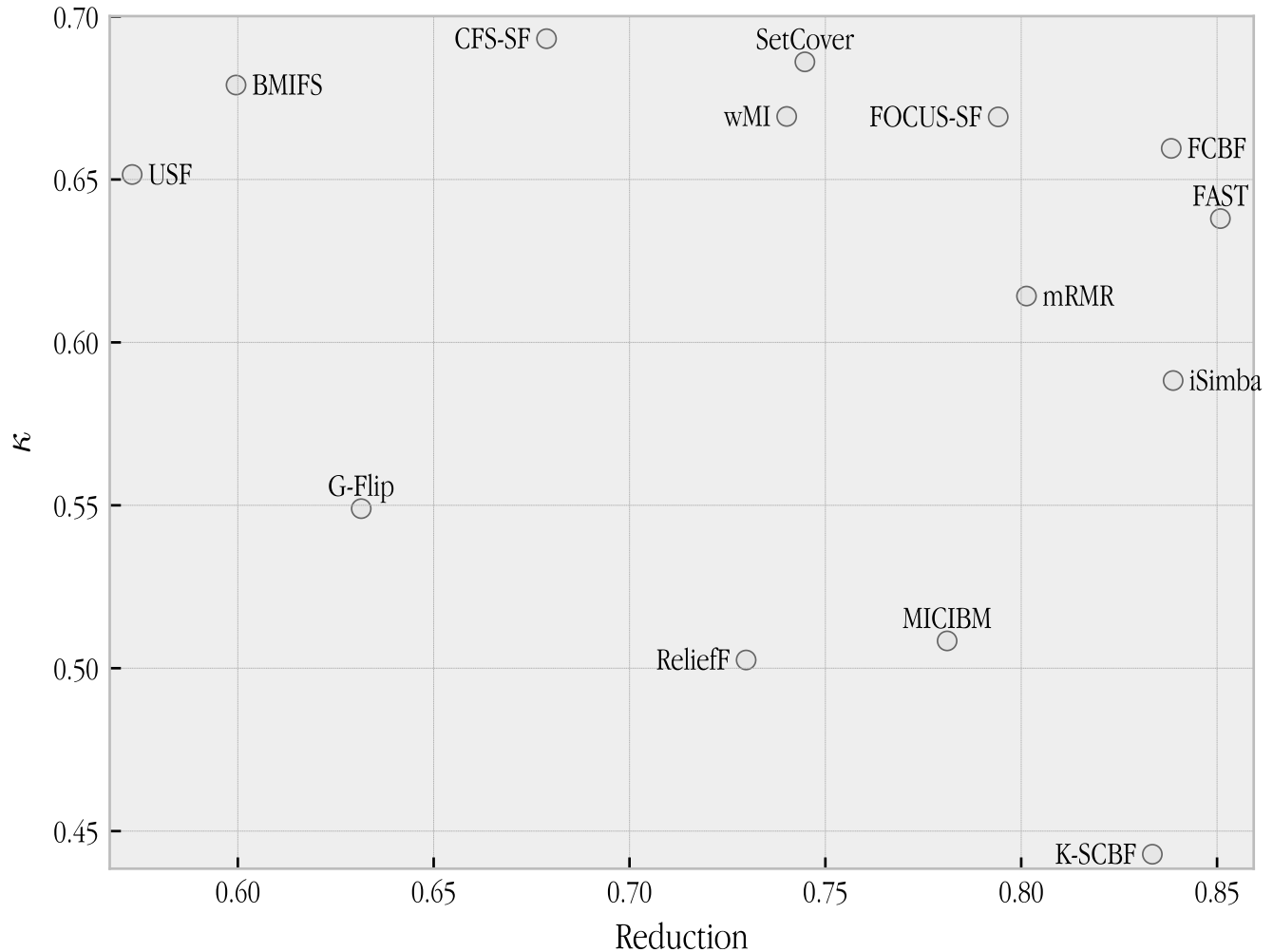


Fig. 2. Reduction and κ average results for the tested feature selection methods using a random forest as classification method.

III. PRELIMINARY COMPARISON OF METHODS

Due to the large number of experiments that are reported in the paper, it is not possible to show the results with many different feature selectors due to length constraints. Thus, we performed a set of preliminary experiments where fourteen different feature selectors were tested in a set of 100 medium problems. The methods tested were: BMIFS [1], CFS-SF [2], FAST [3], FCBF [4], FOCUS-SF [5], G-Flip [6], iSimba [7], K-SCBF [8], MICIBM [9], mRMR [10], ReliefF [11], SetCover [12], UFS [13] and wMI [14].

Figure 2 shows the averaged values of every method for reduction and classification performance using κ measure. Methods in the top right corner exhibited the best behavior in terms of the combined reduction/classification performance. Methods such as BMIFS, CFS-SF, wMI, SetCover and FOCUS-SF achieved a good classification accuracy but with an inferior reduction. FCBF showed the best performance in terms of a good classification accuracy and the second best reduction average. Thus, we selected FCBF as the method to be used in the reported experiments.

However, as the feature selector is a hyper-parameter of our proposal, any other method could be used.

IV. TABLES: DETAILED RESULTS

Detailed results for all the experiments reported. All experiments were performed using ten-fold cross-validation.

A. Detailed results for k -nearest neighbor

Detailed results for the experiments using a k -nearest neighbor rule as classifier.

TABLE IV
REDUCTION RESULTS FOR THE STRATIFICATION APPROACH USING FCBF
AND THE NN LEARNING RULE.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Grab'Em.3
abalone	0.9000	0.9000	0.9000	0.9000
adult	0.9438	0.9457	0.9410	0.9429
bank	0.9129	0.9419	0.9226	0.9355
barleyblumeria	0.8812	0.8422	0.8484	0.8406
census	0.9707	0.9719	0.9714	0.9724
chrom19	0.0000	0.0000	0.0000	0.0000
clave	0.8632	0.8632	0.8632	0.8632
cottonmeloidogyne	0.8125	0.7937	0.7984	0.7891
covtype	0.9593	0.8315	0.9630	0.9630
default	0.9043	0.9000	0.9000	0.9043
dota2	0.7578	0.8034	0.8000	0.8086
egg	0.9167	0.8653	0.9028	0.8875
exon.vs.intron-freq	0.9094	0.9125	0.8906	0.9531
farm-ads	0.9877	0.9877	0.9877	0.9877
gas	0.9156	0.9156	0.9156	0.9156
gisette	0.9922	0.9922	0.9923	0.9923
hiv1-proteasa	0.7869	0.7919	0.7869	0.7675
hiva	0.9621	0.9645	0.9630	0.9631
ht-sensor	0.7273	0.7273	0.7273	0.7273
htru2	0.7625	0.8125	0.8125	0.8125
isolet	0.9139	0.9104	0.9010	0.9021
jvowels	0.4000	0.4000	0.4000	0.4000
kdc-4007	0.9639	0.9639	0.9639	0.9639
krkopt	0.1667	0.1667	0.1667	0.1667
letter	0.3937	0.3937	0.3937	0.3937
localization	0.9032	0.8742	0.9032	0.8871
magic04	0.7600	0.7600	0.7600	0.7600
musk	0.9530	0.9422	0.9349	0.9367
ncRNA	0.9500	0.6000	0.9000	0.6500
new3s-wc	0.9942	0.9930	0.9926	0.9926
newspop	0.8712	0.8627	0.8492	0.8492
nomao	0.9535	0.9610	0.9587	0.9564
nursery	0.7696	0.7261	0.7217	0.7348
occupancy	0.8000	0.8000	0.8000	0.8000
ohscal-wc	0.9983	0.9984	0.9983	0.9982
opn310k	0.9350	0.9700	0.9000	0.9300
optdigits	0.7891	0.7891	0.7891	0.7891
p53-mutants	0.9957	0.9959	0.9959	0.9959
page-blocks	0.7800	0.7800	0.7800	0.7700
particle	0.8920	0.8360	0.8800	0.8260
pendigits	0.4500	0.4500	0.4500	0.4500
phoneme	0.8000	0.7600	0.7800	0.7600
poker	0.8000	0.8000	0.8000	0.8000
polish-1st	0.7750	0.7609	0.7844	0.7922
polish-2nd	0.8156	0.9219	0.8578	0.8859
polish-3rd	0.8750	0.8641	0.8438	0.9141
polish-4th	0.9453	0.9531	0.9375	0.9437
polish-5th	0.9734	0.9688	0.9734	0.9734
polya	0.9213	0.9112	0.9041	0.9183
popularity	0.8508	0.8627	0.8508	0.8339
puc-rio	0.8238	0.8048	0.8048	0.8048
reuters21578	0.9976	0.9977	0.9976	0.9972
satimage	0.8972	0.8889	0.8917	0.8889
sensorless	0.8521	0.9375	0.8854	0.9021
shuttle	0.7111	0.7444	0.7111	0.7111
skin	0.6667	0.6667	0.6667	0.6667
spambase	0.8263	0.8228	0.8088	0.8105
texture	0.8625	0.8550	0.8475	0.8500
theorem	0.9107	0.9107	0.9107	0.9107
tis	0.0000	0.9921	0.9920	0.9920
tvnews	0.9662	0.9688	0.9697	0.9675
waveform	0.8725	0.8650	0.8725	0.8675
wilt	0.4400	0.3200	0.4000	0.3800
winequality-white	0.7545	0.7000	0.7273	0.7000
zip	0.9184	0.9121	0.9043	0.9137

TABLE V
 κ RESULTS FOR THE STRATIFICATION APPROACH USING FCBF AND THE
NN LEARNING RULE.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Grab'Em.3
abalone	0.0872	0.0872	0.0872	0.0872
adult	0.4067	0.4119	0.4194	0.4285
bank	0.4345	0.4302	0.4305	0.4316
barleyblumeria	0.5196	0.5419	0.5437	0.5422
census	0.4178	0.4272	0.4365	0.4371
chrom19	0.7488	0.7786	0.7864	0.7989
clave	0.0000	0.0000	0.0000	0.0000
cottonmeloidogyne	0.2187	0.2450	0.2228	0.2406
covtype	0.1561	0.2744	0.1827	0.1827
default	0.1066	0.1186	0.1136	0.1063
dota2	0.0262	0.0234	0.0225	0.0209
egg	0.1793	0.2150	0.1990	0.2086
exon.vs.intron-freq	0.8252	0.8228	0.8374	0.8018
farm-ads	0.7128	0.7128	0.7128	0.7128
gas	0.9791	0.9791	0.9791	0.9791
gisette	0.8369	0.8369	0.8369	0.8397
hiv1-proteasa	0.4351	0.4333	0.4351	0.4483
hiva	0.1589	0.1527	0.1581	0.1569
ht-sensor	0.9471	0.9471	0.9471	0.9471
htru2	0.7786	0.7748	0.7658	0.7658
isolet	0.8427	0.8614	0.8575	0.8551
jvowels	0.9738	0.9738	0.9738	0.9738
kdc-4007	0.5350	0.5350	0.5350	0.5350
krkopt	0.4290	0.4285	0.4285	0.4285
letter	0.9492	0.9492	0.9492	0.9492
localization	0.4254	0.4995	0.4254	0.4663
magic04	0.4208	0.4241	0.4208	0.4208
musk	0.7694	0.7703	0.7818	0.7861
ncRNA	0.3681	0.8592	0.8519	0.8519
new3s-wc	0.5901	0.6025	0.6100	0.6100
newspop	0.1143	0.1195	0.1232	0.1217
nomao	0.7319	0.7140	0.7266	0.7261
nursery	0.4308	0.5261	0.5271	0.5206
occupancy	0.8458	0.8458	0.8458	0.8458
ohscal-wc	0.4820	0.4775	0.4895	0.4960
opn310k	0.1995	0.1589	0.1911	0.1878
optdigits	0.9331	0.9331	0.9331	0.9331
p53-mutants	0.4542	0.4086	0.4542	0.3855
page-blocks	0.6822	0.6960	0.6822	0.7020
particle	0.5465	0.5957	0.5927	0.5939
pendigits	0.9680	0.9680	0.9680	0.9680
phoneme	0.3281	0.3554	0.3429	0.3538
poker	0.9237	0.9237	0.9237	0.9237
polish-1st	0.0563	0.0564	0.0577	0.0512
polish-2nd	0.0299	0.0258	0.0426	0.0459
polish-3rd	0.0362	0.0214	0.0409	0.0561
polish-4th	0.1341	0.1536	0.1578	0.1603
polish-5th	0.1634	0.2169	0.1634	0.1859
polya	0.3351	0.3307	0.3392	0.3338
popularity	0.0962	0.0927	0.0919	0.1092
puc-rio	0.8478	0.8726	0.8726	0.8726
reuters21578	0.6602	0.6623	0.6602	0.6673
satimage	0.7830	0.8047	0.7939	0.8027
sensorless	0.9911	0.9931	0.9911	0.9915
shuttle	0.9963	0.9956	0.9963	0.9963
skin	0.0000	0.0000	0.0000	0.0000
spambase	0.7210	0.7548	0.7641	0.7623
texture	0.9042	0.9311	0.9285	0.9359
theorem	1.0000	1.0000	1.0000	1.0000
tis	-0.0345	0.6032	0.6003	0.6003
tvnews	0.8087	0.7942	0.7941	0.7981
waveform	0.5573	0.5660	0.5573	0.5897
wilt	0.3056	0.4310	0.8011	0.3726
winequality-white	0.3561	0.4077	0.3730	0.3876
zip	0.9122	0.9319	0.9265	0.9239

TABLE VI
REDUCTION RESULTS FOR THE ENSEMBLE APPROACH USING BAGGING
AND FCBF METHOD AND THE NN LEARNING RULE.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Grab'Em.3
ads	0.9780	0.9810	0.9701	0.9774
adult	0.9524	0.9524	0.9524	0.9429
AID1284Morered	0.9671	0.9746	0.9729	0.9688
AID1284red	0.8932	0.9039	0.8631	0.8621
AID1608Morered	0.8569	0.9640	0.9536	0.9427
AID1608red	0.8955	0.9247	0.9052	0.8851
AID362red	0.8826	0.8139	0.8535	0.8340
AID373AID439red	0.7799	0.9571	0.9325	0.7773
AID373red	0.9484	0.9548	0.9484	0.9742
AID439Morered	0.8918	0.9887	0.9888	0.9880
AID439red	0.7469	0.9185	0.9222	0.9284
AID456red	0.0856	0.7843	0.8059	0.7902
AID604AID644_AllRed	0.9935	0.9935	0.9935	0.9935
AID644Morered	0.8611	0.9596	0.9639	0.9753
AID644red	0.9390	0.9020	0.9240	0.8820
AID687AID721red	0.0000	0.5673	0.5712	0.7660
AID687red	0.9150	0.9085	0.9216	0.9412
AID688red	0.0000	0.7928	0.8346	0.7150
AID721morered	0.0973	0.9919	0.9801	0.9874
AID721red	0.4885	0.9184	0.9322	0.9322
AID746AID1284red	0.9675	0.8117	0.9675	0.7792
AID746red	0.9156	0.8377	0.9026	0.8571
all-aml	0.9946	0.9944	0.9904	0.9947
anneal	0.9034	0.9051	0.8949	0.8915
antivirus	0.9921	0.9902	0.9915	0.9925
arcene	0.9758	0.9833	0.9701	0.9793
arrhythmia	0.9387	0.9355	0.9434	0.9355
audiology	0.9226	0.8860	0.8645	0.8989
autos	0.9306	0.9264	0.9306	0.9333
bank	0.9516	0.9516	0.9516	0.9516
barleyblumeria	0.8797	0.8578	0.8625	0.8641
basehock	0.9769	0.9681	0.9672	0.9734
card	0.9157	0.8941	0.8882	0.8922
cargo2k	0.9670	0.9742	0.9753	0.9763
central-nervous-system	0.9968	0.9962	0.9895	0.9956
cjs	0.5550	0.5740	0.5580	0.5500
cnac-9	0.9388	0.9173	0.9089	0.9193
collins	0.9938	0.9938	0.9938	0.9938
colon-tumor	0.9891	0.9925	0.9928	0.9928
cottonmeloidogyne	0.8484	0.8422	0.8594	0.8547
cyclopentane	0.9562	0.9367	0.9578	0.9563
cylinder-bands	0.9305	0.8596	0.8739	0.8972
dlbcl-stanford	0.9934	0.9923	0.9978	0.9959
eeg	0.8889	0.8750	0.8750	0.8889
eucalyptus	0.9527	0.9330	0.9363	0.9330
fbis-wc	0.9755	0.9708	0.9708	0.9759
flags	0.9835	0.9777	0.9764	0.9764
gas	0.9625	0.9617	0.9633	0.9625
gene	0.8858	0.8850	0.8800	0.8842
german	0.8213	0.8295	0.8082	0.8197
gina	0.9592	0.9645	0.9519	0.9660
hERG-121inputs	0.8851	0.9744	0.9769	0.9810
hERG-64inputs	0.9328	0.9547	0.9500	0.9297
hiv1-proteasa	0.8337	0.8162	0.7900	0.7819
hiva	0.9852	0.8541	0.8454	0.8466
horse	0.9293	0.9052	0.9276	0.9224
isolet	0.9206	0.9157	0.8995	0.9173
libra	0.8900	0.9000	0.8856	0.8867
lrs	0.9287	0.9347	0.9069	0.9406
lung-cancer-ontario	0.9957	0.9941	0.9976	0.9976
madelon	0.9854	0.9790	0.9726	0.9810
mfeat-fac	0.9250	0.9125	0.9083	0.9116
mfeat-fou	0.6592	0.6526	0.6750	0.6724
mfeat-kar	0.1797	0.1734	0.3375	0.1766
mfeat-pix	0.9221	0.9113	0.9108	0.9092
mice-prot	0.8838	0.8838	0.8875	0.8838
mushroom	0.8957	0.8991	0.8915	0.8852
musk	0.9524	0.9512	0.9386	0.9398
newspop	0.8475	0.7966	0.7627	0.7966
optdigits	0.7766	0.7797	0.7797	0.7812
ovarian-cancer	0.9986	0.9990	0.9987	0.9991
ozone1hr	0.8694	0.8583	0.8819	0.8597
ozone8hr	0.8583	0.8250	0.8500	0.8472
pcmac	0.7713	0.9566	0.9521	0.9555
polish-1st	0.9437	0.9453	0.9609	0.9422
polish-2nd	0.8891	0.9266	0.8984	0.8984
polish-3rd	0.9344	0.9500	0.9547	0.9516
polish-4th	0.9641	0.9672	0.9672	0.9625
polish-5th	0.9641	0.9594	0.9594	0.9641
polya	0.9408	0.9053	0.8899	0.8923
profb	0.0000	0.8955	0.8582	0.8657
promoters	0.9272	0.9342	0.9079	0.9167
prostate	0.9952	0.9968	0.9937	0.9963
re0-wc	0.9812	0.9819	0.9790	0.9841
re1-wc	0.9883	0.9862	0.9896	0.9832
secom	0.8629	0.9788	0.9558	0.9831
semeion	0.9491	0.9419	0.9366	0.9434
soybean	0.8622	0.8244	0.8244	0.8439
spambase	0.7912	0.7947	0.7877	0.8035
spectrometer	0.9337	0.9277	0.9287	0.9228
student-weekend	0.8965	0.9175	0.8789	0.8614
student-workday	0.8474	0.8404	0.8649	0.8561
theorem	0.9107	0.9107	0.9107	0.9107
voice	0.9639	0.9732	0.9742	0.9616
zip	0.9297	0.9375	0.9219	0.9219

TABLE VII
F₁ RESULTS FOR THE ENSEMBLE APPROACH USING BAGGING AND FCBF
METHOD AND THE NN LEARNING RULE.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Grab'Em.3
ads	0.8600	0.8587	0.8667	0.8667
adult	0.4030	0.4198	0.4041	0.4461
AID1284Morered	0.0524	0.0580	0.0924	0.0745
AID1284red	0.0538	0.1294	0.0731	0.0617
AID1608Morered	-0.0088	0.0866	0.0085	0.0135
AID1608red	0.0633	0.0726	0.0236	0.0086
AID362red	0.2660	0.2695	0.2688	0.2260
AID373AID439red	0.1731	0.1665	0.1499	0.1351
AID373red	0.1658	0.1658	0.1658	0.2496
AID439Morered	0.0484	0.0390	0.0360	0.0694
AID439red	0.2518	0.2731	0.0798	0.1861
AID456red	-0.0024	-0.0022	-0.0028	-0.0024
AID604AID644_AllRed	0.3327	0.3327	0.3327	0.3327
AID644Morered	0.0603	0.0810	0.0957	-0.0182
AID644red	-0.0465	-0.0664	0.0528	0.0014
AID687AID721red	-0.0005	-0.0005	-0.0005	-0.0005
AID687red	-0.0034	0.0838	-0.0029	-0.0030
AID688red	-0.0043	-0.0078	-0.0007	0.0025
AID721morered	-0.0405	-0.1376	-0.2102	-0.0869
AID721red	-0.0175	-0.0242	-0.1282	0.0240
AID746AID1284red	-0.0007	0.1658	-0.0007	-0.0013
AID746red	0.2055	0.2113	0.2385	0.1525
all-aml	0.8272	0.8431	0.8472	0.8192
anneal	0.9344	0.9278	0.9232	0.9246
antivirus	1.0000	1.0000	1.0000	1.0000
arcene	0.2686	0.3629	0.2652	0.3994
arrhythmia	0.3502	0.3538	0.3800	0.3390
audiology	0.5690	0.5605	0.5580	0.5556
autos	0.7785	0.7511	0.7321	0.7442
bank	0.4234	0.4175	0.4277	0.4324
barleyblumeria	0.5258	0.5327	0.5366	0.5221
basehock	0.8394	0.8535	0.8585	0.8545
card	0.5478	0.6177	0.6237	0.6195
cargo2k	0.9996	1.0000	0.9996	1.0000
central-nervous-system	0.0998	0.1713	0.1530	0.1715
cjs	1.0000	1.0000	1.0000	1.0000
cnac-9	0.7483	0.7666	0.7938	0.7852
collins	1.0000	1.0000	1.0000	1.0000
colon-tumor	0.4042	0.5209	0.5110	0.3552
cottonmeloidogyne	0.2148	0.2311	0.2204	0.2384
cyclopentane	0.1856	0.1813	0.1958	0.1900
cylinder-bands	0.3724	0.4059	0.4190	0.3726
dlbcl-stanford	0.8667	0.8615	0.9045	0.8212
eeg	0.2218	0.2293	0.2293	0.2218
eucalyptus	0.4030	0.3982	0.3893	0.3939
fbis-wc	0.6243	0.6318	0.6309	0.6389
flags	0.5434	0.5257	0.5351	0.5282
gas	0.8177	0.8240	0.8133	0.8261
gene	0.8300	0.8393	0.8391	0.8412
german	0.1390	0.1996	0.2009	0.1685
gina	0.6786	0.6758	0.7063	0.6902
hERG-121inputs	0.0153	0.2467	0.2738	0.1039
hERG-64inputs	0.0243	0.0478	-0.0215	-0.0539
hiv1-proteasa	0.4158	0.4120	0.4655	0.4312
hiva	-0.0260	0.2178	0.1204	0.1204
horse	0.3492	0.3216	0.2828	0.2962
isolet	0.7984	0.8158	0.8198	0.8224
libra	0.7582	0.7970	0.7882	0.8181
lrs	0.6574	0.6795	0.7163	0.6943
lung-cancer-ontario	0.2503	0.2048	0.3297	0.2845
madelon	0.2031	0.1492	0.1808	0.1538
mfeat-fac	0.9063	0.9236	0.9370	0.9303
mfeat-fou	0.8028	0.8062	0.8023	0.8023
mfeat-kar	0.9565	0.9548	0.7991	0.9554
mfeat-pix	0.9052	0.9275	0.9264	0.9353
mice-prot	1.0000	1.0000	1.0000	1.0000
mushroom	0.7847	0.6246	0.6832	0.8607
musk	0.7401	0.7487	0.7744	0.7573
newspop	0.1340	0.1367	0.1144	0.1164
optdigits	0.9399	0.9367	0.9395	0.9385
ovarian-cancer	1.0000	0.9739	0.9821	1.0000
ozone1hr	0.1383	0.0957	0.0842	0.0983
ozone8hr	0.2092	0.2834	0.2484	0.2233
pcmac	0.0065	-0.0182	-0.0135	-0.0621
polish-1st	0.0403	0.0800	0.0327	0.0310
polish-2nd	0.0233	0.0209	0.0407	0.0354
polish-3rd	0.0543	0.0330	0.0389	0.0442
polish-4th	0.1607	0.1564	0.1567	0.1548
polish-5th	0.3105	0.3201	0.3248	0.3181
polya	0.2883	0.3256	0.3472	0.3606
profb	-0.0530	0.0739	0.1124	0.1653
promoters	0.4679	0.4549	0.6226	0.5754
prostate	0.5915	0.6235	0.7355	0.5948
re0-wc	0.7088	0.7145	0.7081	0.7017
re1-wc	0.6415	0.7275	0.6744	0.7089
secom	0.0702	0.0599	0.0589	0.1373
semeion	0.8868	0.9203	0.9167	0.9248
soybean	0.8118	0.8733	0.8784	0.8652
spambase	0.7708	0.7892	0.7805	0.7876
spectrometer	0.4791	0.4864	0.5144	0.4750
student-weekend	0.0604	0.0186	0.0767	0.0825
student-workday	0.1421	0.1329	0.1222	0.1429
theorem	1.0000	1.0000	1.0000	1.0000
voice	0.4706	0.4418	0.4018	0.4039
zip	0.8939	0.8880	0.8867	0.8867

TABLE VIII
REDUCTION RESULTS FOR THE HETEROGENEOUS ENSEMBLE APPROACH
USING BAGGING AND THE NN LEARNING RULE.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Grab'Em.3
ads	0.9897	0.9910	0.9891	0.9910
adult	0.9267	0.9152	0.9076	0.9048
AID1284Morered	0.9664	0.9704	0.9595	0.9560
AID1284red	0.8806	0.8689	0.8408	0.8340
AID1608Morered	0.9277	0.9624	0.9478	0.9248
AID1608red	0.9123	0.8968	0.9305	0.9318
AID362red	0.9313	0.9056	0.8882	0.9132
AID373AID439red	0.6617	0.8526	0.9532	0.9143
AID373red	0.9116	0.8987	0.8716	0.8187
AID439Morered	0.8893	0.9928	0.9793	0.9914
AID439red	0.7519	0.9210	0.8926	0.9309
AID456red	0.0954	0.8163	0.7935	0.7824
AID604AID644_AllRed	0.9247	0.9786	0.9773	0.9779
AID644Morered	0.6399	0.9837	0.9671	0.9479
AID644red	0.9030	0.9120	0.8830	0.8880
AID687AID721red	0.0000	0.6608	0.7882	0.7516
AID687red	0.9013	0.9222	0.9281	0.8928
AID688red	0.0908	0.7915	0.7444	0.6765
AID721morered	0.0989	0.9823	0.9721	0.9844
AID721red	0.6080	0.8782	0.8540	0.8862
AID746AID1284red	0.9097	0.8974	0.9740	0.7812
AID746red	0.8494	0.9351	0.8844	0.9221
all-aml	0.9910	0.9999	0.9931	0.9996
anneal	0.9102	0.9136	0.9000	0.9017
antivirus	0.9944	0.9930	0.9936	0.9938
arcene	0.9624	0.9871	0.9939	0.9955
arrhythmia	0.9645	0.9376	0.9480	0.9541
audiology	0.9151	0.8839	0.9108	0.8570
autos	0.9500	0.9486	0.9417	0.9444
bank	0.8919	0.9339	0.8968	0.9177
barleyblumeria	0.8953	0.8547	0.8891	0.8875
basehock	0.9823	0.9644	0.9780	0.9683
card	0.9216	0.9118	0.8980	0.9157
cargo2k	0.9711	0.9794	0.9784	0.9794
central-nervous-system	0.9963	0.9990	0.9980	0.9997
cjs	0.9830	0.9900	0.9690	0.9900
cnac-9	0.9433	0.9384	0.9171	0.9318
collins	0.9938	0.9938	0.9938	0.9938
colon-tumor	0.9854	0.9833	0.9768	0.9886
cottonmeloidogyne	0.8938	0.8969	0.8703	0.9016
cyclopentane	0.9156	0.9133	0.9000	0.8969
cylinder-bands	0.9415	0.9243	0.9301	0.9289
dlbcl-stanford	0.9937	0.9944	0.9858	0.9915
eeg	0.8319	0.8639	0.8250	0.7917
eucalyptus	0.9363	0.9440	0.9264	0.9341
fbis-wc	0.9683	0.9595	0.9586	0.9553
flags	0.9893	0.9880	0.9880	0.9880
gas	0.9523	0.9547	0.9492	0.9500
gene	0.9200	0.9150	0.9083	0.9167
german	0.8492	0.8066	0.7967	0.8164
gina	0.9368	0.9196	0.9057	0.8839
hERG-121inputs	0.7744	0.9744	0.9835	0.9620
hERG-64inputs	0.9594	0.9437	0.9250	0.9109
hiv1-proteasa	0.8706	0.8444	0.8531	0.8487
hiva	0.8895	0.8805	0.9114	0.9045
horse	0.9345	0.9190	0.9069	0.8948
isolet	0.9110	0.8692	0.8533	0.8867
libra	0.8622	0.8811	0.8500	0.8111
lrs	0.9307	0.9099	0.9059	0.8881
lung-cancer-ontario	0.9941	0.9848	0.9868	0.9902
madelon	0.9860	0.9826	0.9878	0.9840
mfeat-fac	0.9505	0.9394	0.9403	0.9486
mfeat-fou	0.9066	0.9105	0.8803	0.8868
mfeat-kar	0.8828	0.8656	0.8688	0.8547
mfeat-pix	0.9079	0.8442	0.8767	0.8333
mice-prot	0.9375	0.9475	0.9437	0.9563
mushroom	0.8889	0.8564	0.8821	0.8641
musk	0.9771	0.9717	0.9620	0.9651
newspop	0.8814	0.8390	0.8644	0.8576
optdigits	0.8406	0.8359	0.8328	0.8531
ovarian-cancer	0.9990	0.9997	0.9995	0.9996
ozone1hr	0.8625	0.8764	0.8431	0.8472
ozone8hr	0.8833	0.7944	0.7889	0.7931
pcmac	0.9830	0.9653	0.9942	0.8787
polish-1st	0.8906	0.9266	0.9359	0.9375
polish-2nd	0.9406	0.9156	0.8359	0.7422
polish-3rd	0.8594	0.9000	0.8797	0.8672
polish-4th	0.9484	0.9484	0.9484	0.9422
polish-5th	0.9703	0.9563	0.9609	0.9672
polya	0.8976	0.8716	0.8787	0.8870
profb	0.0955	0.9119	0.8373	0.9134
promoters	0.9404	0.9272	0.9193	0.9061
prostate	0.9904	0.9972	0.9952	0.9973
re0-wc	0.9793	0.9666	0.9771	0.9810
re1-wc	0.9892	0.9897	0.9876	0.9916
secom	0.9592	0.9607	0.9498	0.9819
semeion	0.9509	0.9325	0.9309	0.9328
soybean	0.9024	0.8610	0.8366	0.8439
spambase	0.8351	0.8158	0.8298	0.8263
spectrometer	0.8901	0.8653	0.8891	0.8673
student-weekend	0.9386	0.8561	0.8807	0.8509
student-workday	0.8772	0.9035	0.8386	0.8561
theorem	0.9107	0.9107	0.9107	0.9107
voice	0.9471	0.9590	0.9548	0.9406
zip	0.8961	0.8906	0.8547	0.8703

TABLE IX
RESULTS FOR THE HETEROGENEOUS ENSEMBLE APPROACH USING
BAGGING AND THE NN LEARNING RULE.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Grab'Em.3
ads	0.8622	0.8612	0.8970	0.8712
adult	0.4493	0.4581	0.4593	0.4625
AID1284Morered	0.1234	0.0950	0.1255	0.1557
AID1284red	0.1182	0.1326	0.2307	0.1265
AID1608Morered	0.0300	0.0449	0.0397	-0.0054
AID1608red	0.0576	0.0356	0.0488	0.0193
AID362red	0.3112	0.3000	0.2160	0.2230
AID373AID439red	0.1065	-0.0000	-0.0001	0.0665
AID373red	0.1029	0.3236	0.2195	0.1616
AID439Morered	0.1053	-0.0883	0.0200	-0.0504
AID439red	0.2220	0.0524	0.1724	0.0786
AID456red	-0.0024	-0.0021	-0.0026	-0.0015
AID604AID644_AllRed	0.2228	0.3595	0.5287	0.6589
AID644Morered	0.1144	0.2099	0.0637	0.2321
AID644red	0.1416	0.1191	0.1283	0.0628
AID687AID721red	-0.0005	-0.0004	-0.0005	-0.0004
AID687red	0.1104	0.0992	0.1254	0.1492
AID688red	-0.0043	-0.0025	-0.0073	-0.0005
AID721morered	-0.0428	0.0180	0.0313	0.0806
AID721red	0.0272	-0.0764	-0.0702	-0.1210
AID746AID1284red	0.0913	0.3195	0.1994	0.2246
AID746red	0.1755	0.2271	0.2355	0.1895
all-aml	0.9750	0.2500	1.0000	1.0000
anneal	0.8848	0.9012	0.8896	0.9287
antivirus	1.0000	0.9916	1.0000	1.0000
arcene	0.7048	0.1509	0.4000	0.2000
arrhythmia	0.4161	0.4157	0.3776	0.3332
audiology	0.5644	0.6277	0.5588	0.5821
autos	0.7401	0.7232	0.7717	0.7395
bank	0.4259	0.4422	0.4296	0.4294
barleyblumeria	0.5104	0.5398	0.5171	0.5007
basehock	0.8455	0.9016	0.8793	0.8700
card	0.5887	0.5599	0.6326	0.6492
cargo2k	1.0000	1.0000	1.0000	1.0000
central-nervous-system	0.0477	0.1818	0.1818	-0.2000
cjs	0.9987	0.9991	0.9983	0.9978
cnac-9	0.8531	0.8712	0.8962	0.8647
collins	1.0000	1.0000	1.0000	0.9978
colon-tumor	0.5209	0.4304	0.6631	0.4584
cottonmeloidogyne	0.2390	0.2825	0.2643	0.2743
cyclopentane	0.2124	0.2822	0.2307	0.1843
cylinder-bands	0.4861	0.4522	0.4766	0.5463
dlbcl-stanford	0.9045	0.8282	0.9000	0.7831
eeg	0.2294	0.2531	0.2617	0.2693
eucalyptus	0.4499	0.4203	0.4699	0.4321
fbis-wc	0.6465	0.6668	0.6623	0.6606
flags	0.4417	0.4429	0.5327	0.4228
gas	0.9593	0.9768	0.9735	0.9806
gene	0.8040	0.8093	0.8202	0.8197
german	0.2508	0.2251	0.2262	0.2256
gina	0.8142	0.8419	0.8690	0.8771
hERG-121inputs	0.4010	0.1896	0.4162	0.1798
hERG-64inputs	0.0026	0.1034	0.0149	0.0246
hiv1-proteasa	0.4943	0.4949	0.4885	0.5099
hiva	0.2376	0.2353	0.2372	0.3620
horse	0.3339	0.3193	0.3328	0.2891
isolet	0.7920	0.8385	0.8573	0.8255
libra	0.7315	0.7435	0.7286	0.7852
lrs	0.6749	0.7017	0.7299	0.7063
lung-cancer-ontario	0.2148	0.1227	0.2545	0.2228
madelon	0.4592	0.5854	0.6154	0.6277
mfeat-fac	0.9024	0.9225	0.9119	0.9030
mfeat-fou	0.7376	0.7449	0.7738	0.7771
mfeat-kar	0.8757	0.9024	0.9091	0.9225
mfeat-pix	0.7678	0.9013	0.9047	0.8947
mice-prot	0.9915	1.0000	1.0000	1.0000
mushroom	0.9013	0.9928	0.9910	0.9953
musk	0.7582	0.7809	0.7695	0.7702
newspop	0.1214	0.1375	0.1235	0.1323
optdigits	0.8722	0.8922	0.8981	0.8730
ovarian-cancer	0.9821	1.0000	0.9153	1.0000
ozone1hr	0.1762	0.1751	0.2155	0.1806
ozone8hr	0.2381	0.2290	0.2646	0.2534
pcmac	-0.0152	-0.0613	0.0294	0.1012
polish-1st	0.0790	0.0438	0.0445	0.0796
polish-2nd	0.0241	0.0128	0.0299	0.0279
polish-3rd	0.0281	0.0504	0.0521	0.0249
polish-4th	0.1699	0.1854	0.1625	0.1730
polish-5th	0.2842	0.2988	0.3286	0.3150
polya	0.3413	0.3603	0.3619	0.3500
profb	-0.0287	0.0901	0.0175	0.0583
promoters	0.4493	0.5114	0.6418	0.5897
prostate	0.7168	0.7083	0.5532	0.2222
re0-wc	0.6736	0.7140	0.7122	0.7212
re1-wc	0.6602	0.7085	0.6940	0.7125
secom	0.0451	0.0179	0.1020	0.0838
semeion	0.8967	0.9122	0.9223	0.9352
soybean	0.7303	0.7900	0.8360	0.8487
spambase	0.7533	0.7563	0.7762	0.7688
spectrometer	0.3312	0.3315	0.4027	0.3891
student-weekend	0.0741	0.0903	0.0555	0.1213
student-workday	0.0815	0.0993	0.0658	0.1315
theorem	1.0000	1.0000	1.0000	1.0000
voice	0.5577	0.5378	0.5542	0.4814
zip	0.8584	0.8963	0.9052	0.8980

TABLE X
REDUCTION RESULTS FOR THE ENSEMBLE APPROACH USING ADABOOST
AND FCBF METHOD AND THE NN LEARNING RULE.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Grab'Em.3
ads	0.9942	0.9756	0.9727	0.9768
adult	0.9429	0.9333	0.9333	0.9333
AID1284Morered	0.9803	0.9684	0.9458	0.9712
AID1284red	0.9223	0.9010	0.9078	0.9214
AID1608Morered	0.9902	0.9603	0.9261	0.9557
AID1608red	0.8571	0.8636	0.8558	0.9260
AID362red	0.8542	0.8292	0.8681	0.8493
AID373AID439red	0.9805	0.9468	0.9156	0.8662
AID373red	0.8839	0.8258	0.9226	0.7935
AID439Morered	0.9945	0.9871	0.9879	0.9788
AID439red	0.9383	0.9173	0.9259	0.9160
AID456red	0.7909	0.7281	0.8438	0.8824
AID604AID644_AllRed	0.9870	0.9935	0.9805	0.9935
AID644Morered	0.0000	0.9676	0.9705	0.9710
AID644red	0.9200	0.9130	0.8810	0.9040
AID687AID721red	0.0000	0.5634	0.7739	0.5752
AID687red	0.8824	0.9412	0.9673	0.9412
AID688red	0.0000	0.9288	0.6993	0.8105
AID721morered	0.0000	0.9880	0.9794	0.9885
AID721red	0.9310	0.9276	0.9161	0.9356
AID746AID1284red	0.8896	0.8961	0.8442	0.8636
AID746red	0.8896	0.8377	0.9156	0.9156
all-aml	0.9997	0.9942	0.9945	0.9972
anneal	0.9153	0.9153	0.9136	0.9153
antivirus	0.9925	0.9936	0.9921	0.9923
arcene	0.8939	0.8903	0.9117	0.9015
arrhythmia	0.9534	0.9423	0.9430	0.9509
audiology	0.9140	0.8860	0.8882	0.8860
autos	0.9306	0.9347	0.9333	0.9389
bank	0.9516	0.9516	0.9516	0.9516
barleyblumeria	0.8906	0.8422	0.8344	0.8547
basehock	0.9885	0.9693	0.9776	0.9723
card	0.9216	0.9294	0.9196	0.9216
cargo2k	0.9691	0.9753	0.9711	0.9711
central-nervous-system	0.9822	0.9981	0.9992	0.9974
cjs	0.6100	0.8120	0.7870	0.9900
cnac-9	0.9439	0.9239	0.9217	0.9276
collins	0.9938	0.9938	0.9938	0.9938
colon-tumor	0.9660	0.9953	0.9906	0.9925
cottonmeloidogyne	0.6875	0.7406	0.7594	0.7391
cyclopentane	0.9219	0.9406	0.9602	0.9359
cylinder-bands	0.9255	0.9291	0.8668	0.8816
dlbcl-stanford	0.9985	0.9932	0.9940	0.9950
eeg	0.9028	0.8889	0.8889	0.8889
eucalyptus	0.9670	0.9615	0.9495	0.9440
fbis-wc	0.9870	0.9868	0.9885	0.9869
flags	0.9917	0.9773	0.9806	0.9798
gas	0.9531	0.9297	0.9445	0.9492
gene	0.9083	0.9067	0.9058	0.9100
german	0.8361	0.7918	0.8033	0.7869
gina	0.9670	0.9514	0.9542	0.9412
hERG-121inputs	0.0000	0.9835	0.9678	0.9736
hERG-64inputs	0.9219	0.9219	0.9297	0.9172
hiv1-proteasa	0.7188	0.7206	0.7094	0.7400
hiva	0.8808	0.8794	0.8893	0.8936
horse	0.9310	0.9241	0.9155	0.8914
isolet	0.9562	0.8865	0.8979	0.9222
libra	0.8778	0.9011	0.9089	0.8967
lrs	0.9208	0.9347	0.9396	0.9416
lung-cancer-ontario	0.9990	0.9974	0.9947	0.9963
madelon	0.9020	0.9274	0.9524	0.9690
mfeat-fac	0.9491	0.9329	0.9301	0.9352
mfeat-fou	0.8553	0.8895	0.8908	0.8921
mfeat-kar	0.8125	0.7969	0.8094	0.7969
mfeat-pix	0.9458	0.9254	0.9208	0.9058
mice-prot	0.9125	0.9325	0.9262	0.9337
mushroom	0.9402	0.8786	0.8906	0.8650
musk	0.9518	0.9620	0.9639	0.9566
newspop	0.7627	0.8136	0.8305	0.8814
optdigits	0.8594	0.8344	0.8406	0.8422
ovarian-cancer	0.9995	0.9995	0.9995	0.9995
ozone1hr	0.9444	0.8889	0.7889	0.8444
ozone8hr	0.8611	0.8556	0.8500	0.8042
pcmac	0.9656	0.9633	0.9621	0.9594
polish-1st	0.9844	0.9547	0.9484	0.9437
polish-2nd	0.9844	0.9688	0.9031	0.8844
polish-3rd	0.9844	0.9688	0.9172	0.8969
polish-4th	0.9531	0.9625	0.9609	0.9641
polish-5th	0.9688	0.9609	0.9609	0.9625
polya	0.9231	0.8740	0.8781	0.8846
profb	0.0000	0.9075	0.8463	0.8716
promoters	0.9211	0.9193	0.9123	0.9044
prostate	0.9973	0.9978	0.9967	0.9982
re0-wc	0.9920	0.9908	0.9920	0.9905
re1-wc	0.9896	0.9918	0.9925	0.9872
secom	0.9780	0.9731	0.9783	0.9698
semeion	0.9321	0.9445	0.9442	0.9419
soybean	0.9024	0.8646	0.8720	0.8732
spambase	0.8070	0.7772	0.7772	0.7860
spectrometer	0.9406	0.9307	0.9366	0.9327
student-weekend	0.9298	0.9140	0.9316	0.9193
student-workday	0.9298	0.9298	0.9000	0.8737
theorem	0.9107	0.9107	0.9107	0.9107
voice	0.9710	0.9439	0.9726	0.9623
zip	0.9375	0.8828	0.9180	0.9180

TABLE XI
 κ RESULTS FOR THE ENSEMBLE APPROACH USING ADABOOST AND FCBF
METHOD AND THE NN LEARNING RULE.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Grab'Em.3
ads	0.7531	0.8665	0.8628	0.8512
adult	0.3798	0.4449	0.4465	0.4461
AID1284Morered	-0.1163	0.0656	0.0823	0.0780
AID1284red	-0.1408	0.0243	0.0039	-0.0165
AID1608Morered	-0.0906	0.0303	0.0167	-0.0101
AID1608red	-0.0489	0.0226	0.0389	0.0198
AID362red	0.3932	0.2488	0.3426	0.3459
AID373AID439red	-0.0002	0.0698	0.1498	0.1098
AID373red	0.1239	0.2491	0.1658	0.2491
AID439Morered	-0.1667	0.0690	0.0768	0.1863
AID439red	1.0000	0.2197	0.2197	0.2979
AID456red	-0.0030	-0.0026	-0.0029	-0.0027
AID604AID644_AllRed	0.2217	0.4279	0.3327	0.1658
AID644Morered	0.2000	-0.0627	0.0559	0.0934
AID644red	-0.3750	0.0137	0.1412	0.0934
AID687AID721red	-0.0004	-0.0004	-0.0003	-0.0005
AID687red	0.1087	0.0801	0.0879	0.0801
AID688red	-0.0075	0.0033	0.0031	0.0011
AID721morered	-0.3636	-0.1575	-0.1110	-0.1051
AID721red	-0.2857	-0.1393	-0.0056	-0.1033
AID746AID1284red	-0.0012	-0.0010	-0.0011	-0.0010
AID746red	0.1074	0.1468	0.1302	0.2045
all-aml	0.6667	0.7712	0.8764	0.8002
anneal	0.9524	0.9264	0.9365	0.9386
antivirus	1.0000	1.0000	1.0000	1.0000
arcene	0.3137	0.4200	0.3637	0.4368
arrhythmia	0.3422	0.3779	0.3413	0.3311
audiology	0.3744	0.5735	0.5715	0.5758
autos	0.8693	0.7507	0.7570	0.7108
bank	0.4290	0.4325	0.4286	0.4272
barleyblumeria	0.5434	0.5426	0.5539	0.5288
basehock	0.7587	0.7832	0.8284	0.7873
card	0.6223	0.5479	0.6150	0.6559
cargo2k	1.0000	1.0000	0.9992	0.9973
central-nervous-system	0.0000	-0.0627	0.0683	-0.1404
cjs	1.0000	1.0000	0.9996	0.9983
cnac-9	0.7894	0.8469	0.8500	0.8385
collins	1.0000	1.0000	1.0000	1.0000
colon-tumor	0.6667	0.2160	0.2953	0.3308
cottonmeloidogyne	0.3176	0.2845	0.2511	0.2725
cyclopentane	0.1148	0.2395	0.3430	0.1954
cylinder-bands	0.3872	0.4815	0.3693	0.3570
dlbcl-stanford	0.6154	0.7776	0.7782	0.7947
eeg	0.2169	0.2243	0.2243	0.2243
eucalyptus	0.3476	0.4399	0.3905	0.3775
fbis-wc	0.5469	0.5789	0.5814	0.5830
flags	0.4611	0.5565	0.5223	0.5521
gas	0.9686	0.9608	0.9715	0.9429
gene	0.8445	0.8205	0.8226	0.8230
german	0.2088	0.1547	0.1752	0.1543
gina	0.7808	0.7438	0.7409	0.7438
hERG-121inputs	0.6957	0.2305	0.0915	0.1181
hERG-64inputs	-0.2353	-0.1039	-0.0202	0.0503
hiv1-proteasa	0.5706	0.4912	0.5368	0.5055
hiva	0.1629	0.0639	0.0484	0.0583
horse	0.2769	0.3302	0.2853	0.2945
isolet	0.7610	0.8652	0.8571	0.8264
libra	0.8808	0.7882	0.8210	0.8268
lrs	0.8418	0.7144	0.7255	0.7567
lung-cancer-ontario	0.4000	0.3200	0.3291	0.2845
madelon	0.0077	0.0985	0.1008	0.1431
mfeat-fac	0.9217	0.9337	0.9376	0.9208
mfeat-fou	0.7881	0.7710	0.7788	0.7849
mfeat-kar	0.9499	0.9459	0.9437	0.9493
mfeat-pix	0.8774	0.9035	0.9080	0.9398
mice-prot	1.0000	0.9989	0.9989	0.9958
mushroom	0.4370	0.9610	0.7485	0.9983
musk	0.6848	0.7578	0.7467	0.7778
newspop	0.1144	0.1549	0.1393	0.1472
optdigits	0.8832	0.9052	0.8965	0.8969
ovarian-cancer	0.9153	0.9639	0.9723	0.9634
ozone1hr	0.1516	0.1633	0.1637	0.1220
ozone8hr	0.2678	0.3153	0.3124	0.3702
pcmac	-0.0865	-0.0631	-0.0273	-0.0272
polish-1st	-0.0242	0.0417	0.0414	0.0542
polish-2nd	0.0242	0.0705	0.0249	0.0416
polish-3rd	0.0201	0.0011	0.0391	0.0622
polish-4th	0.2048	0.1482	0.1525	0.1484
polish-5th	0.2548	0.3092	0.3120	0.3065
polya	0.3472	0.3705	0.3576	0.3615
profb	0.2239	0.0439	0.0890	0.0779
promoters	0.6154	0.4469	0.5360	0.5882
prostate	0.5532	0.6797	0.5523	0.5830
re0-wc	0.7064	0.6195	0.6427	0.6347
re1-wc	0.6857	0.6801	0.7011	0.6773
secom	0.1103	0.0575	0.0966	0.0890
semeion	0.9643	0.9141	0.9419	0.9252
soybean	0.7442	0.8294	0.8281	0.8162
spambase	0.7736	0.7858	0.7935	0.7907
spectrometer	0.3826	0.4625	0.4268	0.4484
student-weekend	0.0488	0.0517	0.0664	0.0685
student-workday	0.0609	0.1164	0.0839	0.1196
theorem	1.0000	1.0000	1.0000	1.0000
voice	0.8235	0.4207	0.4131	0.4249
zip	0.8880	0.9229	0.9048	0.9108

B. Results for decision trees

This section shows detailed results for decision trees (DTs) and random forests (RFs) classifiers. For both cases, DTs were used to evaluate the selection threshold so the reduction values were the same for DTs and RFs and are only reported once.

TABLE XII
REDUCTION RESULTS FOR THE DATA DIVISION APPROACH USING BAGGING AND THE FCBF METHOD AND A DT.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Grab'Em.3
ads	0.9000	0.9000	0.9000	0.9000
adult	0.9481	0.9524	0.9476	0.9524
AID1284Morered	0.9113	0.9613	0.9274	0.9258
AID1284red	0.9109	0.9062	0.9094	0.9062
AID1608Morered	0.9636	0.9494	0.9614	0.9638
AID1608red	0.0000	0.8000	0.8000	0.8000
AID362red	0.8947	0.8947	0.8947	0.8947
AID373AID439red	0.9297	0.9141	0.9187	0.9125
AID373red	0.9745	0.9667	0.9667	0.9667
AID439Morered	0.9565	0.9565	0.9565	0.9565
AID439red	0.8819	0.8897	0.8690	0.8862
AID456red	0.9278	0.9181	0.8889	0.9111
AID604AID644_AllRed	0.9688	0.9688	0.9688	0.9688
AID644Morered	0.9873	0.9874	0.9874	0.9900
AID644red	0.9156	0.9109	0.9109	0.9203
AID687AID721red	0.9923	0.9929	0.9923	0.9924
AID687red	0.8763	0.8763	0.8700	0.8763
AID688red	0.9621	0.9621	0.9621	0.9622
AID721morered	0.7273	0.7273	0.7273	0.7273
AID721red	0.7625	0.8125	0.8125	0.8125
AID746AID1284red	0.9321	0.9170	0.9198	0.9212
AID746red	0.4000	0.4000	0.4000	0.4000
all-aml	0.9639	0.9624	0.9624	0.9639
anneal	0.1667	0.1667	0.1667	0.1667
antivirus	0.3937	0.3937	0.3937	0.3937
arcene	0.9032	0.8710	0.9032	0.9032
arrhythmia	0.8900	0.8100	0.8100	0.8100
audiology	0.9500	0.9458	0.9386	0.9518
autos	0.8850	0.7500	0.7650	0.8850
bank	0.9924	0.9925	0.9925	0.9924
barleyblumeria	0.9475	0.9475	0.9492	0.9424
basehock	0.9628	0.9750	0.9663	0.9721
card	0.8130	0.8130	0.8130	0.8087
cargo2k	0.8000	0.8000	0.8000	0.8000
central-nervous-system	0.9961	0.9935	0.9954	0.9954
cjs	0.9070	0.9155	0.8990	0.8890
cnae-9	0.7891	0.7891	0.7891	0.7891
collins	0.9812	0.9647	0.9815	0.9843
colon-tumor	0.8100	0.7900	0.8000	0.7800
cottonmeloidogyne	0.9320	0.8960	0.9040	0.8940
cyclopentane	0.4500	0.4500	0.4500	0.4500
cylinder-bands	0.8000	0.8000	0.8000	0.8000
dlbcl-stanford	0.8000	0.8000	0.8000	0.8000
eeg	0.7438	0.7234	0.7328	0.7312
eucalyptus	0.6562	0.6703	0.6422	0.6312
fbis-wc	0.7188	0.7188	0.7188	0.7406
flags	0.9844	0.9812	0.9844	0.9844
gas	0.9547	0.9547	0.9516	0.9453
gene	0.9781	0.9793	0.9781	0.9775
german	0.8390	0.8271	0.8356	0.8254
gina	0.8429	0.8238	0.8238	0.8238
hERG-121inputs	0.9887	0.9883	0.9887	0.9895
hERG-64inputs	0.9278	0.9306	0.9250	0.9250
hiv1-proteasa	0.9437	0.9375	0.9083	0.9021
hiva	0.8556	0.7778	0.8333	0.8333
horse	0.6667	0.6667	0.6667	0.6667
isolet	0.8421	0.8421	0.8421	0.8386
libra	0.8875	0.8500	0.8750	0.8725
lrs	0.9107	0.9107	0.9107	0.9107
lung-cancer-ontario	0.9945	0.9924	0.9945	0.9945
madelon	0.9719	0.9697	0.9719	0.9723
mfeat-fac	0.8925	0.9000	0.8875	0.8800
mfeat-fou	0.1400	0.2000	0.3200	0.3200
mfeat-kar	0.8273	0.7273	0.8182	0.7727
mfeat-pix	0.9352	0.9414	0.9184	0.9219

TABLE XIII
RESULTS FOR THE DATA DIVISION APPROACH USING BAGGING AND THE FCBF METHOD AND A DT.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Grab'Em.3
ads	0.1157	0.1157	0.1157	0.1157
adult	0.5693	0.5714	0.5712	0.5741
AID1284Morered	0.5293	0.5141	0.5252	0.5338
AID1284red	0.5602	0.5653	0.5633	0.5653
AID1608Morered	0.4871	0.5010	0.4918	0.4903
AID1608red	0.8184	0.7851	0.7785	0.7785
AID362red	0.8740	0.8740	0.8740	0.8740
AID373AID439red	0.3229	0.3326	0.3289	0.3304
AID373red	0.3455	0.3959	0.3700	0.3735
AID439Morered	0.3532	0.3532	0.3532	0.3532
AID439red	0.0987	0.0972	0.1012	0.0980
AID456red	0.1946	0.2131	0.2281	0.2225
AID604AID644_AllRed	0.7808	0.7805	0.7810	0.7810
AID644Morered	0.6598	0.6580	0.6580	0.6544
AID644red	0.9458	0.9497	0.9497	0.9457
AID687AID721red	0.8578	0.8426	0.8531	0.8540
AID687red	0.5013	0.5065	0.5084	0.5132
AID688red	0.1790	0.1898	0.1898	0.1888
AID721morered	0.9668	0.9668	0.9668	0.9668
AID721red	0.8553	0.8491	0.8462	0.8462
AID746AID1284red	0.7487	0.7618	0.7570	0.7601
AID746red	0.8580	0.8580	0.8580	0.8580
all-aml	0.4777	0.5340	0.5340	0.4777
anneal	0.5459	0.5459	0.5459	0.5459
antivirus	0.8724	0.8724	0.8724	0.8724
arcene	0.3633	0.3907	0.3632	0.3656
arrhythmia	0.4337	0.5020	0.5030	0.5030
audiology	0.7931	0.8085	0.8109	0.8000
autos	0.7868	0.8547	0.8270	0.7868
bank	0.6491	0.6866	0.6490	0.6774
barleyblumeria	0.2256	0.2276	0.2268	0.2293
basehock	0.8391	0.8281	0.8371	0.8297
card	0.4647	0.4647	0.4647	0.4316
cargo2k	0.9709	0.9700	0.9700	0.9700
central-nervous-system	0.6036	0.6163	0.5962	0.5996
cjs	0.3087	0.3038	0.3045	0.3136
cnae-9	0.8627	0.8627	0.8627	0.8627
collins	0.2711	0.3551	0.3463	0.3779
colon-tumor	0.7287	0.7448	0.7404	0.7592
cottonmeloidogyne	0.6647	0.7072	0.6974	0.7117
cyclopentane	0.9296	0.9296	0.9296	0.9296
cylinder-bands	0.4275	0.4275	0.4275	0.4275
dlbcl-stanford	0.7922	0.8001	0.7927	0.7927
eeg	0.1074	0.1119	0.1051	0.1067
eucalyptus	0.1169	0.1135	0.1410	0.1275
fbis-wc	0.1017	0.1017	0.1017	0.0926
flags	0.3141	0.3113	0.3141	0.3141
gas	0.3775	0.3934	0.3942	0.3866
gene	0.3465	0.3536	0.3465	0.3532
german	0.1690	0.1677	0.1680	0.1750
gina	0.8408	0.8666	0.8666	0.8666
hERG-121inputs	0.7260	0.7490	0.7260	0.7228
hERG-64inputs	0.7786	0.7847	0.7840	0.7895
hiv1-proteasa	0.8438	0.9915	0.9574	0.9893
hiva	0.8902	0.9956	0.9168	0.9168
horse	0.6523	0.6447	0.6523	0.6523
isolet	0.8179	0.7797	0.8179	0.8185
libra	0.8294	0.8696	0.8468	0.8504
lrs	1.0000	1.0000	1.0000	1.0000
lung-cancer-ontario	0.6831	0.6662	0.6831	0.6831
madelon	0.7263	0.7516	0.7271	0.7254
mfeat-fac	0.6149	0.5532	0.6197	0.6387
mfeat-fou	0.6802	0.0637	0.4335	0.4233
mfeat-kar	0.2510	0.2786	0.2590	0.2938
mfeat-pix	0.8423	0.8386	0.8539	0.8578

TABLE XV
REDUCTION RESULTS FOR THE ENSEMBLE APPROACH USING BAGGING
AND THE FCBF METHOD AND DTS.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Grab'Em.3
ads	0.9920	0.9900	0.9920	0.9911
adult	0.9524	0.9524	0.9524	0.9524
AID1284Morered	0.9611	0.9611	0.9419	0.9571
AID1284red	0.6204	0.6621	0.6699	0.6922
AID1608Morered	0.9473	0.9473	0.9450	0.9493
AID1608red	0.8890	0.8831	0.8539	0.8864
AID362red	0.8486	0.8500	0.7729	0.8563
AID373AID439red	0.1805	0.9539	0.9578	0.9481
AID373red	0.2645	0.9600	0.9600	0.8710
AID439Morered	0.4919	0.9863	0.9757	0.9756
AID439red	0.5568	0.9185	0.8802	0.9000
AID456red	0.0000	0.9928	0.9928	0.9928
AID604AID644_AllRed	0.9740	0.9688	0.9422	0.9461
AID644Morered	0.8176	0.9130	0.9307	0.9140
AID644red	0.3560	0.7160	0.6350	0.7210
AID687AID721red	0.0000	0.9935	0.9935	0.9935
AID687red	0.5353	0.9327	0.8915	0.9327
AID688red	0.0000	0.9935	0.9935	0.9935
AID721morered	0.2963	0.9862	0.9743	0.9865
AID721red	0.3563	0.8563	0.8241	0.8667
AID746AID1284red	0.0753	0.9688	0.9688	0.9688
AID746red	0.7513	0.8506	0.7545	0.8565
all-aml	0.9995	0.9997	0.9998	0.9998
anneal	0.9017	0.8881	0.8881	0.8881
antivirus	0.9904	0.9913	0.9904	0.9913
arcene	0.9926	0.9970	0.9964	0.9958
arrhythmia	0.9348	0.9319	0.9251	0.9269
audiology	0.9409	0.9097	0.9022	0.9108
autos	0.9222	0.9347	0.9389	0.9431
bank	0.9500	0.9516	0.9500	0.9500
barleyblumeria	0.8953	0.8812	0.8875	0.8828
basehock	0.9825	0.9793	0.9793	0.9793
card	0.9765	0.9765	0.9765	0.9765
cargo2k	0.9732	0.9794	0.9732	0.9732
central-nervous-system	0.6994	0.9992	0.9991	0.9992
cjs	0.5660	0.5660	0.5660	0.5660
cnae-9	0.9439	0.9340	0.9340	0.9396
collins	0.9938	0.9938	0.9938	0.9938
colon-tumor	0.9963	0.9972	0.9973	0.9970
cottonmeloidogyne	0.8953	0.8844	0.8797	0.8844
cyclopentane	0.9266	0.9195	0.9187	0.9445
cylinder-bands	0.9381	0.8887	0.8853	0.9053
dlbcl-stanford	0.9993	0.9993	0.9993	0.9995
eeg	0.8875	0.8847	0.8847	0.8847
eucalyptus	0.9890	0.9769	0.9791	0.9780
fbis-wc	0.9803	0.9769	0.9769	0.9816
flags	0.9847	0.9843	0.9835	0.9839
gas	0.9656	0.9656	0.9656	0.9656
gene	0.8850	0.8850	0.8850	0.8850
german	0.8705	0.8705	0.8328	0.8689
gina	0.9687	0.9674	0.9643	0.9707
hERG-121inputs	0.9835	0.9868	0.9835	0.9835
hERG-64inputs	0.6547	0.9187	0.9297	0.9156
hiv1-proteasa	0.8900	0.8906	0.8881	0.8938
hiva	0.9904	0.9922	0.9844	0.9903
horse	0.9397	0.9293	0.9379	0.9414
isolet	0.9394	0.9237	0.9212	0.9235
libra	0.8933	0.9122	0.8711	0.8678
lrs	0.9436	0.9416	0.9248	0.9307
lung-cancer-ontario	0.9989	0.9990	0.9982	0.9988
madelon	0.9682	0.9466	0.9402	0.9494
mfeat-fac	0.9245	0.9162	0.9171	0.9139
mfeat-fou	0.6684	0.6684	0.6684	0.6684
mfeat-kar	0.1797	0.1828	0.1828	0.1828
mfeat-pix	0.9383	0.9192	0.9263	0.9229
mice-prot	0.8875	0.8875	0.8875	0.8875
mushroom	0.9453	0.9410	0.9410	0.9419
musk	0.9542	0.9367	0.9422	0.9404
newspop	0.8814	0.8729	0.8661	0.8712
optdigits	0.7781	0.7781	0.7781	0.7781
ovarian-cancer	0.9991	0.9996	0.9995	0.9994
ozone1hr	0.8208	0.8069	0.8431	0.8500
ozone8hr	0.8347	0.8472	0.8347	0.8486
pcmac	0.1948	0.9760	0.9707	0.9569
polish-1st	0.9234	0.9266	0.9187	0.9234
polish-2nd	0.7953	0.7953	0.8000	0.7953
polish-3rd	0.8375	0.8359	0.8359	0.8328
polish-4th	0.9844	0.9844	0.9844	0.9844
polish-5th	0.9516	0.9469	0.9484	0.9422
polya	0.9799	0.9805	0.9787	0.9811
profb	0.7761	0.8925	0.8343	0.8821
promoters	0.9579	0.9658	0.9561	0.9614
prostate	0.9985	0.9993	0.9984	0.9990
re0-wc	0.9923	0.9912	0.9902	0.9921
re1-wc	0.9876	0.9873	0.9873	0.9875
secom	0.9029	0.9029	0.8988	0.9032
semeion	0.9645	0.9653	0.9642	0.9623
soybean	0.8585	0.8378	0.8329	0.8378
spambase	0.8140	0.8140	0.8140	0.8140
spectrometer	0.9238	0.9158	0.9287	0.9248
student-weekend	0.9298	0.9404	0.9404	0.9351
student-workday	0.8842	0.8860	0.8895	0.8895
theorem	0.9107	0.9107	0.9107	0.9107
voice	0.9826	0.9819	0.9810	0.9829
zip	0.9488	0.9371	0.9352	0.9383

TABLE XIV

κ RESULTS FOR THE DATA DIVISION APPROACH USING BAGGING AND THE FCBF METHOD AND A RF.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Grab'Em.3
ads	0.1066	0.1080	0.1073	0.1077
adult	0.5587	0.5577	0.5581	0.5585
AID1284Morered	0.4684	0.4435	0.4624	0.4615
AID1284red	0.5922	0.5981	0.5943	0.5958
AID1608Morered	0.4211	0.4171	0.4226	0.4220
AID1608red	0.7223	0.6662	0.6662	0.6662
AID362red	0.6842	0.6846	0.6829	0.6857
AID373AID439red	0.3126	0.3109	0.3185	0.3118
AID373red	0.4104	0.4133	0.4140	0.4129
AID439Morered	0.3532	0.3534	0.3532	0.3532
AID439red	0.0633	0.0712	0.0683	0.0686
AID456red	0.2579	0.2918	0.3106	0.2994
AID604AID644_AllRed	0.7653	0.7655	0.7652	0.7652
AID644Morered	0.7780	0.8107	0.8072	0.7688
AID644red	0.9764	0.9784	0.9788	0.9740
AID687AID721red	0.8857	0.8749	0.8854	0.8843
AID687red	0.5423	0.5507	0.5569	0.5565
AID688red	0.2203	0.2086	0.2073	0.2123
AID721morered	0.9211	0.9212	0.9212	0.9210
AID721red	0.8186	0.8033	0.7994	0.8006
AID746AID1284red	0.8737	0.8889	0.8833	0.8881
AID746red	0.9449	0.9463	0.9461	0.9458
all-aml	0.5934	0.6449	0.6426	0.5946
anneal	0.5092	0.5077	0.5085	0.5100
antivirus	0.9428	0.9443	0.9434	0.9433
arcene	0.4585	0.5031	0.4586	0.4835
arrhythmia	0.2840	0.4494	0.4510	0.4522
audiology	0.8289	0.8280	0.8431	0.8273
autos	0.5467	0.6234	0.6716	0.5468
bank	0.7977	0.7990	0.7994	0.8078
barleyblumeria	0.0940	0.0991	0.0828	0.0941
basehock	0.8433	0.8239	0.8394	0.8321
card	0.6603	0.6594	0.6594	0.6636
cargo2k	0.9601	0.9606	0.9604	0.9604
central-nervous-system	0.6766	0.6756	0.6790	0.6756
cjs	0.2728	0.2647	0.2766	0.2861
cnae-9	0.9393	0.9411	0.9397	0.9401
collins	0.0137	0.0398	-0.0001	0.0137
colon-tumor	0.7283	0.7428	0.7208	0.7573
cottonmeloidogyne	0.6406	0.7066	0.6970	0.7189
cyclopentane	0.9676	0.9679	0.9681	0.9676
cylinder-bands	0.3287	0.3277	0.3272	0.3277
dlbcl-stanford	0.3621	0.3623	0.3603	0.3606
eeg	0.1205	0.1228	0.1417	0.1101
eucalyptus	0.0850	0.0751	0.0959	0.1066
fbis-wc	0.0245	0.0207	0.0207	0.0209
flags	0.2404	0.2292	0.2458	0.2372
gas	0.3985	0.3958	0.4169	0.4151
gene	0.3256	0.3200	0.3210	0.3258
german	0.1658	0.1740	0.1674	0.1758
gina	0.8282	0.8620	0.8623	0.8623
hERG-121inputs	0.8058	0.8075	0.8070	0.8058
hERG-64inputs	0.7828	0.7845	0.7918	0.7970
hiv1-proteasa	0.8313	0.9874	0.9379	0.9707
hiva	0.8884	0.9006	0.9151	0.9154
horse	0.6375	0.6333	0.6384	0.6379
isolet	0.8174	0.8310	0.8183	0.8252
libra	0.8758	0.9016	0.8958	0.9021
lrs	1.0000	1.0000	1.0000	1.0000
lung-cancer-ontario	0.6759	0.6753	0.6685	0.6656
madelon	0.7000	0.6997	0.7005	0.7009
mfeat-fac	0.6392	0.6663	0.6542	0.6692
mfeat-fou	0.6844	0.4980	0.4959	0.4739
mfeat-kar	0.3054	0.3540	0.3148	0.3653
mfeat-pix	0.9230	0.9314	0.9314	0.9350

TABLE XVI
 κ RESULTS FOR THE ENSEMBLE APPROACH USING BAGGING AND THE
 FCBF METHOD AND DTs.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Grab'Em.3
ads	0.8108	0.8148	0.8234	0.8116
adult	0.5714	0.5711	0.5728	0.5714
AID1284Morered	0.1141	0.1141	0.0979	0.0893
AID1284red	0.0248	0.0110	0.0059	-0.0307
AID1608Morered	0.0052	0.0052	0.0118	0.0255
AID1608red	0.0468	0.0494	0.0622	0.0320
AID362red	0.1607	0.2214	0.1735	0.1396
AID373AID439red	-0.0000	0.0000	-0.0000	-0.0000
AID373red	0.1525	0.0221	0.0221	0.2217
AID439Morered	-0.0870	0.0678	-0.0232	-0.1083
AID439red	0.1678	0.0431	0.1676	0.2088
AID456red	-0.0018	0.0000	0.0000	0.0000
AID604AID644_AllRed	0.2432	0.2610	0.2554	0.3254
AID644Morered	0.0973	0.0834	0.0823	0.0438
AID644red	0.0955	-0.0100	0.0506	0.0935
AID687AID721red	-0.0001	0.0000	0.0000	0.0000
AID687red	0.0698	0.0165	0.0658	0.0165
AID688red	-0.0059	0.0000	0.0000	0.0000
AID721morered	-0.0053	-0.0374	-0.0964	-0.0375
AID721red	-0.0845	-0.0315	0.0254	-0.0355
AID746AID1284red	0.0376	-0.0000	-0.0000	-0.0000
AID746red	0.0536	0.0336	0.0636	0.0341
all-aml	0.7083	0.6830	0.6887	0.6887
anneal	0.9207	0.9313	0.9313	0.9313
antivirus	0.9916	0.9916	0.9916	0.9916
arcene	0.3377	0.4564	0.3846	0.3738
arrhythmia	0.4261	0.4474	0.4331	0.4127
audiology	0.6112	0.6449	0.6456	0.6504
autos	0.6586	0.6557	0.6551	0.6611
bank	0.5501	0.5501	0.5501	0.5501
barleyblumeria	0.5949	0.5958	0.5920	0.5945
basehock	0.7964	0.8034	0.8034	0.8034
card	0.7095	0.7095	0.7095	0.7095
cargo2k	1.0000	1.0000	1.0000	1.0000
central-nervous-system	0.0990	0.2445	0.2178	0.2178
cjs	0.9974	0.9974	0.9974	0.9974
cnae-9	0.7873	0.7926	0.7926	0.7923
collins	1.0000	1.0000	1.0000	1.0000
colon-tumor	0.4934	0.4934	0.4934	0.4934
cottonmeloiodogyne	0.3453	0.3409	0.3582	0.3486
cyclopentane	0.1650	0.2359	0.2283	0.1701
cylinder-bands	0.3479	0.3585	0.3546	0.3429
dlbcl-stanford	0.6992	0.6278	0.6107	0.6607
egg	0.2480	0.2498	0.2498	0.2498
eucalyptus	0.4888	0.4829	0.4885	0.4903
fbis-wc	0.6494	0.6608	0.6608	0.6477
flags	0.5821	0.5869	0.5952	0.5889
gas	0.7790	0.7790	0.7790	0.7790
gene	0.8809	0.8809	0.8809	0.8809
german	0.1936	0.2177	0.2372	0.2229
gina	0.6914	0.6948	0.7018	0.6953
hERG-121inputs	0.4810	0.4810	0.4810	0.4810
HERG-64inputs	0.0460	0.0460	0.0771	0.0460
hiv1-proteasa	0.5289	0.5218	0.5299	0.5209
hiva	0.0980	0.1072	0.0870	0.1072
horse	0.2567	0.2631	0.2561	0.2730
isolet	0.7417	0.7634	0.7621	0.7584
libra	0.5590	0.5971	0.6269	0.6097
lrs	0.6850	0.7334	0.7184	0.7086
lung-cancer-ontario	0.3845	0.2548	0.3391	0.3012
madelon	0.3554	0.3777	0.3738	0.3746
mfeat-fac	0.8266	0.8344	0.8361	0.8355
mfeat-fou	0.7393	0.7393	0.7393	0.7393
mfeat-kar	0.8011	0.8011	0.8011	0.8011
mfeat-pix	0.8267	0.8517	0.8440	0.8456
mice-prot	1.0000	1.0000	1.0000	1.0000
mushroom	0.9552	0.9552	0.9552	0.9552
musk	0.7917	0.8009	0.7961	0.8007
newspop	0.2513	0.2580	0.2610	0.2589
optdigits	0.8641	0.8641	0.8641	0.8641
ovarian-cancer	0.9210	0.9659	0.9572	0.9572
ozone1hr	0.1152	0.1367	0.1782	0.1564
ozone8hr	0.2982	0.2843	0.2982	0.3243
pcmac	-0.0300	-0.0190	-0.0265	-0.0297
polish-1st	0.1832	0.1966	0.1832	0.1832
polish-2nd	0.1135	0.1135	0.1103	0.1135
polish-3rd	0.0427	0.0427	0.0427	0.0423
polish-4th	0.3141	0.3141	0.3141	0.3141
polish-5th	0.4409	0.4309	0.4409	0.4464
polya	0.3610	0.3490	0.3555	0.3565
profb	0.0909	0.0835	0.0814	0.0835
promoters	0.4455	0.4414	0.4455	0.5057
prostate	0.6246	0.7252	0.7154	0.7013
re0-wc	0.6286	0.6392	0.6254	0.6286
re1-wc	0.7563	0.7590	0.7590	0.7583
secom	0.0779	0.0779	0.0425	0.0636
semeion	0.9130	0.9067	0.9164	0.9125
soybean	0.8102	0.8489	0.8520	0.8456
spambase	0.8340	0.8340	0.8340	0.8340
spectrometer	0.4532	0.4296	0.4634	0.4400
student-weekend	0.1139	0.1198	0.1142	0.1267
student-workday	0.0648	0.0794	0.0824	0.0835
theorem	1.0000	1.0000	1.0000	1.0000
voice	0.5094	0.5618	0.4927	0.4787
zip	0.8311	0.8511	0.8383	0.8427

TABLE XVII
 κ RESULTS FOR THE ENSEMBLE APPROACH USING BAGGING AND THE
 FCBF METHOD AND RFs.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Grab'Em.3
ads	0.8357	0.8463	0.8380	0.8411
adult	0.5588	0.5589	0.5551	0.5562
AID1284Morered	0.1144	0.1068	0.1156	0.1237
AID1284red	0.0985	0.1035	0.0808	0.1218
AID1608Morered	-0.0082	-0.0100	-0.0103	-0.0128
AID1608red	0.0683	0.0740	0.0631	0.0399
AID362red	0.2044	0.2040	0.1914	0.2044
AID373AID439red	-0.0000	-0.0000	-0.0000	-0.0000
AID373red	-0.0000	0.0000	0.0000	0.0000
AID439Morered	0.1242	0.1602	0.1007	0.0707
AID439red	0.2538	0.2667	0.2088	0.1967
AID456red	0.0000	0.0000	0.0000	0.0000
AID604AID644_AllRed	0.1129	0.5997	0.0765	0.2498
AID644Morered	0.1921	0.1819	0.1785	0.1502
AID644red	0.1750	0.0815	0.1669	0.1536
AID687AID721red	-0.0000	0.0000	0.0000	0.0000
AID687red	0.0199	0.0000	0.0399	-0.0001
AID688red	-0.0001	0.0000	0.0000	0.0000
AID721morered	-0.0348	-0.0775	-0.0068	-0.0300
AID721red	-0.0229	0.0000	-0.0891	-0.0833
AID746AID1284red	-0.0000	-0.0001	-0.0001	-0.0001
AID746red	0.0207	0.0103	0.0250	0.0221
all-aml	0.8014	0.7489	0.7546	0.7546
anneal	0.9256	0.9300	0.9300	0.9356
antivirus	0.9916	1.0000	0.9916	0.9916
arcene	0.2399	0.3207	0.3704	0.4004
arrhythmia	0.5208	0.5366	0.5262	0.5125
audiology	0.6328	0.6681	0.6831	0.6524
autos	0.7497	0.7581	0.7320	0.7391
bank	0.4606	0.4670	0.4623	0.4602
barleyblumeria	0.6271	0.6327	0.6351	0.6328
basehock	0.8997	0.9218	0.9131	0.9197
card	0.7095	0.7095	0.7095	0.7095
cargo2k	1.0000	1.0000	1.0000	1.0000
central-nervous-system	-0.0263	-0.0787	0.0487	0.0939
cjs	1.0000	1.0000	1.0000	1.0000
cnae-9	0.8094	0.8260	0.8271	0.8252
collins	1.0000	1.0000	1.0000	1.0000
colon-tumor	0.4281	0.4852	0.4520	0.4281
cottonmeloiodogyne	0.3330	0.3322	0.3540	0.3366
cyclopentane	0.2497	0.3783	0.2840	0.2466
cylinder-bands	0.3821	0.4514	0.4795	0.4381
dlbcl-stanford	0.6734	0.5965	0.6350	0.6350
egg	0.3312	0.3347	0.3351	0.3353
eucalyptus	0.4660	0.4618	0.4656	0.4791
fbis-wc	0.7238	0.7270	0.7256	0.7216
flags	0.6303	0.5977	0.6156	0.5978
gas	0.8180	0.8183	0.8202	0.8197
gene	0.8917	0.8886	0.8901	0.8922
german	0.2228	0.2083	0.2172	0.1948
gina	0.7474	0.7497	0.7647	0.7416
hERG-121inputs	0.4505	1.0000	0.4505	0.4505
HERG-64inputs	0.0136	0.1493	0.1960	0.2960
hiv1-proteasa	0.5601	0.5531	0.5627	0.5479
hiva	0.1706	0.1645	0.2048	0.1790
horse	0.3336	0.3221	0.3333	0.3224
isolet	0.8789	0.9007	0.8975	0.8983
libra	0.6837	0.7701	0.7403	0.7406
lrs	0.7545	0.7742	0.7632	0.7671
lung-cancer-ontario	0.3027	0.3427	0.3027	0.2527
madelon	0.3323	0.3446	0.3531	0.3685
mfeat-fac	0.9150	0.9294	0.9256	0.9294
mfeat-fou	0.8294	0.8244	0.8267	0.8267
mfeat-kar	0.9611	0.9611	0.9600	0.9589
mfeat-pix	0.8972	0.9467	0.9267	0.9350
mice-prot	1.0000	1.0000	1.0000	1.0000
mushroom	0.9696	0.9756	0.9756	0.9761
musk	0.8036	0.8337	0.8295	0.8373
newspop	0.2084	0.2271	0.2340	0.2265
optdigits	0.9424	0.9407	0.9422	0.9430
ovarian-cancer	0.9634	0.9739	0.9650	0.9826
ozone1hr	0.0260	0.0267	0.0255	0.0260
ozone8hr	0.1870	0.2050	0.1934	0.1889
pcmac	0.0136	-0.0238	-0.0334	-0.0017
polish-1st	0.1244	0.1100	0.1264	0.1301
polish-2nd	0.0603	0.0565	0.0567	0.0651
polish-3rd	0.0345	0.0348	0.0272	0.0418
polish-4th	0.2400	0.2404	0.2400	0.2404
polish-5th	0.4510	0.4487	0.4451	0.4619
polya	0.3154	0.3185	0.3122	0.3207
profb	0.1242	0.1022	0.1352	0.1303
promoters	0.5154	0.5014	0.5154	0.5722
prostate	0.7304	0.8207	0.8363	0.8063
re0-wc	0.6908	0.7031	0.6959	0.7011
re1-wc	0.7905	0.7925	0.7946	0.7942
secom	0.0000	0.0000	0.0000	0.0000
semeion	0.9206	0.9092	0.9242	0.9163
soybean	0.8490	0.8842	0.8822	0.8794
spambase	0.8562	0.8544	0.8558	0.8557
spectrometer	0.5120	0.5029	0.4946	0.5046
student-weekend	0.1163	0.1202	0.1187	0.1323
student-workday	0.0937	0.0809	0.1061	0.1046
theorem	1.0000	1.0000	1.0000	1.0000
voice	0.5725	0.5947	0.5787	0.5392
zip	0.9092	0.9293	0.9228	0.9271

TABLE XVIII
REDUCTION RESULTS FOR THE HETEROGENEOUS ENSEMBLE AND A DT.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Grab'Em.3
ads	0.9807	0.9884	0.9923	0.9904
adult	0.9533	0.9619	0.9333	0.9429
AID1284Morered	0.7487	0.9617	0.9891	0.9530
AID1284red	0.8117	0.9806	0.8447	0.8252
AID1608Morered	0.9565	0.9683	0.9530	0.9902
AID1608red	0.8610	0.8831	0.5325	0.9545
AID362red	0.8417	0.8264	0.8542	0.9375
AID373AID439red	0.4318	0.9610	0.9156	0.8506
AID373red	0.7600	0.9613	0.8323	0.8258
AID439Morered	0.3879	0.9912	0.8118	0.9902
AID439red	0.5309	0.8519	0.8889	0.9259
AID456red	0.0000	0.8105	0.9935	0.9804
AID604AID644_AllRed	0.7468	0.7987	0.8636	0.9286
AID644Morered	0.9335	0.9967	0.9617	0.9923
AID644red	0.6890	0.9000	0.6700	0.8500
AID687AID721red	0.0000	0.9935	0.9935	0.9935
AID687red	0.6634	0.7451	0.9150	0.7778
AID688red	0.0000	0.3856	0.3529	0.3922
AID721morered	0.1876	0.9869	0.9540	0.9333
AID721red	0.3632	0.9310	0.8161	0.9195
AID746AID1284red	0.3052	0.7468	0.5844	0.7857
AID746red	0.6045	0.7922	0.7597	0.6429
all-aml	0.9997	0.9999	0.9999	0.9994
anneal	0.9136	0.9153	0.9153	0.9322
antivirus	0.9878	0.9736	0.9567	0.9849
arcene	0.9855	0.9936	0.9873	0.9970
arrhythmia	0.9487	0.9498	0.9785	0.9247
audiology	0.9280	0.9462	0.9247	0.9355
autos	0.9111	0.9167	0.9167	0.9167
bank	0.9226	0.9516	0.9677	0.9677
barleyblumeria	0.9266	0.8906	0.9062	0.8281
basehock	0.9746	0.9821	0.9749	0.9840
card	0.9235	0.9216	0.9216	0.9804
cargo2k	0.9557	0.9691	0.9794	0.9794
central-nervous-system	0.5948	0.9992	0.9996	0.9997
cjs	0.9210	0.9400	0.9700	0.9700
cnac-9	0.9428	0.9498	0.9591	0.9533
collins	0.9938	0.9938	0.9938	0.9938
colon-tumor	0.9962	0.9975	0.9950	0.9935
cottonmeloiodgyne	0.9703	0.8750	0.9062	0.9062
cyclopentane	0.8820	0.9375	0.8984	0.8750
cylinder-bands	0.9321	0.9557	0.9521	0.9592
dlbcl-stanford	0.9988	0.9988	0.9963	0.9995
egg	0.8597	0.8333	0.8889	0.9306
eucalyptus	0.9758	0.9231	0.9560	0.9890
fbis-wc	0.9730	0.9695	0.9650	0.9455
flags	0.9781	0.9174	0.9421	0.9835
gas	0.9453	0.9609	0.8984	0.9609
gene	0.8800	0.8667	0.8667	0.8667
german	0.8623	0.9180	0.8852	0.9180
gina	0.9657	0.9639	0.9515	0.9619
hERG-121inputs	0.9851	0.9752	0.9091	0.9835
hERG-64inputs	0.5750	0.7188	0.8594	0.8750
hiv1-proteasa	0.8894	0.8938	0.9062	0.9250
hiva	0.9357	0.9753	0.9437	0.9703
horse	0.9328	0.9483	0.9655	0.9310
isolet	0.9353	0.9384	0.9368	0.9125
libra	0.8800	0.8556	0.7889	0.9111
lrs	0.9446	0.9208	0.9604	0.8812
lung-cancer-ontario	0.9992	0.9997	0.9997	0.9993
madelon	0.9484	0.9780	0.9620	0.9720
mfeat-fac	0.9458	0.9583	0.9537	0.9444
mfeat-fou	0.9026	0.9079	0.9211	0.9079
mfeat-kar	0.8953	0.8438	0.9219	0.9062
mfeat-pix	0.9158	0.9250	0.7833	0.9583
mice-prot	0.9363	0.9625	0.9625	0.9500
mushroom	0.9323	0.9231	0.9231	0.9145
musk	0.9699	0.9578	0.9699	0.9578
newspop	0.8627	0.8305	0.8136	0.8475
optdigits	0.8656	0.8750	0.8281	0.8438
ovarian-cancer	0.9989	0.9955	0.9996	0.9995
ozone1hr	0.7611	0.7222	0.6944	0.7083
ozone8hr	0.7528	0.7500	0.8056	0.7917
pcmac	0.2847	0.9763	0.9641	0.8151
polish-1st	0.9125	0.9688	0.9375	0.9375
polish-2nd	0.5813	0.5156	0.7344	0.4688
polish-3rd	0.5922	0.5469	0.6562	0.5312
polish-4th	0.9844	0.9844	0.9844	0.9844
polish-5th	0.9609	0.9844	0.9844	0.8750
polya	0.9793	0.9763	0.9704	0.9645
profb	0.7597	0.7015	0.4776	0.4925
promoters	0.9588	0.9737	0.9737	0.9298
prostate	0.9970	0.9994	0.9980	0.9875
re0-wc	0.9768	0.9529	0.9622	0.9515
re1-wc	0.9851	0.9654	0.9761	0.9859
secom	0.9124	0.9407	0.9271	0.7424
semeion	0.9623	0.9623	0.9358	0.9509
soybean	0.8927	0.8415	0.9146	0.8537
spambase	0.8544	0.8772	0.8947	0.8596
spectrometer	0.8663	0.9109	0.8020	0.9604
student-weekend	0.9333	0.8947	0.9298	0.9649
student-workday	0.8877	0.9123	0.9123	0.8421
theorem	0.9107	0.9107	0.9107	0.9107
voice	0.9677	0.9774	0.9935	0.9806
zip	0.8539	0.9141	0.9102	0.8398

TABLE XIX
κ RESULTS FOR THE HETEROGENEOUS ENSEMBLE AND A DT.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Grab'Em.3
ads	0.8341	0.8930	0.8663	0.8785
adult	0.5717	0.5770	0.5973	0.5969
AID1284Morered	0.0914	-0.0862	-0.0862	0.3032
AID1284red	0.1044	0.0000	0.2241	-0.0485
AID1608Morered	0.0313	-0.0520	0.2933	0.0000
AID1608red	0.0312	-0.0169	-0.0489	0.0000
AID362red	0.1596	-0.0040	-0.0071	0.2828
AID373AID439red	-0.0001	-0.0002	-0.0002	-0.0002
AID373red	0.1913	0.0000	0.4997	0.2855
AID439Morered	-0.0831	0.0000	0.0000	0.0000
AID439red	0.1960	0.0000	-0.1667	0.0000
AID456red	-0.0018	0.0000	0.0000	0.0000
AID604AID644_AllRed	0.1132	0.0000	0.0000	-0.0003
AID644Morered	0.1900	0.1176	-0.1250	0.1176
AID644red	-0.0008	-0.1905	-0.0526	0.0278
AID687AID721red	-0.0001	0.0000	0.0000	0.0000
AID687red	0.1094	0.1814	0.3327	0.1814
AID688red	-0.0059	-0.0007	-0.0049	-0.0014
AID721morered	-0.1046	-0.1739	0.3571	0.3571
AID721red	-0.1136	0.0000	0.1818	0.3571
AID746AID1284red	-0.0004	-0.0005	-0.0005	-0.0005
AID746red	0.0993	0.1252	0.1315	0.1340
all-aml	0.7249	0.2500	0.2500	0.5714
anneal	0.8662	0.8791	0.8791	0.9047
antivirus	0.9709	1.0000	1.0000	1.0000
arcene	0.3865	-0.1224	0.4000	0.4000
arrhythmia	0.4140	0.4005	0.4216	0.2748
audiology	0.6337	0.5829	0.6842	0.6298
autos	0.7044	0.8000	0.8697	0.7386
bank	0.5480	0.5120	0.5201	0.5201
barleyblumeria	0.5683	0.6346	0.5906	0.7046
basehock	0.8224	0.8393	0.8393	0.8092
card	0.6921	0.6804	0.6804	0.6804
cargo2k	1.0000	1.0000	1.0000	1.0000
central-nervous-system	0.1990	0.5714	0.5714	0.6667
cjs	0.9974	1.0000	1.0000	1.0000
cnac-9	0.8074	0.7912	0.8420	0.8737
collins	1.0000	1.0000	1.0000	1.0000
colon-tumor	0.5201	0.4000	0.4000	0.4000
cottonmeloiodgyne	0.2829	0.3947	0.3506	0.3711
cyclopentane	0.2089	0.4098	0.7000	0.3306
cylinder-bands	0.4661	0.4008	0.3669	0.4008
dlbcl-stanford	0.7161	0.6154	1.0000	0.6154
egg	0.2573	0.2745	0.2600	0.1912
eucalyptus	0.4703	0.4752	0.5434	0.4620
fbis-wc	0.6844	0.6783	0.7117	0.6866
flags	0.5332	0.4872	0.6805	0.4479
gas	0.9157	0.9485	0.9320	0.9197
gene	0.8755	0.8831	0.8831	0.8831
german	0.2744	0.2138	0.2211	0.2138
gina	0.6653	0.6535	0.6942	0.7348
hERG-121inputs	0.5381	1.0000	1.0000	1.0000
hERG-64inputs	0.0893	0.0000	0.0000	0.0000
hiv1-proteasa	0.5155	0.4640	0.4597	0.3996
hiva	0.2895	0.0531	-0.0152	0.4205
horse	0.3272	0.4090	0.4525	0.4469
isolet	0.7634	0.7130	0.7370	0.7610
libra	0.5672	0.5814	0.6719	0.6113
lrs	0.6371	0.7134	0.6628	0.7099
lung-cancer-ontario	0.2633	0.4000	0.4000	0.4000
madelon	0.4600	0.6154	0.5692	0.6154
mfeat-fac	0.8067	0.7711	0.7879	0.7829
mfeat-fou	0.6975	0.6874	0.6921	0.6825
mfeat-kar	0.7486	0.7718	0.7217	0.7552
mfeat-pix	0.7811	0.7604	0.8272	0.7604
mice-prot	1.0000	1.0000	1.0000	1.0000
mushroom	0.9003	1.0000	1.0000	1.0000
musk	0.7918	0.7204	0.7505	0.7595
newspop	0.2593	0.2734	0.2807	0.2739
optdigits	0.7943	0.8061	0.8536	0.8378
ovarian-cancer	0.9291	1.0000	1.0000	1.0000
ozone1hr	0.1295	-0.0293	-0.0131	-0.0072
ozone8hr	0.2445	0.2499	0.2127	0.2239
pcmac	-0.0357	0.0517	0.0215	-0.0825
polish-1st	0.2029	0.1938	0.1776	0.1938
polish-2nd	0.1256	0.1024	0.1556	0.1597
polish-3rd	0.1128	0.1912	0.1703	0.0771
polish-4th	0.3141	0.4288	0.4288	0.4288
polish-5th	0.3769	0.4252	0.4252	0.4246
polya	0.3536	0.3581	0.3298	0.3411
profb	0.1235	0.0756	0.1395	0.1687
promoters	0.4180	0.4444	0.8000	0.8000
prostate	0.7299	0.4167	0.8511	1.0000
re0-wc	0.6523	0.7201	0.6653	0.6290
re1-wc	0.7528	0.7471	0.6533	0.7212
secom	0.0512	0.1103	0.3732	-0.0305
semeion	0.8846	0.7655	0.9264	0.9643
soybean	0.8096	0.9194	0.8235	0.8560
spambase	0.8099	0.7488	0.7469	0.8395
spectrometer	0.4093	0.4222	0.4852	0.4230
student-weekend	0.1260	0.1407	0.1407	0.2369
student-workday	0.0851	-0.0308	0.1604	0.0343
theorem	1.0000	1.0000	1.0000	1.0000
voice	0.4724	0.5714	0.5714	0.8000
zip	0.7931	0.8119	0.8385	0.8325

TABLE XX
 κ RESULTS FOR THE HETEROGENEOUS ENSEMBLE AND A RF.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Grab'Em.3
ads	0.8663	0.9213	0.9213	0.8808
adult	0.5565	0.5686	0.5365	0.5316
AID1284Morered	0.0000	0.2241	-0.0485	0.3010
AID1284red	0.0000	0.0000	0.2241	-0.0485
AID1608Morered	-0.0173	-0.0311	-0.0173	0.1166
AID1608red	0.0000	0.0000	0.0000	-0.0404
AID362red	0.0000	0.0000	0.0000	0.0000
AID373AID439red	-0.0002	-0.0002	-0.0002	-0.0002
AID373red	0.2855	0.2855	0.2855	0.2855
AID439Morered	0.0000	0.0000	0.0000	0.0000
AID439red	0.0000	0.0000	0.0000	0.0000
AID456red	0.0000	0.0000	0.0000	0.0000
AID604AID644_AllRed	0.0000	0.0000	0.0000	0.0000
AID644Morered	-0.3158	0.0476	0.1176	0.0278
AID644red	0.1250	0.0278	0.3056	0.3056
AID687AID721red	0.0000	0.0000	0.0000	0.0000
AID687red	0.0000	0.0000	0.0000	0.0000
AID688red	0.0000	-0.0031	-0.0020	-0.0025
AID721morered	0.0000	-0.1739	0.0000	0.0000
AID721red	0.0000	-0.1739	0.0000	0.6087
AID746AID1284red	0.0000	0.0000	0.0000	-0.0003
AID746red	0.0000	-0.0003	0.1047	0.1047
all-aml	0.5714	0.2500	0.2500	1.0000
anneal	0.8791	0.9077	0.8830	0.9047
antivirus	1.0000	1.0000	1.0000	1.0000
arcene	0.5098	0.5098	0.5098	0.5098
arrhythmia	0.5246	0.5337	0.5511	0.5718
audiology	0.6414	0.6913	0.6960	0.6920
autos	0.9340	0.8667	0.8000	0.8667
bank	0.4766	0.4336	0.4697	0.4688
barleyblumeria	0.6054	0.6819	0.6238	0.6912
basehock	0.9397	0.9397	0.9598	0.9196
card	0.6774	0.6497	0.7081	0.6804
cargo2k	1.0000	1.0000	1.0000	1.0000
central-nervous-system	0.0000	0.2500	0.2500	0.6667
cjs	0.9956	0.9956	0.9956	0.9956
cnae-9	0.8750	0.8646	0.8542	0.8542
collins	1.0000	1.0000	1.0000	1.0000
colon-tumor	0.6667	0.7818	0.4000	0.8000
cottonmeloidogyne	0.2135	0.3905	0.3121	0.3854
cyclopentane	0.2373	0.3898	0.4615	0.4615
cylinder-bands	0.5404	0.5352	0.4638	0.5404
dlbcl-stanford	0.6154	1.0000	1.0000	0.6154
eg	0.3707	0.3900	0.3669	0.2493
eucalyptus	0.4932	0.5050	0.5553	0.4454
fbis-wc	0.6975	0.7494	0.7912	0.7805
flags	0.4888	0.6764	0.5484	0.4083
gas	0.9616	0.9747	0.9712	0.9581
gene	0.8783	0.8732	0.8577	0.8577
german	0.2211	0.1521	0.2629	0.1832
gina	0.7808	0.8040	0.8156	0.8444
hERG-121inputs	1.0000	1.0000	1.0000	1.0000
hERG-64inputs	0.0000	0.0000	0.0000	0.0000
hiv1-proteasa	0.4335	0.4816	0.4729	0.4039
hiva	0.1005	0.1439	0.1005	-0.0045
horse	0.3656	0.4677	0.4411	0.3735
isolet	0.7811	0.8064	0.8345	0.8758
libra	0.7612	0.8209	0.8212	0.6714
lrs	0.6850	0.7891	0.6893	0.7632
lung-cancer-ontario	0.4000	0.4000	0.4000	0.4000
madelon	0.4462	0.7923	0.7615	0.7846
mfeat-fac	0.9389	0.8944	0.8944	0.9222
mfeat-fou	0.7278	0.7333	0.7222	0.7389
mfeat-kar	0.8000	0.9778	0.8500	0.8944
mfeat-pix	0.8333	0.8222	0.9000	0.7667
mice-prot	1.0000	1.0000	1.0000	1.0000
mushroom	0.8891	0.9877	0.9877	0.9877
musk	0.7418	0.7929	0.7584	0.7562
newspop	0.2539	0.2206	0.2582	0.2146
optdigits	0.8476	0.8991	0.9110	0.9051
ovarian-cancer	1.0000	1.0000	1.0000	1.0000
ozone1hr	-0.0131	-0.0072	-0.0131	-0.0131
ozone8hr	0.1787	0.0821	0.2575	0.0821
pcmac	-0.0086	-0.0178	0.0683	-0.0121
polish-1st	0.1855	0.2821	0.1632	0.1855
polish-2nd	0.0844	0.0743	0.0809	0.1096
polish-3rd	-0.0037	0.0325	0.0374	0.0349
polish-4th	0.3333	0.3333	0.3333	0.3333
polish-5th	0.3331	0.3331	0.3331	0.4409
polya	0.3301	0.3496	0.3224	0.3769
profb	0.0993	0.1737	0.2126	0.3924
promoters	0.8000	0.4444	0.8000	0.8000
prostate	1.0000	0.8571	1.0000	1.0000
re0-wc	0.8239	0.7692	0.8683	0.8143
re1-wc	0.7210	0.7698	0.7348	0.7165
secom	0.0000	0.0000	0.0000	0.0000
semeion	0.8437	0.7983	0.8437	0.8437
soybean	0.8536	0.9188	0.9029	0.8867
spambase	0.8127	0.8316	0.7913	0.8764
spectrometer	0.4610	0.5592	0.6612	0.5211
student-weekend	0.1407	0.1407	0.1407	0.2369
student-workday	0.1301	-0.0043	0.2351	0.0042
theorem	1.0000	1.0000	1.0000	1.0000
voice	0.8000	0.8000	0.5714	0.5714
zip	0.8493	0.8698	0.8963	0.8951

TABLE XXI
REDUCTION RESULTS FOR THE ADABOOST ENSEMBLE AND A DT.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Grab'Em.3
ads	0.9831	0.9773	0.9775	0.9777
adult	0.9524	0.9524	0.9524	0.9524
AID1284Morered	0.9293	0.9497	0.9270	0.9412
AID1284red	0.6466	0.7447	0.7175	0.7359
AID1608Morered	0.9495	0.9523	0.9523	0.9500
AID1608red	0.8390	0.8727	0.8448	0.8701
AID362red	0.8410	0.8347	0.8382	0.8347
AID373AID439red	0.2753	0.9734	0.9571	0.9721
AID373red	0.2735	0.4677	0.9000	0.9690
AID439Morered	0.4940	0.9876	0.9832	0.9858
AID439red	0.5432	0.9210	0.8901	0.8975
AID456red	0.0000	0.9935	0.9935	0.9935
AID604AID644_AllRed	0.8896	0.9260	0.8740	0.8903
AID644Morered	0.8502	0.9586	0.9426	0.9430
AID644red	0.4910	0.7750	0.7390	0.7150
AID687AID721red	0.0000	0.9935	0.9935	0.9935
AID687red	0.4359	0.9327	0.9085	0.9327
AID688red	0.0000	0.9935	0.9935	0.9935
AID721morered	0.2939	0.9811	0.9696	0.9791
AID721red	0.4253	0.8759	0.8977	0.8506
AID746AID1284red	0.0000	0.9935	0.9935	0.9935
AID746red	0.2701	0.9656	0.8409	0.9656
all-aml	0.9997	0.9997	0.9997	0.9997
anneal	0.9085	0.9017	0.9051	0.9051
antivirus	0.9891	0.9900	0.9898	0.9904
arcene	0.9907	0.9916	0.9896	0.9928
arrhythmia	0.9391	0.9376	0.9351	0.9315
audiology	0.9226	0.8957	0.8925	0.9022
autos	0.9431	0.9431	0.9375	0.9431
bank	0.9419	0.9516	0.9468	0.9484
barleyblumeria	0.9141	0.9125	0.8984	0.9172
basehock	0.9725	0.9702	0.9688	0.9702
card	0.9765	0.9765	0.9765	0.9745
cargo2k	0.9670	0.9794	0.9763	0.9763
central-nervous-system	0.6982	0.9981	0.9980	0.9978
cjs	0.6980	0.7070	0.7070	0.9900
cnae-9	0.9235	0.9092	0.9088	0.9231
collins	0.9938	0.9938	0.9938	0.9938
colon-tumor	0.9976	0.9975	0.9900	0.9980
cottonmeloidogyne	0.8812	0.8859	0.8812	0.8812
cyclopentane	0.9313	0.9398	0.9203	0.9313
cylinder-bands	0.8995	0.8706	0.8878	0.8819
dlbcl-stanford	0.9991	0.9994	0.9992	0.9991
eg	0.8889	0.8833	0.8833	0.8833
eucalyptus	0.9857	0.9780	0.9824	0.9758
fbis-wc	0.9739	0.9686	0.9681	0.9749
flags	0.9847	0.9822	0.9839	0.9831
gas	0.9461	0.9461	0.9461	0.9461
gene	0.8967	0.8958	0.8908	0.8983
german	0.8443	0.8738	0.8344	0.8656
gina	0.9657	0.9618	0.9610	0.9615
hERG-121inputs	0.9777	0.9793	0.9810	0.9802
hERG-64inputs	0.6594	0.9250	0.9219	0.9187
hiv1-proteasa	0.8513	0.8419	0.8100	0.8406
hiva	0.9816	0.9821	0.9569	0.9791
horse	0.9172	0.9190	0.8966	0.9172
isolet	0.9353	0.9282	0.9267	0.9292
libra	0.8956	0.8911	0.8978	0.8944
lrs	0.9455	0.9436	0.9386	0.9376
lung-cancer-ontario	0.9982	0.9984	0.9983	0.9984
madelon	0.9110	0.8794	0.8888	0.8834
mfeat-fac	0.9250	0.9241	0.9097	0.9157
mfeat-fou	0.7342	0.7395	0.7342	0.7421
mfeat-kar	0.3047	0.4219	0.4219	0.4219
mfeat-pix	0.9375	0.9254	0.9237	0.9296
mice-prot	0.9025	0.9025	0.9025	0.9025
mushroom	0.9521	0.9521	0.9513	0.9462
musk	0.9651	0.9554	0.9554	0.9554
newspop	0.8814	0.8644	0.8695	0.8644
optdigits	0.8266	0.8281	0.8266	0.8250
ovarian-cancer	0.9989	0.9991	0.9990	0.9992
ozone1hr	0.8139	0.8139	0.8278	0.8236
ozone8hr	0.8597	0.8792	0.8556	0.8667
pcmac	0.1829	0.9743	0.9333	0.9556
polish-1st	0.9344	0.9344	0.9234	0.9328
polish-2nd	0.7531	0.8516	0.8453	0.8516
polish-3rd	0.6234	0.9156	0.8484	0.9078
polish-4th	0.9844	0.9844	0.9844	0.9844
polish-5th	0.9531	0.9484	0.9531	0.9484
polya	0.9716	0.9716	0.9692	0.9728
profb	0.8433	0.8612	0.7791	0.8806
promoters	0.9632	0.9570	0.9535	0.9588
prostate	0.9955	0.9958	0.9960	0.9958
re0-wc	0.9927	0.9923	0.9891	0.9918
re1-wc	0.9866	0.9866	0.9866	0.9866
secom	0.8863	0.9058	0.9093	0.9242
semeion	0.9558	0.9543	0.9494	0.9592
soybean	0.8671	0.8341	0.8415	0.8402
spambase	0.8544	0.8386	0.8351	0.8386
spectrometer	0.9396	0.9416	0.9238	0.9158
student-weekend	0.9123	0.9228	0.9088	0.9333
student-workday	0.8842	0.8719	0.8702	0.8702
theorem	0.9107	0.9107	0.9107	0.9107
voice	0.9781	0.9806	0.9777	0.9813
zip	0.9383	0.9305	0.9336	0.9406

TABLE XXII

 κ RESULTS FOR THE ADABOOST ENSEMBLE AND A DT.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Grab'Em.3
ads	0.8212	0.8297	0.8278	0.8296
adult	0.5714	0.5714	0.5714	0.5714
AID1284Morered	0.2009	0.1637	0.1488	0.1388
AID1284red	0.0806	0.0592	0.0636	0.0461
AID1608Morered	0.0238	0.0384	0.0191	0.0036
AID1608red	0.0251	0.0353	0.0278	0.0323
AID362red	0.0915	0.1312	0.1196	0.1312
AID373AID439red	-0.0000	0.0000	-0.0000	0.0000
AID373red	0.1667	0.3332	0.0284	-0.0001
AID439Morered	-0.0469	0.0363	0.0165	0.1449
AID439red	0.0650	0.1982	0.2080	0.0959
AID456red	-0.0018	0.0000	0.0000	0.0000
AID604AID644_AllRed	0.1049	0.2286	0.1769	0.1992
AID644Morered	0.0645	0.0171	0.0107	0.0486
AID644red	0.0882	-0.0035	-0.0001	0.0074
AID687AID721red	-0.0001	0.0000	0.0000	0.0000
AID687red	0.1396	0.0864	0.0817	0.0864
AID688red	-0.0059	0.0000	0.0000	0.0000
AID721morered	-0.0417	-0.0257	-0.0898	-0.0603
AID721red	-0.0291	0.0082	-0.0005	0.0218
AID746AID1284red	0.0376	0.0000	0.0000	0.0000
AID746red	0.1235	-0.0001	0.0299	-0.0001
all-aml	0.7203	0.6870	0.7203	0.7203
anneal	0.9147	0.9205	0.9150	0.9049
antivirus	0.9916	0.9833	0.9916	0.9833
arcene	0.4044	0.3917	0.4026	0.3470
arrhythmia	0.4591	0.4169	0.4628	0.4368
audiology	0.6202	0.6454	0.6303	0.6392
autos	0.7134	0.6811	0.6922	0.6854
bank	0.5456	0.5492	0.5469	0.5494
barleyblumeria	0.5758	0.5688	0.5696	0.5752
basehock	0.8345	0.8415	0.8325	0.8415
card	0.7095	0.7095	0.7095	0.7095
cargo2k	1.0000	1.0000	1.0000	1.0000
central-nervous-system	0.0758	0.1375	0.1375	0.1375
cjs	0.9974	0.9974	0.9974	0.9974
cnae-9	0.8408	0.8544	0.8544	0.8397
collins	1.0000	1.0000	1.0000	1.0000
colon-tumor	0.4410	0.5271	0.4410	0.4369
cottonmeloidogyne	0.3495	0.3415	0.3522	0.3537
cyclopentane	0.1439	0.2109	0.2890	0.1439
cylinder-bands	0.3736	0.3816	0.3907	0.3865
dlbcl-stanford	0.7322	0.7322	0.7322	0.7322
eg	0.2443	0.2454	0.2454	0.2454
eucalyptus	0.4911	0.4793	0.4879	0.4722
fbis-wc	0.6412	0.6455	0.6594	0.6461
flags	0.5562	0.5823	0.5807	0.5681
gas	0.8806	0.8806	0.8806	0.8806
gene	0.8590	0.8704	0.8696	0.8612
german	0.2700	0.2340	0.2677	0.2420
gina	0.6967	0.6978	0.6885	0.6949
hERG-121inputs	0.4810	0.4810	0.4810	0.4810
hERG-64inputs	0.0460	0.1360	0.0771	0.0771
hiv1-proteasa	0.5266	0.5381	0.5534	0.5498
hiva	0.1274	0.1395	0.2108	0.1384
horse	0.2745	0.2359	0.3184	0.2804
isolet	0.7545	0.7620	0.7658	0.7628
libra	0.5706	0.6153	0.5823	0.5853
lrs	0.6729	0.7275	0.6812	0.7045
lung-cancer-ontario	0.4145	0.2592	0.2592	0.4291
madelon	0.3423	0.3646	0.3485	0.3438
mfeat-fac	0.8305	0.8372	0.8529	0.8412
mfeat-fou	0.7354	0.7365	0.7354	0.7354
mfeat-kar	0.8005	0.7505	0.7505	0.7505
mfeat-pix	0.8272	0.8495	0.8417	0.8395
mice-prot	1.0000	1.0000	1.0000	1.0000
mushroom	0.8329	0.8334	0.8329	0.8884
musk	0.8054	0.8108	0.8108	0.8108
newspop	0.2632	0.2744	0.2765	0.2744
optdigits	0.8433	0.8419	0.8433	0.8449
ovarian-cancer	0.9126	0.9126	0.9380	0.9041
ozone1hr	0.1523	0.1523	0.1321	0.1422
ozone8hr	0.2802	0.2892	0.3354	0.2852
pcmac	-0.0252	-0.0097	-0.0163	-0.0149
polish-1st	0.1714	0.1886	0.1911	0.1543
polish-2nd	0.0885	0.0695	0.0837	0.0695
polish-3rd	0.0532	0.0067	0.0530	0.0185
polish-4th	0.3141	0.3141	0.3141	0.3141
polish-5th	0.4374	0.4539	0.4374	0.4594
polya	0.3460	0.3455	0.3473	0.3496
profb	0.0858	0.0858	0.0758	0.0858
promoters	0.4796	0.4862	0.5249	0.5649
prostate	0.6887	0.7177	0.7043	0.6887
re0-wc	0.6395	0.6396	0.6430	0.6374
re1-wc	0.7807	0.7807	0.7801	0.7769
secom	0.0370	0.0215	0.0206	0.0367
semeion	0.8996	0.9154	0.9143	0.8932
soybean	0.8079	0.8567	0.8440	0.8390
spambase	0.8092	0.8185	0.8233	0.8233
spectrometer	0.4292	0.4415	0.4374	0.4379
student-weekend	0.0869	0.1122	0.0974	0.1286
student-workday	0.1269	0.0929	0.0889	0.0854
theorem	1.0000	1.0000	1.0000	1.0000
voice	0.4566	0.4635	0.5574	0.4524
zip	0.8399	0.8469	0.8434	0.8429

TABLE XXIII

 κ RESULTS FOR THE ADABOOST ENSEMBLE AND A RF.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Grab'Em.3
ads	0.8482	0.8506	0.8509	0.8495
adult	0.5586	0.5564	0.5590	0.5587
AID1284Morered	0.0688	0.0515	0.1391	0.1065
AID1284red	0.1341	0.0971	0.0949	0.1168
AID1608Morered	0.0120	0.0114	0.0147	0.0335
AID1608red	0.1071	0.0438	0.0234	0.0592
AID362red	0.1892	0.2270	0.1647	0.1704
AID373AID439red	-0.0000	0.0000	-0.0000	-0.0000
AID373red	-0.0001	0.0000	0.0444	-0.0000
AID439Morered	0.0173	0.0821	-0.0062	0.0768
AID439red	0.2469	0.3294	0.3667	0.3598
AID456red	0.0000	0.0000	0.0000	0.0000
AID604AID644_AllRed	0.0535	0.0979	0.0535	0.0535
AID644Morered	0.1966	0.2094	0.1969	0.1720
AID644red	0.1922	0.1820	0.1948	0.1926
AID687AID721red	-0.0000	0.0000	0.0000	0.0000
AID687red	0.0198	-0.0001	-0.0001	-0.0001
AID688red	0.0000	0.0000	0.0000	0.0000
AID721morered	-0.0348	-0.0941	-0.0787	-0.1138
AID721red	-0.0886	-0.0925	0.0828	-0.0868
AID746AID1284red	-0.0000	0.0000	0.0000	0.0000
AID746red	0.0208	-0.0002	0.0102	-0.0002
all-aml	0.7380	0.6635	0.7685	0.7380
anneal	0.9319	0.9279	0.9277	0.9303
antivirus	1.0000	0.9833	1.0000	0.9916
arcene	0.3584	0.3826	0.4341	0.3479
arrhythmia	0.4959	0.5283	0.5289	0.5298
audiology	0.6535	0.6434	0.6799	0.6786
autos	0.7403	0.7529	0.7529	0.7598
bank	0.4676	0.4652	0.4640	0.4658
barleyblumeria	0.5946	0.6027	0.6135	0.5932
basehock	0.9268	0.9278	0.9278	0.9278
card	0.7061	0.7061	0.7061	0.7095
cargo2k	1.0000	1.0000	1.0000	1.0000
central-nervous-system	0.0808	0.0618	0.1035	0.1189
cjs	0.9996	0.9996	0.9996	0.9978
cnae-9	0.8698	0.8854	0.8844	0.8740
collins	1.0000	1.0000	1.0000	1.0000
colon-tumor	0.2755	0.5930	0.2834	0.2517
cottonmeloidogyne	0.3334	0.3342	0.3357	0.3338
cyclopentane	0.2409	0.2791	0.3328	0.2170
cylinder-bands	0.4654	0.4712	0.4548	0.4487
dlbcl-stanford	0.7679	0.7179	0.7179	0.8064
eg	0.3303	0.3347	0.3340	0.3342
eucalyptus	0.4581	0.4676	0.4721	0.4666
fbis-wc	0.7240	0.7374	0.7382	0.7196
flags	0.6004	0.6040	0.5918	0.5669
gas	0.9167	0.9176	0.9183	0.9170
gene	0.8644	0.8661	0.8683	0.8660
german	0.2760	0.2072	0.2574	0.2214
gina	0.7786	0.7838	0.7814	0.7861
hERG-121inputs	0.5238	0.3705	0.4171	0.5238
hERG-64inputs	-0.0264	0.0400	0.0400	0.0638
hiv1-proteasa	0.5613	0.5923	0.6054	0.5843
hiva	0.2171	0.2142	0.2443	0.1900
horse	0.3609	0.2923	0.3274	0.3252
isolet	0.8907	0.9013	0.9017	0.8985
libra	0.7375	0.7880	0.7493	0.7492
lrs	0.7424	0.7839	0.7689	0.7667
lung-cancer-ontario	0.4073	0.2715	0.2328	0.4027
madelon	0.2854	0.3009	0.3046	0.3085
mfeat-fac	0.9233	0.9344	0.9406	0.9378
mfeat-fou	0.8228	0.8200	0.8161	0.8178
mfeat-kar	0.9611	0.8828	0.8856	0.8833
mfeat-pix	0.9056	0.9339	0.9317	0.9233
mice-prot	1.0000	1.0000	1.0000	1.0000
mushroom	0.9429	0.9439	0.9447	0.9601
musk	0.8091	0.8330	0.8327	0.8318
newspop	0.2015	0.2283	0.2351	0.2278
optdigits	0.9167	0.9175	0.9185	0.9195
ovarian-cancer	0.9821	0.9639	0.9723	0.9639
ozone1hr	0.0195	0.0189	-0.0014	-0.0020
ozone8hr	0.2115	0.1738	0.2119	0.1918
pcmac	0.0159	-0.0115	-0.0358	-0.0327
polish-1st	0.1593	0.1542	0.1495	0.1358
polish-2nd	0.0468	0.0366	0.0462	0.0408
polish-3rd	0.0500	0.0528	0.0454	0.0397
polish-4th	0.2400	0.2404	0.2400	0.2400
polish-5th	0.4262	0.4252	0.4335	0.4398
polya	0.3330	0.3298	0.3477	0.3268
profb	0.1559	0.1580	0.1658	0.1582
promoters	0.5589	0.5163	0.5789	0.6189
prostate	0.8532	0.8220	0.8052	0.8369
re0-wc	0.6973	0.7094	0.7096	0.7102
re1-wc	0.7962	0.7878	0.7899	0.7916
secom	0.0000	0.0000	0.0000	0.0000
semeion	0.9213	0.9161	0.9396	0.9166
soybean	0.8279	0.8745	0.8648	0.8665
spambase	0.8045	0.8292	0.8265	0.8264
spectrometer	0.4772	0.4834	0.5033	0.4987
student-weekend	0.0955	0.1168	0.1050	0.1362
student-workday	0.0988	0.1284	0.0918	0.0965
theorem	1.0000	1.0000	1.0000	1.0000
voice	0.6182	0.4575	0.5947	0.5434
zip	0.9196	0.9331	0.9246	0.9233

TABLE XXIV
REDUCTION RESULTS FOR THE ENSEMBLE USING THE COMPLEXITY MEASURES AND A DT.

Dataset	CF	LOOR	MFDR	MFE	RIIC	VOOR	Grab'Em.1	Grab'Em.2	Method 9
ads	0.9795	0.9974	0.9974	0.9994	0.9955	0.9974	0.9900	0.9920	0.9911
adult	0.9429	0.9619	0.9524	0.9429	0.9524	0.9619	0.9524	0.9524	0.9524
AID1284Morered	0.9956	0.9978	0.9956	0.9989	0.9945	0.9978	0.9611	0.9419	0.9571
AID1284red	0.9903	0.9903	0.9515	0.9903	0.9903	0.9903	0.6621	0.6699	0.6922
AID1608Morered	0.9945	0.9978	0.9945	0.9989	0.9726	0.9967	0.9473	0.9450	0.9493
AID1608red	0.8636	0.8636	0.9740	0.9870	0.9416	0.8117	0.8831	0.8539	0.8864
AID362red	0.9167	0.8681	0.9931	0.9931	0.9653	0.8681	0.8500	0.7729	0.8563
AID373AID439red	0.9545	0.9481	0.9935	0.9935	0.9740	0.8896	0.9539	0.9578	0.9481
AID373red	0.9548	0.9548	0.9935	0.9935	0.9806	0.9742	0.9600	0.9600	0.8710
AID439Morered	0.9989	0.9989	0.9989	0.9989	0.9989	0.9989	0.9863	0.9757	0.9756
AID439red	0.9877	0.9877	0.9877	0.9877	0.9877	0.9877	0.9185	0.8802	0.9000
AID456red	0.9542	0.9542	0.9935	0.9935	0.9542	0.9608	0.9928	0.9928	0.9928
AID604AID644_AllRed	0.9805	0.9805	0.9935	0.9091	0.9805	0.9675	0.9935	0.9422	0.9286
AID644Morered	0.9978	0.9978	0.9716	0.9989	0.9978	0.9989	0.9130	0.9307	0.9140
AID644red	0.9600	0.9800	0.9900	0.9300	0.9600	0.9800	0.7160	0.6350	0.7210
AID687AID721red	0.9346	0.9477	0.9935	0.9935	0.9804	0.9477	0.9935	0.9935	0.9935
AID687red	0.9804	0.9804	0.9935	0.9935	0.9804	0.9804	0.9327	0.8915	0.9327
AID688red	0.9739	0.9739	0.9935	0.9935	0.9739	0.9804	0.9935	0.9935	0.9935
AID721morered	0.9934	0.9978	0.9978	0.9934	0.9956	0.9978	0.9862	0.9743	0.9865
AID721red	0.8621	0.8621	0.9885	0.9885	0.9770	0.8506	0.7931	0.8241	0.8667
AID746AID1284red	0.9221	0.9545	0.9935	0.9935	0.9416	0.9416	0.9688	0.9688	0.9688
AID746red	0.9870	0.9870	0.9935	0.9935	0.9805	0.9805	0.8506	0.7545	0.8565
all-aml	0.9994	0.9992	0.9994	0.9999	0.9999	0.9992	0.9997	0.9998	0.9998
anneal	0.9153	0.9153	0.9153	0.9153	0.9153	0.9153	0.8881	0.8881	0.8881
antivirus	0.9925	0.9925	0.9925	0.9925	0.9925	0.9925	0.9913	0.9904	0.9913
arcene	0.9870	0.9984	0.9878	0.9985	0.9999	0.9985	0.9970	0.9964	0.9958
arrhythmia	0.0000	0.9498	0.0000	0.9964	0.9677	0.9964	0.9319	0.9251	0.9269
audiology	0.6667	0.0000	0.6667	0.9570	0.0000	0.9570	0.9097	0.9022	0.9108
autos	0.9583	0.8472	0.9722	0.9722	0.9306	0.9722	0.9347	0.9389	0.9431
bank	0.8871	0.8871	0.9677	0.9516	0.9194	0.8871	0.9516	0.9500	0.9500
barleyblumeria	0.9375	0.9062	0.9375	0.9375	0.9688	0.8906	0.8812	0.8875	0.8828
basehock	0.9977	0.9981	0.9981	0.9776	0.9981	0.9981	0.9793	0.9793	0.9793
card	0.7255	0.7255	0.9804	0.9804	0.9412	0.7255	0.9765	0.9765	0.9765
cargo2k	0.9278	0.9278	0.9278	0.9897	0.9897	0.9794	0.9794	0.9732	0.9732
central-nervous-system	0.9898	0.9965	0.9896	0.9999	0.9999	0.9965	0.9992	0.9991	0.9992
cjs	0.9900	0.6200	0.6400	0.6400	0.9900	0.6400	0.5660	0.5660	0.5660
cnae-9	0.9918	0.9860	0.9918	0.9918	0.9860	0.9918	0.9340	0.9340	0.9396
collins	0.9250	0.0000	0.0000	0.9938	0.9938	0.9313	0.9938	0.9938	0.9938
colon-tumor	0.9985	0.9970	0.9985	0.9985	0.9995	0.9970	0.9972	0.9973	0.9973
cottonmeloidogyne	0.9219	0.9062	0.9844	0.9688	0.9844	0.8906	0.8844	0.8797	0.8844
cyclopectane	0.9531	0.9219	0.9844	0.9375	0.9531	0.9375	0.9195	0.9187	0.9445
cylinder-bands	0.9433	0.9982	0.9699	0.9982	0.9982	0.9982	0.8887	0.8853	0.9053
dbcl-stanford	0.9958	0.9958	0.9958	0.9998	0.9998	0.9985	0.9993	0.9993	0.9993
eeg	0.9861	0.0000	0.9167	0.9861	0.9861	0.9861	0.8847	0.8847	0.8847
eucalyptus	0.9890	0.9011	0.9890	0.9780	0.9890	0.9890	0.9769	0.9791	0.9780
fbis-wc	0.0000	0.9930	0.0000	0.9970	0.9965	0.9970	0.9769	0.9769	0.9816
flags	0.9917	0.7934	0.9917	0.9917	0.9835	0.9917	0.9843	0.9835	0.9839
gas	0.9922	0.0000	0.0000	0.9922	0.9922	0.9922	0.9656	0.9656	0.9656
gene	0.8917	0.8917	0.8917	0.8917	0.8917	0.8917	0.8850	0.8850	0.8850
german	0.9836	0.7541	0.9836	0.9836	0.9344	0.7541	0.8705	0.8328	0.8689
gina	0.9784	0.9887	0.9959	0.9990	0.9990	0.9876	0.9674	0.9643	0.9707
hERG-121inputs	0.9835	0.9587	0.9917	0.9917	0.9917	0.9587	0.9835	0.9835	0.9835
hERG-64inputs	0.9531	0.9531	0.9688	0.8438	0.9844	0.9531	0.9187	0.9297	0.9156
hiv1-proteasa	0.9313	0.9313	0.9313	0.9313	0.9313	0.9313	0.8906	0.8881	0.8938
hiva	0.9920	0.9920	0.9963	0.9994	0.9920	0.9920	0.9922	0.9844	0.9903
horse	0.7931	0.0000	0.9828	0.7931	0.8966	0.7931	0.9293	0.9379	0.9414
isolet	0.9417	0.8930	0.9433	0.9887	0.9417	0.9887	0.9237	0.9212	0.9235
libra	0.8444	0.6778	0.6556	0.9889	0.8444	0.9889	0.9122	0.8711	0.8678
lrs	0.9901	0.8614	0.9802	0.9901	0.0000	0.9901	0.9416	0.9248	0.9307
lung-cancer-ontario	0.9986	0.9976	0.9993	0.9993	0.9997	0.9969	0.9990	0.9982	0.9988
madelon	0.9420	0.8760	0.9920	0.9960	0.9920	0.9240	0.9466	0.9402	0.9494
mfeat-fac	0.9259	0.8935	0.9167	0.8935	0.9259	0.9167	0.9162	0.9171	0.9139
mfeat-fou	0.6711	0.5789	0.6711	0.6711	0.6711	0.6711	0.6684	0.6684	0.6684
mfeat-kar	0.1250	0.1250	0.1562	0.1562	0.1250	0.1562	0.1828	0.1828	0.1828
mfeat-pix	0.9750	0.0000	0.9500	0.9833	0.9500	0.9750	0.9192	0.9263	0.9229
mice-prot	0.8500	0.7500	0.8875	0.8875	0.8875	0.8875	0.8875	0.8875	0.8875
mushroom	0.9573	0.9573	0.9573	0.9573	0.9573	0.9573	0.9410	0.9410	0.9410
musk	0.9518	0.9578	0.9578	0.9096	0.9940	0.9518	0.9367	0.9422	0.9404
newspop	0.8983	0.8983	0.9831	0.9831	0.9492	0.9153	0.8729	0.8661	0.8712
optdigits	0.7812	0.5156	0.7812	0.7344	0.7812	0.7812	0.7781	0.7781	0.7781
ovarian-cancer	0.9997	0.9993	0.9997	0.9997	0.9999	0.9993	0.9996	0.9995	0.9994
ozone1hr	0.9444	0.9028	0.9861	0.9861	0.9861	0.8889	0.8069	0.8431	0.8500
ozone8hr	0.8194	0.8194	0.9722	0.9722	0.9861	0.7639	0.8472	0.8347	0.8486
pcmac	0.9967	0.9967	0.9991	0.9991	0.9991	0.9967	0.9760	0.9707	0.9569
polish-1st	0.9219	0.9844	0.9844	0.9375	0.9844	0.9844	0.9266	0.9187	0.9234
polish-2nd	0.9844	0.9844	0.9844	0.9844	0.9844	0.9844	0.7953	0.8000	0.7953
polish-3rd	0.9844	0.9844	0.9844	0.9844	0.9531	0.9844	0.8359	0.8359	0.8328
polish-4th	0.9688	0.9531	0.9844	0.9375	0.8750	0.9688	0.9844	0.9844	0.9844
polish-5th	0.9844	0.9844	0.9688	0.9844	0.9219	0.9844	0.9469	0.9484	0.9422
polya	0.9112	0.9112	0.9822	0.9290	0.9763	0.9112	0.9805	0.9787	0.9811
profb	0.8806	0.9701	0.9851	0.7164	0.9701	0.9701	0.8925	0.8343	0.8821
promoters	0.9912	0.9912	0.9912	0.9912	0.9737	0.9912	0.9658	0.9561	0.9614
prostate	0.9987	0.9991	0.9998	0.9989	0.9999	0.9989	0.9993	0.9984	0.9990
re0-wc	0.9955	0.9955	0.9976	0.9941	0.9969	0.9976	0.9912	0.9902	0.9921
re1-wc	0.9960	0.9960	0.0000	0.9971	0.9971	0.9971	0.9873	0.9873	0.9875
secom	0.9881	0.9881	0.9966	0.9864	0.9983	0.9864	0.9029	0.8988	0.9032
semeion	0.9736	0.9736	0.9962	0.9962	0.9925	0.9736	0.9653	0.9642	0.9623
soybean	0.0000	0.7561	0.0000	0.9024	0.9024	0.9024	0.8378	0.8329	0.8378
spambase	0.8070	0.8070	0.8070	0.8070	0.8070	0.8070	0.8140	0.8140	0.8140
spectrometer	0.9604	0.7525	0.7822	0.9901	0.0000	0.9901	0.9158	0.9287	0.9248
student-weekend	0.8596	0.0000	0.9825	0.9474	0.6667	0.8596	0.9404	0.9404	0.9351
student-workday	0.9123	0.0000	0.9298	0.9123	0.8772	0.9474	0.8860	0.8895	0.8895
theorem	0.9107	0.9107	0.9107	0.9107	0.9107	0.9107	0.9107	0.9107	0.9107
voice	0.9839	0.9806	0.9968	0.9935	0.9968	0.9613	0.9819	0.9810	0.9829
zip	0.0000	0.0000	0.0000	0.9688	0.9258	0.9922	0.9371	0.9352	0.9383

TABLE XXV
 κ RESULTS FOR THE ENSEMBLE USING THE COMPLEXITY MEASURES AND A DT.

Dataset	CF	LOOR	MFDR	MFE	RIIC	VOOR	Grab'Em.1	Grab'Em.2	Method 9
ads	0.8637	0.8485	0.8637	0.5140	0.8331	0.8485	0.8463	0.8380	0.8411
adult	0.5708	0.4019	0.5695	0.5725	0.5703	0.4039	0.5589	0.5551	0.5562
AID1284Morered	0.0055	-0.1163	0.0055	-0.1163	0.0055	-0.1163	0.1068	0.1156	0.1237
AID1284red	0.0000	0.0000	-0.0862	0.0000	0.0000	0.0000	0.1035	0.0808	0.1218
AID1608Morered	-0.0173	0.0000	0.0000	0.0000	-0.0311	0.0000	-0.0100	-0.0103	-0.0128
AID1608red	-0.0300	-0.0300	0.0000	0.0000	-0.0169	0.0000	0.0740	0.0631	0.0399
AID362red	-0.0040	0.0000	0.0000	0.0000	0.2828	0.0000	0.2040	0.1914	0.2044
AID373AID439red	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0000	-0.0000	-0.0000
AID373red	-0.0003	-0.0003	0.0000	0.0000	-0.0009	-0.0007	0.0000	0.0000	0.0000
AID439Morered	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.1602	0.1007	0.0707
AID439red	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.2667	0.2088	0.1967
AID456red	-0.0024	-0.0024	0.0000	0.0000	-0.0024	0.0000	0.0000	0.0000	0.0000
AID604AID644_AllRed	-0.0005	-0.0005	0.0000	0.0000	-0.0005	0.0000	0.5997	0.0765	0.2498
AID644Morered	0.0000	0.0000	-0.0526	0.0000	0.0000	0.0000	0.1819	0.1785	0.1502
AID644red	-0.3158	-0.3158	-0.3750	-0.1905	-0.3158	-0.3158	0.0815	0.1669	0.1536
AID687AID721red	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AID687red	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0399	-0.0001
AID688red	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AID721morered	0.0000	-0.1739	-0.1739	0.0000	0.0000	-0.1739	-0.0775	-0.0068	-0.0300
AID721red	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0891	-0.0833
AID746AID1284red	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	-0.0001	-0.0001	-0.0001
AID746red	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0103	0.0250	0.0221
all-aml	1.0000	1.0000	1.0000	0.2500	0.2500	1.0000	0.7489	0.7546	0.7546
anneal	0.9077	0.9077	0.9077	0.8830	0.8830	0.9077	0.9300	0.9300	0.9356
antivirus	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.9916	0.9916
arctene	0.3137	0.1667	0.4000	0.2553	-0.2791	0.2553	0.3207	0.3704	0.4004
arrhythmia	0.6683	0.5059	0.6631	0.2458	0.5064	0.1979	0.5366	0.5262	0.5125
audiology	0.6477	0.6462	0.6477	0.5929	0.6993	0.6430	0.6681	0.6831	0.6524
autos	0.8000	0.8000	0.5270	0.5270	0.8000	0.5270	0.7581	0.7320	0.7391
bank	0.4707	0.4715	0.3581	0.3610	0.4779	0.4787	0.4670	0.4623	0.4602
barleyblumeria	0.5848	0.6157	0.5753	0.5882	0.3750	0.6464	0.6327	0.6351	0.6328
baschock	0.8192	0.7992	0.8092	0.9196	0.8092	0.8092	0.9218	0.9131	0.9197
card	0.7643	0.7336	0.6804	0.6804	0.6774	0.7643	0.7095	0.7095	0.7095
cargo2k	1.0000	1.0000	1.0000	0.5168	0.5168	1.0000	1.0000	1.0000	1.0000
central-nervous-system	0.5714	0.0000	0.5714	-0.2000	-0.2000	0.0000	-0.0787	0.0487	0.0939
cjs	0.9956	1.0000	1.0000	1.0000	0.9956	1.0000	1.0000	1.0000	1.0000
cnae-9	0.4375	0.5208	0.4375	0.4375	0.5208	0.4375	0.8260	0.8271	0.8252
collins	0.6881	0.8897	0.8451	1.0000	1.0000	0.7329	1.0000	1.0000	1.0000
colon-tumor	0.4000	0.4000	0.4000	0.4000	0.6667	0.4000	0.4852	0.4520	0.4281
cottonmeloidogyne	0.2976	0.3370	0.2182	0.2232	0.2182	0.3079	0.3322	0.3540	0.3366
cyclopentane	0.3898	0.2373	0.4098	0.4615	0.3898	0.3898	0.3783	0.2840	0.2466
cylinder-bands	0.3872	0.0000	0.2340	0.0000	0.0000	0.0000	0.4514	0.4795	0.4381
dblcl-stanford	0.6154	1.0000	1.0000	1.0000	1.0000	0.6154	0.5965	0.6350	0.6350
eg	0.0246	0.4602	0.3041	0.0246	0.0246	0.0246	0.3347	0.3351	0.3353
eucalyptus	0.4454	0.4425	0.4454	0.4051	0.4051	0.4454	0.4618	0.4656	0.4791
fbis-we	0.7943	0.5819	0.7799	0.5153	0.5716	0.5146	0.7270	0.7256	0.7216
flags	0.5077	0.6753	0.5031	0.5031	0.5062	0.6835	0.5977	0.6156	0.5978
gas	0.2887	0.9956	0.9948	0.2895	0.2895	0.2895	0.8183	0.8202	0.8197
gene	0.8888	0.8836	0.8937	0.8888	0.8888	0.8888	0.8886	0.8901	0.8922
german	0.0000	0.3017	0.0000	0.0000	0.2092	0.2911	0.2083	0.2172	0.1948
gina	0.7461	0.7002	0.5404	0.1382	0.1438	0.6887	0.7497	0.7647	0.7416
HERG-121inputs	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.4505	0.4505
HERG-64inputs	0.0000	0.0000	0.5882	0.0000	0.0000	0.0000	0.1493	0.1960	0.2960
hiv1-proteasa	0.4573	0.4573	0.4573	0.4573	0.4573	0.4573	0.5531	0.5627	0.5479
hiva	0.1211	0.1211	0.0000	0.0000	0.1211	0.1211	0.1645	0.2048	0.1790
horse	0.4294	0.4714	0.0642	0.4294	0.3656	0.3656	0.3221	0.3333	0.3224
isolet	0.8158	0.8745	0.8158	0.3819	0.8118	0.3779	0.9007	0.8975	0.8983
libra	0.9403	0.8807	0.8509	0.2232	0.9403	0.2232	0.7701	0.7403	0.7406
lrs	0.4022	0.7895	0.4776	0.0000	0.7907	0.0000	0.7742	0.7632	0.7671
lung-cancer-ontario	0.4000	0.4000	0.4000	0.4000	0.4000	0.4000	0.3427	0.3027	0.2527
madelon	0.1308	0.2923	0.3000	0.1538	0.1615	0.2385	0.3446	0.3531	0.3685
mfeat-fac	0.9500	0.9556	0.9556	0.9722	0.9556	0.9667	0.9294	0.9256	0.9294
mfeat-fou	0.7889	0.8000	0.7833	0.7778	0.7889	0.7778	0.8244	0.8267	0.8267
mfeat-kar	0.9722	0.9722	0.9722	0.9833	0.9722	0.9722	0.9611	0.9600	0.9589
mfeat-pix	0.5944	0.9833	0.8889	0.4278	0.8889	0.5889	0.9467	0.9267	0.9350
mice-prot	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
mushroom	0.9655	0.9655	0.9655	0.9655	0.9655	0.9655	0.9756	0.9756	0.9761
nusk	0.7704	0.7541	0.7310	0.7985	0.4832	0.7473	0.8337	0.8295	0.8373
newspop	0.1962	0.1972	0.0000	0.0000	0.1314	0.1729	0.2271	0.2340	0.2265
optdigits	0.9505	0.9664	0.9505	0.9525	0.9486	0.9505	0.9407	0.9422	0.9430
ovarian-cancer	0.9110	1.0000	0.9110	0.9110	0.9153	1.0000	0.9739	0.9650	0.9826
ozone1hr	-0.0072	-0.0072	0.0000	0.0000	0.0000	-0.0072	0.0267	0.0255	0.0260
ozone8hr	0.1647	0.1647	0.1647	0.1647	-0.0466	0.2258	0.2050	0.1934	0.1889
pemac	-0.0103	-0.0103	-0.0307	-0.0307	-0.0307	-0.0103	-0.0238	-0.0334	-0.0017
polish-1st	0.1855	0.1041	0.1041	0.2636	0.1041	0.1041	0.1100	0.1264	0.1301
polish-2nd	-0.0072	-0.0072	-0.0072	-0.0072	-0.0072	-0.0072	0.0565	0.0567	0.0651
polish-3rd	-0.0175	-0.0175	-0.0161	-0.0161	0.0123	-0.0161	0.0348	0.0272	0.0418
polish-4th	0.3140	0.4615	0.3333	0.4288	0.4554	0.3089	0.2404	0.2400	0.2404
polish-5th	0.3331	0.3205	0.4479	0.3267	0.5261	0.3331	0.4487	0.4451	0.4619
polya	0.4486	0.4446	0.3391	0.4515	0.3388	0.4923	0.3185	0.3122	0.3207
profb	0.0534	-0.0507	-0.0245	0.1528	0.0563	0.0301	0.1022	0.1352	0.1303
promoters	0.4444	0.4444	0.4444	0.4444	0.8000	0.4444	0.5014	0.5154	0.5722
prostate	0.8571	0.5714	0.4400	0.7200	0.5714	0.8571	0.8207	0.8363	0.8063
re0-we	0.7040	0.7000	0.5773	0.7442	0.6597	0.5852	0.7031	0.6959	0.7011
re1-we	0.7133	0.7133	0.7405	0.6452	0.6527	0.6527	0.7925	0.7946	0.7942
secom	0.0000	0.0000	-0.0218	0.0000	-0.0685	0.0000	0.0000	0.0000	0.0000
semeion	0.8610	0.8610	0.7633	0.7633	0.8213	0.8610	0.9092	0.9242	0.9163
soybean	0.9839	0.9352	0.9839	0.8544	0.8544	0.8705	0.8842	0.8822	0.8794
spambase	0.7857	0.7857	0.7905	0.7814	0.7861	0.7814	0.8544	0.8558	0.8557
spectrometer	0.3821	0.6407	0.6405	0.1644	0.6805	0.1644	0.5029	0.4946	0.5046
student-weekend	0.0693	0.1219	0.0109	0.2556	0.2091	0.0482	0.1202	0.1187	0.1323
student-workday	0.2228	-0.0248	0.0821	0.2228	0.0870	0.1677	0.0809	0.1061	0.1046
theorem	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
voice	0.8000	0.8000	0.1176	0.8000	0.8235	0.8000	0.5947	0.5787	0.5392
zip	0.9470	0.9482	0.9470	0.8517	0.9192	0.3241	0.9293	0.9228	0.9271

TABLE XXVI
REDUCTION RESULTS FOR THE DATA DIVISION APPROACH USING
BAGGING AND THE FCBF METHOD AND A SVM.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Method 4
abalone	0.9000	0.9000	0.9000	0.9000
adult	0.9429	0.9524	0.9429	0.9524
bank	0.9194	0.9677	0.9194	0.9355
barleyblumeria	0.8906	0.8906	0.8906	0.9219
census	0.0000	0.9902	0.9829	0.9853
chrom19	0.0000	0.2000	0.2000	0.2000
clave	0.1250	0.1250	0.1250	0.1250
cottonmeloiodogyne	0.0000	0.8281	0.8281	0.9062
covtype	0.9815	0.9630	0.9630	0.9630
default	0.9565	0.9565	0.9565	0.9565
dota2	0.9483	0.9483	0.9310	0.8017
eeg	0.9306	0.9444	0.9306	0.9722
exon.vs.intron-freq	0.9688	0.9688	0.9688	0.9688
farm-ads	0.9991	0.9964	0.9964	0.9991
gas	0.9219	0.9219	0.9219	0.9141
gisette	0.9998	0.9988	0.9976	0.9986
hiv1-proteasa	0.8750	0.8375	0.8750	0.8688
hiva	0.9641	0.9889	0.9641	0.9641
ht-sensor	0.7273	0.7273	0.7273	0.7273
htru2	0.7500	0.7500	0.7500	0.8750
isolet	0.0000	0.9822	0.9822	0.9806
jvowels	0.4286	0.4286	0.4286	0.4286
kdc-4007	0.9995	0.9878	0.9878	0.9978
krkopt	0.1667	0.1667	0.1667	0.1667
letter	0.4375	0.4375	0.3750	0.3750
localization	0.9032	0.9032	0.9032	0.9032
magic04	0.7000	0.9000	0.8000	0.8000
musk	0.9578	0.9639	0.9578	0.9458
ncRNA	0.6500	0.5500	0.7500	0.5500
new3s-wc	0.9993	0.9991	0.9993	0.9993
newspop	0.9322	0.9322	0.9322	0.8475
nomao	0.9535	0.9651	0.9651	0.9826
nursery	0.7826	0.7826	0.7826	0.7826
occupancy	0.8000	0.8000	0.8000	0.8000
ohscal-wc	0.9935	0.9990	0.9990	0.9990
opn310k	0.8150	0.8150	0.7800	0.8300
optdigits	0.0000	0.7969	0.7812	0.7812
p53-mutants	0.9996	0.9998	0.9970	0.9994
page-blocks	0.6000	0.7000	0.8000	0.8000
particle	0.9800	0.7200	0.8400	0.8000
pendigits	0.3125	0.3125	0.3750	0.3750
phoneme	0.8000	0.8000	0.8000	0.8000
poker	0.8000	0.8000	0.8000	0.8000
polish-1st	0.0000	0.9844	0.9844	0.9844
polish-2nd	0.9844	0.9844	0.9688	0.9844
polish-3rd	0.0000	0.9844	0.9844	0.9844
polish-4th	0.0000	0.9844	0.9844	0.9844
polish-5th	0.7812	0.7812	0.9844	0.9844
polya	0.0000	0.9822	0.9822	0.9822
popularity	0.8983	0.8644	0.8475	0.7458
puc-rio	0.8571	0.8095	0.8095	0.8095
reuters21578	0.9884	0.9884	0.9884	0.9884
satimage	0.8889	0.9167	0.9167	0.9167
sensorless	0.0000	0.9375	0.9583	0.9583
shuttle	0.7778	0.7778	0.7778	0.7778
skin	0.6667	0.6667	0.6667	0.6667
spambase	0.8421	0.8421	0.8421	0.8421
texture	0.8750	0.8500	0.8250	0.8500
theorem	0.9107	0.9107	0.9107	0.9107
tis	0.9946	0.9957	0.9957	0.9957
tvnews	0.9740	0.9740	0.9697	0.9697
waveform	0.0000	0.8250	0.9000	0.8750
wilt	0.0000	0.6000	0.6000	0.6000
winequality-white	0.9091	0.9091	0.9091	0.9091
zip	0.9727	0.9727	0.9766	0.9766

TABLE XXVII
 κ RESULTS FOR THE DATA DIVISION APPROACH USING BAGGING AND THE
FCBF METHOD AND A SVM.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Grab'Em.3
abalone	0.0797	0.0797	0.0797	0.0797
adult	0.5470	0.5470	0.5470	0.5470
bank	0.0000	0.0000	0.0000	0.0000
barleyblumeria	0.6803	0.6803	0.6803	0.6658
census	0.0000	0.0000	0.0000	0.0000
chrom19	0.2428	0.3315	0.3315	0.3315
clave	0.7629	0.7629	0.7629	0.7629
cottonmeloiodogyne	0.5626	0.3798	0.3798	0.3463
covtype	0.4427	0.4569	0.4569	0.4569
default	0.0000	0.0000	0.0000	0.0000
dota2	0.0830	0.0830	0.0889	0.0797
eeg	0.1528	0.1725	0.1714	0.1735
exon.vs.intron-freq	0.7792	0.7792	0.7792	0.7792
farm-ads	0.5541	0.5989	0.5989	0.5541
gas	0.9686	0.9686	0.9686	0.9756
gisette	0.6629	0.6857	0.7829	0.6829
hiv1-proteasa	0.5036	0.5429	0.5036	0.5252
hiva	-0.0084	0.1211	-0.0084	-0.0084
ht-sensor	0.8590	0.8590	0.8590	0.8590
htru2	0.8179	0.8514	0.8179	0.8404
isolet	0.9426	0.5955	0.6022	0.6889
jvowels	0.9738	0.9738	0.9738	0.9738
kdc-4007	0.0000	0.3709	0.3709	0.3815
krkopt	0.5380	0.5380	0.5380	0.5380
letter	0.9480	0.9480	0.9433	0.9433
localization	0.4456	0.4456	0.4456	0.4456
magic04	0.4057	0.4057	0.5259	0.5259
musk	0.6426	0.6323	0.6256	0.6770
ncRNA	0.6805	0.6961	0.6961	0.6961
new3s-wc	0.4686	0.5257	0.4660	0.4660
newspop	0.2392	0.2392	0.2392	0.2320
nomao	0.8034	0.8034	0.8034	0.8024
nursery	0.7130	0.7130	0.7130	0.7130
occupancy	0.9717	0.9717	0.9717	0.9717
ohscal-wc	0.5675	0.5750	0.5822	0.5822
opn310k	0.0000	0.0000	0.0000	0.0000
optdigits	0.9842	0.9585	0.9585	0.9585
p53-mutants	0.0000	0.0000	0.0000	0.0000
page-blocks	0.7410	0.7457	0.7254	0.7254
particle	0.4742	0.7269	0.7156	0.7208
pendigits	0.9879	0.9879	0.9879	0.9879
phoneme	0.4332	0.4332	0.4332	0.4332
poker	0.2210	0.2210	0.2210	0.2210
polish-1st	0.0594	0.0000	0.0000	0.0000
polish-2nd	0.0000	0.0000	0.0000	0.0000
polish-3rd	-0.0087	0.0000	0.0000	0.0000
polish-4th	0.1320	0.0000	0.0000	0.0000
polish-5th	0.0822	0.0822	0.0000	0.0000
polya	0.5361	0.3625	0.3625	0.3625
popularity	0.0000	0.0000	0.0000	0.0000
puc-rio	0.8140	0.8616	0.8616	0.8616
reuters21578	0.7277	0.7921	0.7921	0.7921
satimage	0.8309	0.8400	0.8194	0.8194
sensorless	0.9590	0.9927	0.8073	0.8073
shuttle	0.9937	0.9937	0.9937	0.9937
skin	0.0000	0.0000	0.0000	0.0000
spambase	0.8009	0.8009	0.8009	0.8009
texture	0.9158	0.9479	0.9599	0.9479
theorem	1.0000	1.0000	1.0000	1.0000
tis	0.6785	0.6502	0.6502	0.6502
tvnews	0.6741	0.6741	0.6800	0.6800
waveform	0.7780	0.5649	0.6012	0.6940
wilt	0.9156	0.0000	0.0000	0.0000
winequality-white	0.1367	0.1367	0.1367	0.1367
zip	0.7985	0.7985	0.7251	0.7251

C. Detailed results for support vector machines

This section shows detailed results for support vector machines.

REFERENCES

- [1] H. Liu, L. Liu, and H. Zhang, "Boosting feature selection using information metric for classification," *Neurocomputing*, vol. 73, p. 295–303, 2009.
- [2] M. A. Hall, "Correlation-based feature selection for discrete and numeric class machine learning," in *Proceedings of the Seventeenth International Conference on Machine Learning (ICML 2000)*. Morgan Kaufmann, 2000, p. 359–366.
- [3] Q. Song, J. Ni, and G. Wang, "A fast clustering-based feature subset selection algorithm for high-dimensional data," *IEEE Transactions on Knowledge and Data Engineering*, vol. 25, p. 1–14, 2013.
- [4] L. Yu and H. Liu, "Efficient feature selection via analysis of relevance and redundancy," *Journal of Machine Learning Research*, vol. 5, p. 1205–1224, 2004.
- [5] H. Almuallim and T. G. Dietterich, "Learning boolean concepts in the presence of many irrelevant features. artificial intelligence," *Artificial Intelligence*, vol. 69, p. 279–305, 1994.
- [6] R. Gilad-Bachrach, A. Navot, and N. Tishby, "Margin based feature selection - theory and algorithms," in *Proceedings of the Twenty-first International Conference on Machine Learning*, ser. ICML '04. New York, NY, USA: ACM, 2004, p. 43–50.
- [7] M. Yang, F. Wang, and P. Yang, "A novel feature selection algorithm based on hypothesis-margin," *Journal of Computers*, vol. 3, p. 27–35, 2008.
- [8] J. Biesiada and W. Duch, "Feature selection for high-dimensional data: A kolmogorov-smirnov correlation-based filter," in *Computer Recognition Systems. Advances in Soft Computing*, M. Kurzyński, E. Puchała, M. Woźniak, and A. Zolnierek, Eds. Berlin, Heidelberg: Springer, 2005, vol. 30, p. 95–106.
- [9] P. Mitra, C.-A. Murthy, and S.-K. Pal, "Unsupervised feature selection using feature similarity," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 24, p. 301–312, 2002.
- [10] H. Peng, F. Long, and C. Ding, "Feature selection based on mutual information: Criteria of max-dependency, max-relevance, and min-redundancy," *IEEE Transactions on Pattern Analysis and Machine Intelligence*, vol. 27, p. 1226–1238, 2005.
- [11] I. Kononenko, E. Šimec, and M. Robnik-Šikonja, "Overcoming the myopia of inductive learning algorithms with relief," *Applied Intelligence*, vol. 7, p. 39–55, 1997.
- [12] M. Dash and H. Liu, "Feature selection for classification," *Intelligent Data Analysis*, vol. 1, p. 131–156, 1997.
- [13] D. C. Whitley, M. G. Ford, and D. J. Livingstone, "Unsupervised forward

TABLE XXVIII
REDUCTION RESULTS FOR THE ENSEMBLE APPROACH USING BAGGING
AND THE FCBF METHOD AND SVMs.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Grab'Em.3
ads	0.9929	0.9852	0.9872	0.9795
adult	0.9524	0.9524	0.9524	0.9524
AID1284Morered	0.9956	0.9967	0.9967	0.9967
AID1284red	0.0000	0.8350	0.8447	0.8447
AID1608Morered	0.0000	0.9934	0.9891	0.9912
AID1608red	0.9351	0.9545	0.9545	0.9545
AID362red	0.9236	0.9514	0.9097	0.8681
AID373AID439red	0.0000	0.9935	0.9935	0.9935
AID373red	0.0000	0.9935	0.9935	0.9935
AID439Morered	0.0000	0.9945	0.9934	0.9967
AID439red	0.0000	0.9630	0.9630	0.9630
AID456red	0.0000	0.9935	0.9935	0.9935
AID604AID644_AllRed	0.0000	0.9935	0.9935	0.9935
AID644Morered	0.9716	0.9376	0.9726	0.9869
AID644red	0.7700	0.9300	0.7600	0.7600
AID687AID721red	0.0000	0.9935	0.9935	0.9935
AID687red	0.0000	0.9935	0.8301	0.9935
AID688red	0.0000	0.9935	0.9935	0.9935
AID721morered	0.9880	0.9891	0.9912	0.9912
AID721red	0.0000	0.9195	0.9885	0.9885
AID746AID1284red	0.0000	0.9935	0.9870	0.9870
AID746red	0.0000	0.7273	0.9935	0.9935
all-aml	0.9997	0.9997	0.9997	0.9997
anneal	0.9153	0.8814	0.8814	0.8933
antivirus	0.9925	0.9925	0.9925	0.9925
arcene	0.9995	0.9995	0.9995	0.9995
arrhythmia	0.9928	0.9928	0.9928	0.9928
audiology	0.9462	0.9462	0.9462	0.9462
autos	0.9028	0.9444	0.9028	0.9444
bank	0.9194	0.9194	0.9194	0.9194
barleyblumeria	0.8906	0.8906	0.8906	0.8906
baschock	0.9981	0.9981	0.9981	0.9981
card	0.9804	0.9804	0.9804	0.9804
cargo2k	0.9794	0.9794	0.9794	0.9794
central-nervous-system	0.9996	0.9996	0.9996	0.9996
cjs	0.6400	0.5500	0.6400	0.6400
cnae-9	0.9568	0.9591	0.9568	0.9568
collins	0.9938	0.9938	0.9938	0.9938
colon-tumor	0.9985	0.9985	0.9985	0.9985
cottonmeloidogyne	0.9219	0.8906	0.8906	0.9062
cyclopentane	0.9766	0.9688	0.9531	0.9688
cylinder-bands	0.9273	0.9309	0.9238	0.9184
dlbcl-stanford	0.0000	0.9990	0.9993	0.9993
eeg	0.9167	0.9167	0.9167	0.9167
eucalyptus	0.9341	0.9341	0.9231	0.9341
fbis-wc	0.9925	0.9925	0.9925	0.9925
flags	0.9752	0.9752	0.9752	0.9669
gas	0.9688	0.9688	0.9688	0.9688
gene	0.8917	0.8917	0.8917	0.8917
german	0.9180	0.9180	0.9180	0.9180
gina	0.9938	0.9907	0.9887	0.9887
hERG-121inputs	0.9421	0.9421	0.9421	0.9421
hERG-64inputs	0.9219	0.9688	0.9688	0.9219
hiv1-proteasa	0.8938	0.8938	0.8938	0.8938
hiva	0.9852	0.9852	0.9592	0.9876
horse	0.9483	0.9483	0.9483	0.9483
isolet	0.9741	0.9822	0.9757	0.9757
libra	0.9444	0.9222	0.8889	0.9444
lrs	0.9802	0.9802	0.9604	0.9703
lung-cancer-ontario	0.9990	0.9976	0.9990	0.9990
madelon	0.9920	0.9920	0.9920	0.9920
mfeat-fac	0.9167	0.9167	0.9167	0.9167
mfeat-fou	0.6711	0.6711	0.6711	0.6711
mfeat-kar	0.1562	0.9844	0.9844	0.9844
mfeat-pix	0.9500	0.9583	0.9625	0.9542
mice-prot	0.8875	0.8875	0.8875	0.8875
mushroom	0.9573	0.9487	0.9487	0.9487
musk	0.9277	0.9277	0.9277	0.9277
newspop	0.8475	0.8475	0.8475	0.8983
optdigits	0.7812	0.7812	0.7812	0.7812
ovarian-cancer	0.9997	0.9997	0.9997	0.9997
ozone1hr	0.0000	0.9861	0.7639	0.9861
ozone8hr	0.9028	0.9028	0.9028	0.9028
pcmac	0.9921	0.9951	0.9875	0.9921
polish-1st	0.8906	0.9375	0.8906	0.8906
polish-2nd	0.0000	0.9844	0.9844	0.9844
polish-3rd	0.0000	0.9844	0.9844	0.9844
polish-4th	0.0000	0.9844	0.9844	0.9844
polish-5th	0.7500	0.7500	0.7500	0.7500
polya	0.9704	0.9763	0.9704	0.9704
profb	0.8060	0.8955	0.8060	0.8060
promoters	0.0000	0.9561	0.9561	0.9561
prostate	0.9997	0.9997	0.9996	0.9997
re0-wc	0.9976	0.9976	0.9976	0.9976
re1-wc	0.9960	0.9960	0.9960	0.9957
secom	0.0000	0.9966	0.9983	0.9983
semeion	0.9736	0.9736	0.9736	0.9585
soybean	0.9024	0.9024	0.9024	0.9024
spambase	0.8070	0.8070	0.8070	0.8070
spectrometer	0.9406	0.9208	0.8614	0.8911
student-weekend	0.9298	0.9474	0.9123	0.9123
student-workday	0.9298	0.9298	0.9298	0.9649
theorem	0.9107	0.9107	0.9107	0.9107
voice	0.9935	0.9903	0.9935	0.9903
zip	0.9648	0.9609	0.9648	0.9609

TABLE XXIX
K RESULTS FOR THE ENSEMBLE APPROACH USING BAGGING AND THE
FCBF METHOD AND SVMs.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Grab'Em.3
ads	0.8364	0.8364	0.8364	0.8485
adult	0.5317	0.5317	0.5317	0.5317
AID1284Morered	0.0055	0.0055	0.0055	0.0055
AID1284red	0.0710	0.3010	0.3010	0.3010
AID1608Morered	-0.0173	-0.0173	-0.0311	-0.0173
AID1608red	0.0000	0.0000	-0.0404	0.0000
AID362red	0.0000	-0.0040	0.0000	0.2828
AID373AID439red	0.0000	0.0000	0.0000	0.0000
AID373red	0.0000	0.0000	0.0000	0.0000
AID439Morered	0.0000	0.0000	0.0000	0.0000
AID439red	0.0000	1.0000	1.0000	1.0000
AID456red	0.0000	0.0000	0.0000	0.0000
AID604AID644_AllRed	0.0000	0.0000	0.0000	0.0000
AID644Morered	-0.0526	-0.0526	-0.0526	-0.0526
AID644red	0.1176	0.1250	0.0000	0.0000
AID687AID721red	0.0000	0.0000	0.0000	0.0000
AID687red	0.0000	0.0000	0.0000	0.0000
AID688red	0.0000	0.0000	0.0000	0.0000
AID721morered	-0.1739	-0.1739	0.0000	0.0000
AID721red	-0.1739	0.0000	0.0000	0.0000
AID746AID1284red	0.0000	0.0000	0.0000	0.0000
AID746red	0.0000	0.0000	0.0000	0.0000
all-aml	1.0000	1.0000	1.0000	1.0000
anneal	0.9022	0.9047	0.9047	0.9022
antivirus	1.0000	1.0000	1.0000	1.0000
arcene	0.4898	0.4898	0.4898	0.0000
arrhythmia	0.4123	0.4123	0.4123	0.4123
audiology	0.6967	0.6967	0.6967	0.6967
autos	0.7333	0.7333	0.7333	0.7333
bank	0.0000	0.0000	0.0000	0.0000
barleyblumeria	0.6937	0.6937	0.6937	0.6937
baschock	0.8092	0.8092	0.8092	0.8092
card	0.6804	0.6804	0.6804	0.6804
cargo2k	1.0000	1.0000	1.0000	1.0000
central-nervous-system	0.4000	0.4000	0.4000	0.4000
cjs	1.0000	1.0000	1.0000	1.0000
cnae-9	0.7708	0.7292	0.7708	0.7708
collins	1.0000	1.0000	1.0000	1.0000
colon-tumor	0.0000	0.0000	0.0000	0.0000
cottonmeloidogyne	0.3366	0.3512	0.3512	0.3667
cyclopentane	0.6281	0.3415	0.5574	0.3415
cylinder-bands	0.4690	0.4247	0.4753	0.4753
dlbcl-stanford	1.0000	0.6154	0.1667	1.0000
eeg	0.2858	0.2925	0.2858	0.2858
eucalyptus	0.4370	0.4370	0.4376	0.4370
fbis-wc	0.6252	0.6252	0.6252	0.6252
flags	0.5000	0.5000	0.5000	0.5000
gas	0.8162	0.8127	0.8162	0.8162
gene	0.8734	0.8734	0.8734	0.8734
german	0.2602	0.2602	0.2602	0.2602
gina	0.6654	0.6827	0.7116	0.7116
hERG-121inputs	0.0000	0.0000	0.0000	0.0000
hERG-64inputs	0.0000	0.0000	0.0000	0.0000
hiv1-proteasa	0.4776	0.4776	0.4776	0.4776
hiva	0.1211	0.1211	0.1005	0.1211
horse	0.2033	0.2033	0.2033	0.2033
isolet	0.7303	0.6315	0.7170	0.7170
libra	0.8210	0.8510	0.7914	0.8210
lrs	0.5030	0.6599	0.5495	0.6599
lung-cancer-ontario	0.4000	0.4000	0.4000	0.4000
madelon	0.3000	0.3000	0.3000	0.3000
mfeat-fac	0.9778	0.9778	0.9778	0.9778
mfeat-fou	0.8500	0.8500	0.8500	0.8500
mfeat-kar	0.9833	0.2333	0.2333	0.2333
mfeat-pix	0.8722	0.8333	0.8278	0.8611
mice-prot	1.0000	1.0000	1.0000	1.0000
mushroom	0.9655	0.9729	0.9729	0.9729
musk	0.7310	0.7310	0.7310	0.7310
newspop	0.2563	0.2580	0.2580	0.2158
optdigits	0.9585	0.9585	0.9585	0.9585
ovarian-cancer	1.0000	1.0000	1.0000	1.0000
ozone1hr	0.1711	0.0000	-0.0072	0.0000
ozone8hr	0.3410	0.3410	0.3410	0.3410
pcmac	-0.0532	-0.0244	-0.1200	-0.0532
polish-1st	0.0689	0.0689	0.0689	0.0689
polish-2nd	-0.0185	0.0000	0.0000	0.0000
polish-3rd	-0.0087	0.0000	0.0000	0.0000
polish-4th	0.1320	0.0000	0.0000	0.0000
polish-5th	0.1856	0.1856	0.1856	0.1856
polya	0.3874	0.3941	0.3874	0.3874
profb	0.1918	0.2307	0.1918	0.2064
promoters	1.0000	0.8000	0.8000	0.8000
prostate	0.5714	0.5714	0.5714	0.5714
re0-wc	0.5871	0.5871	0.5871	0.5871
re1-wc	0.6976	0.6976	0.6976	0.7125
secom	0.1452	0.0000	0.0000	0.0000
semeion	0.8610	0.8610	0.8610	0.9305
soybean	0.9031	0.9031	0.9031	0.9031
spambase	0.8147	0.8147	0.8147	0.8147
spectrometer	0.5610	0.6806	0.6813	0.6408
student-weekend	0.1266	0.1407	0.1642	0.1642
student-workday	-0.0605	-0.0605	-0.0605	0.0504
theorem	1.0000	1.0000	1.0000	1.0000
voice	0.8000	0.5714	0.8000	0.5714
zip	0.8409	0.8651	0.8409	0.8651

selection: A method for eliminating redundant variables," *Journal of Chemical Information and Computer Science*, vol. 40, p. 1160–1168, 2000.

- [14] E. Schaffernicht and H.-M. Gross, "Weighted mutual information for feature selection," in *Proceeding of the 21st Int. Conf. on Artificial Neu-*

ral Networks (ICANN 2011), ser. Lecture Notes in Computer Science, vol. 6792, Espoo, Finland, 2011, p. 181–188.

TABLE XXX
REDUCTION RESULTS FOR THE HETEROGENEOUS ENSEMBLE APPROACH
USING BAGGING AND SVMs.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Method 4
ads	0.9897	0.9897	0.9897	0.9897
adult	0.9524	0.9524	0.9524	0.9524
AID1284Morered	0.9989	0.9912	0.9912	0.9891
AID1284red	0.6699	0.6699	0.6699	0.5825
AID1608Morered	0.0000	0.9836	0.9989	0.9989
AID1608red	0.9870	0.9740	0.9740	0.9870
AID362red	0.8681	0.9375	0.9444	0.8819
AID373AID439red	0.0000	0.9935	0.9935	0.9935
AID373red	0.0000	0.9935	0.9935	0.9935
AID439Morered	0.0000	0.9934	0.9978	0.9945
AID439red	0.0000	0.9877	0.9877	0.9877
AID456red	0.0000	0.9935	0.9935	0.9935
AID604AID644_AllRed	0.8961	0.9156	0.9091	0.9091
AID644Morered	0.9858	0.9912	0.9869	0.9880
AID644red	0.8100	0.8800	0.8200	0.8100
AID687AID721red	0.0000	0.9935	0.9935	0.9935
AID687red	0.0000	0.9935	0.9935	0.3660
AID688red	0.0000	0.9935	0.9935	0.9935
AID721morered	0.0000	0.9978	0.9978	0.9978
AID721red	0.0000	0.7356	0.9655	0.9655
AID746AID1284red	0.1753	0.4805	0.1753	0.4805
AID746red	0.0000	0.9870	0.9870	0.2468
all-aml	0.9994	0.9994	0.9994	0.9994
anneal	0.9492	0.8644	0.8644	0.8644
antivirus	0.9887	0.9906	0.9906	0.9906
arcene	0.9994	0.9982	0.9994	0.9989
arrhythmia	0.9964	0.9785	0.9785	0.9928
audiology	0.9462	0.9462	0.9462	0.9462
autos	0.9028	0.9306	0.9306	0.9167
bank	0.9194	0.9194	0.9194	0.9194
barleyblumeria	0.9062	0.8906	0.9062	0.9219
basehock	0.9977	0.9977	0.9977	0.9977
card	0.8235	0.8431	0.8235	0.8627
cargo2k	0.9794	0.9794	0.9794	0.9794
central-nervous-system	0.0000	0.9990	0.9990	0.9999
cjs	0.9700	0.9700	0.9700	0.9700
cnae-9	0.9743	0.9778	0.9790	0.9790
collins	0.9938	0.9938	0.9938	0.9938
colon-tumor	0.9990	0.9975	0.9985	0.9990
cottonmeloidogyne	0.9375	0.9375	0.9375	0.9531
cyclopentane	0.9609	0.9609	0.9609	0.9609
cylinder-bands	0.9823	0.9202	0.9805	0.9663
dlbcl-stanford	0.0000	0.9990	0.9995	0.9980
eeg	0.8056	0.8194	0.8056	0.8194
eucalyptus	0.9231	0.9451	0.9231	0.9231
fbis-wc	0.9935	0.9935	0.9935	0.9935
flags	0.9793	0.9876	0.9793	0.9793
gas	0.8047	0.8203	0.8125	0.8203
gene	0.9083	0.9083	0.9083	0.9083
german	0.8852	0.9016	0.8852	0.9016
gina	0.9866	0.9866	0.9866	0.9876
hERG-121inputs	0.0000	0.7025	0.5372	0.5620
hERG-64inputs	0.9375	0.9531	0.9375	0.9375
hiv1-proteasa	0.8812	0.8812	0.8812	0.8812
hiva	0.9963	0.9963	0.9963	0.9981
horse	0.9483	0.9483	0.9483	0.9483
isolet	0.9741	0.9741	0.9741	0.9741
libra	0.9000	0.9000	0.9000	0.9000
lrs	0.9406	0.9604	0.9406	0.9505
lung-cancer-ontario	0.9993	0.9997	0.9997	0.9997
madelon	0.9940	0.9660	0.9960	0.9960
mfeat-fac	0.9537	0.9537	0.9537	0.9537
mfeat-fou	0.8947	0.9079	0.8947	0.9211
mfeat-kar	0.9062	0.9062	0.9062	0.9062
mfeat-pix	0.9375	0.9375	0.9458	0.9375
mice-prot	0.9250	0.9500	0.9250	0.9250
mushroom	0.9231	0.9316	0.9316	0.9231
musk	0.9639	0.9639	0.9639	0.9639
newspop	0.8814	0.8814	0.8814	0.8814
optdigits	0.8594	0.8594	0.8594	0.8594
ovarian-cancer	0.9995	0.9995	0.9995	0.9995
ozone1hr	0.0000	0.9861	0.9861	0.9861
ozone8hr	0.8750	0.8472	0.8889	0.8472
pcmac	0.9769	0.9808	0.9775	0.9808
polish-1st	0.0000	0.9844	0.9844	0.9844
polish-2nd	0.0000	0.9688	0.9688	0.9688
polish-3rd	0.0000	0.9844	0.9844	0.9844
polish-4th	0.0000	0.9844	0.9844	0.9844
polish-5th	0.7031	0.7031	0.7031	0.7344
polya	0.9704	0.9704	0.9704	0.9704
profb	0.9254	0.8507	0.9254	0.8358
promoters	0.0000	0.9825	0.9825	0.9825
prostate	0.9998	0.9998	0.9998	0.9998
re0-wc	0.9955	0.9955	0.9955	0.9955
re1-wc	0.9864	0.9864	0.9864	0.9867
secom	0.0000	0.9983	0.9983	0.9983
semeion	0.9698	0.9660	0.9698	0.9660
soybean	0.9146	0.9146	0.9146	0.9146
spambase	0.8947	0.8947	0.8947	0.8421
spectrometer	0.9406	0.8713	0.9406	0.9406
student-weekend	0.9298	0.9298	0.9298	0.9298
student-workday	0.8596	0.8246	0.8596	0.8596
theorem	0.8929	0.9107	0.8929	0.8929
voice	0.9774	0.9839	0.9903	0.9839
zip	0.9531	0.9531	0.9531	0.9570

TABLE XXXI
RESULTS FOR THE HETEROGENEOUS ENSEMBLE APPROACH USING
BAGGING AND SVMs.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Method 4
ads	0.8663	0.8663	0.8663	0.8663
adult	0.5397	0.5383	0.5397	0.5383
AID1284Morered	-0.1163	-0.1163	-0.1163	-0.1163
AID1284red	0.1628	0.1628	0.1628	0.0710
AID1608Morered	-0.0173	-0.0520	0.0000	0.0000
AID1608red	-0.0300	0.0000	0.0000	-0.0300
AID362red	0.2447	0.0000	0.0000	0.4392
AID373AID439red	0.0000	0.0000	0.0000	0.0000
AID373red	0.0000	0.0000	0.0000	0.0000
AID439Morered	0.0000	0.0000	0.0000	1.0000
AID439red	0.0000	0.0000	0.0000	0.0000
AID456red	0.0000	0.0000	0.0000	0.0000
AID604AID644_AllRed	0.0000	0.0000	-0.0007	0.0000
AID644Morered	0.0278	0.0278	0.0278	0.0278
AID644red	0.1176	0.0278	0.1176	0.1176
AID687AID721red	0.0000	0.0000	0.0000	0.0000
AID687red	0.0000	0.0000	0.0000	0.0000
AID688red	0.0000	0.0000	0.0000	0.0000
AID721morered	-0.1739	0.0000	0.0000	0.0000
AID721red	-0.1739	0.0000	0.0000	0.0000
AID746AID1284red	0.0000	0.0000	0.0000	0.0000
AID746red	0.0000	0.0000	0.0000	0.0000
all-aml	1.0000	1.0000	1.0000	1.0000
anneal	0.6759	0.9277	0.9277	0.9277
antivirus	1.0000	1.0000	1.0000	1.0000
arcene	0.3396	0.5098	0.3396	0.5098
arrhythmia	0.1667	0.5259	0.5259	0.2296
audiology	0.6430	0.6430	0.6430	0.6430
autos	0.4631	0.4613	0.4613	0.7360
bank	0.0000	0.0000	0.0000	0.0000
barleyblumeria	0.6968	0.6937	0.6968	0.6725
basehock	0.7991	0.7991	0.7991	0.7991
card	0.6804	0.6804	0.6804	0.6804
cargo2k	1.0000	1.0000	1.0000	1.0000
central-nervous-system	0.0000	0.5714	0.5714	0.0000
cjs	0.9913	0.9913	0.9913	0.9913
cnae-9	0.7188	0.6250	0.6458	0.6458
collins	1.0000	1.0000	1.0000	1.0000
colon-tumor	-0.5000	0.2500	0.5714	0.0000
cottonmeloidogyne	0.2519	0.2519	0.2519	0.2994
cyclopentane	0.5500	0.5500	0.5500	0.5500
cylinder-bands	0.2332	0.4018	0.1818	0.3802
dlbcl-stanford	1.0000	0.6154	0.6154	1.0000
eeg	0.3497	0.3496	0.3449	0.3407
eucalyptus	0.5184	0.4672	0.5184	0.5184
fbis-wc	0.6206	0.6206	0.6206	0.6206
flags	0.6226	0.4212	0.6226	0.6226
gas	0.9695	0.9616	0.9686	0.9616
gene	0.8141	0.8141	0.8141	0.8401
german	0.2802	0.2167	0.2802	0.2167
gina	0.7461	0.7461	0.7461	0.7231
hERG-121inputs	1.0000	1.0000	1.0000	1.0000
hERG-64inputs	0.0000	0.0000	0.0000	0.0000
hiv1-proteasa	0.4949	0.4949	0.4949	0.4949
hiva	0.0000	0.0000	0.0000	0.1211
horse	0.2033	0.2033	0.2033	0.2033
isolet	0.7250	0.7250	0.7250	0.7250
libra	0.8509	0.8806	0.8509	0.8509
lrs	0.7891	0.7907	0.7891	0.7891
lung-cancer-ontario	0.4000	0.4000	0.4000	0.4000
madelon	0.2769	0.7385	0.3692	0.3692
mfeat-fac	0.9333	0.9333	0.9333	0.9333
mfeat-fou	0.7889	0.8000	0.7889	0.7556
mfeat-kar	0.9056	0.9056	0.9056	0.9056
mfeat-pix	0.6889	0.6889	0.6778	0.6889
mice-prot	1.0000	1.0000	1.0000	1.0000
mushroom	0.9679	0.9679	0.9679	0.9679
musk	0.6708	0.6708	0.6708	0.6708
newspop	0.2789	0.2808	0.2296	0.2354
optdigits	0.9050	0.9050	0.9050	0.9050
ovarian-cancer	1.0000	1.0000	1.0000	1.0000
ozone1hr	0.1711	0.0000	0.0000	0.0000
ozone8hr	0.1182	-0.0268	0.1085	0.0625
pcmac	-0.0577	-0.0751	-0.0577	-0.0751
polish-1st	0.0594	0.0000	0.0000	0.0000
polish-2nd	-0.0185	-0.0019	-0.0019	-0.0019
polish-3rd	-0.0087	0.0000	0.0000	0.0000
polish-4th	0.1320	0.0000	0.0000	0.0000
polish-5th	0.1840	0.1840	0.1840	0.2150
polya	0.3743	0.3743	0.3743	0.3743
profb	0.1853	0.1998	0.1853	0.2903
promoters	1.0000	0.3478	0.3478	0.3478
prostate	0.2222	0.2222	0.2222	0.2222
re0-wc	0.6065	0.6065	0.6065	0.6417
re1-wc	0.5177	0.5177	0.5177	0.5180
secom	0.1452	0.0000	0.0000	0.0000
semeion	0.9264	0.8528	0.9264	0.8528
soybean	0.8548	0.8548	0.8548	0.8548
spambase	0.5976	0.5976	0.5976	0.7688
spectrometer	0.5002	0.7010	0.5002	0.5002
student-weekend	0.2192	0.2192	0.2192	0.2192
student-workday	0.1700	0.0016	0.1700	0.1700
theorem	1.0000	1.0000	1.0000	1.0000
voice	0.8000	0.2500	0.6250	0.2500
zip	0.5465	0.5465	0.5465	0.5477

TABLE XXXII
REDUCTION RESULTS FOR THE ENSEMBLE APPROACH USING BOOSTING
AND THE FCBF METHOD AND SVMs.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Grab'Em.3
ads	0.9884	0.9891	0.9763	0.9859
adult	0.9524	0.9524	0.9524	0.9524
AID1284Morered	0.9945	0.9989	0.9912	0.9912
AID1284red	0.6990	0.6117	0.6019	0.6019
AID1608Morered	0.0000	0.9902	0.9945	0.9923
AID1608red	0.0000	0.9610	0.9416	0.9481
AID362red	0.8403	0.8333	0.8264	0.9167
AID373AID439red	0.0000	0.9935	0.9935	0.9935
AID373red	0.0000	0.9935	0.9935	0.9935
AID439Morered	0.0000	0.9945	0.9967	0.9967
AID439red	0.0000	0.9753	0.9753	0.9753
AID456red	0.0000	0.9935	0.9935	0.9935
AID604AID644_AllRed	0.8442	0.8701	0.9935	0.9935
AID644Morered	0.9902	0.9836	0.9683	0.9880
AID644red	0.7800	0.9500	0.8400	0.5600
AID687AID721red	0.0000	0.9935	0.9935	0.9935
AID687red	0.0000	0.9935	0.7712	0.9935
AID688red	0.0000	0.9935	0.9935	0.9935
AID721morered	0.0000	0.9945	0.9945	0.9945
AID721red	0.0000	0.9425	0.9195	0.9425
AID746AID1284red	0.0000	0.9935	0.9935	0.9935
AID746red	0.0000	0.9935	0.9935	0.9935
all-aml	0.9999	0.9997	0.9999	0.9999
anneal	0.8983	0.8983	0.8983	0.8814
antivirus	0.9868	0.9925	0.9868	0.9925
arcene	0.9994	0.9997	0.9996	0.9996
arrhythmia	0.9928	0.9892	0.9892	0.9892
audiology	0.9247	0.9247	0.9247	0.9355
autos	0.9444	0.9583	0.9583	0.9583
bank	0.9032	0.9032	0.9194	0.9194
barleyblumeria	0.9062	0.9062	0.8906	0.9062
basehock	0.9977	0.9977	0.9977	0.9977
card	0.9608	0.9608	0.9608	0.9804
cargo2k	0.9794	0.9794	0.9794	0.9794
central-nervous-system	0.9990	0.9990	0.9990	0.9990
cjs	0.9900	0.9900	0.9900	0.9900
cnac-9	0.9673	0.9673	0.9673	0.9673
collins	0.9938	0.9938	0.9938	0.9938
colon-tumor	0.9995	0.9990	0.9985	0.9995
cottonmeloiodogyne	0.9062	0.8906	0.8750	0.8906
cyclopentane	0.9453	0.9453	0.9375	0.9453
cylinder-bands	0.8777	0.9255	0.8989	0.8989
dlbcl-stanford	0.0000	0.9990	0.9988	0.9988
eeg	0.9167	0.9167	0.9028	0.9167
eucalyptus	0.9670	0.9670	0.9670	0.9670
fbis-wc	0.9915	0.9935	0.9925	0.9925
flags	0.9959	0.9917	0.9917	0.9917
gas	0.9531	0.9531	0.9531	0.9531
gene	0.9000	0.9000	0.9000	0.9000
german	0.8689	0.8852	0.8689	0.9180
gina	0.9907	0.9866	0.9918	0.9918
hERG-121inputs	0.9587	0.9587	0.9835	0.9835
hERG-64inputs	0.9688	0.9688	0.9688	0.9688
hiv1-proteasa	0.8938	0.8812	0.8625	0.8625
hiva	0.9901	0.9901	0.9777	0.9913
horse	0.9655	0.9310	0.9655	0.9655
isolet	0.9708	0.9806	0.9708	0.9708
libra	0.9333	0.9222	0.9000	0.9333
lrs	0.9802	0.9703	0.9604	0.9505
lung-cancer-ontario	0.9993	0.9993	0.9993	0.9993
madelon	0.9980	0.9980	0.9980	0.9980
mfeat-fac	0.9306	0.9398	0.9444	0.9444
mfeat-fou	0.5526	0.6447	0.6447	0.6447
mfeat-kar	0.1406	0.9844	0.9844	0.9844
mfeat-pix	0.9542	0.9500	0.9500	0.9500
mice-prot	0.9125	0.9375	0.9375	0.9375
mushroom	0.9573	0.9487	0.9487	0.9487
musk	0.9217	0.9217	0.9217	0.9217
newspop	0.8814	0.8814	0.8983	0.8814
optdigits	0.8125	0.8438	0.8438	0.8438
ovarian-cancer	0.9997	0.9995	0.9996	0.9995
ozone1hr	0.8194	0.7639	0.7639	0.7639
ozone8hr	0.9028	0.9306	0.9028	0.8194
pcmac	0.9915	0.9815	0.9802	0.9787
polish-1st	0.0000	0.9844	0.9844	0.9844
polish-2nd	0.0000	0.9844	0.9844	0.9844
polish-3rd	0.0000	0.9844	0.9844	0.9844
polish-4th	0.0000	0.9844	0.9844	0.9844
polish-5th	0.8281	0.9844	0.8594	0.9844
polya	0.9704	0.9645	0.9704	0.9704
profb	0.8060	0.8060	0.8060	0.8060
promoters	0.0000	0.9649	0.9386	0.9386
prostate	0.9998	0.9998	0.9998	0.9998
re0-wc	0.9972	0.9972	0.9972	0.9972
re1-wc	0.9963	0.9963	0.9963	0.9973
secom	0.0000	0.9983	0.9983	0.9983
semeion	0.9698	0.9660	0.9698	0.9698
soybean	0.8415	0.9146	0.9146	0.8780
spambase	0.8246	0.8070	0.8246	0.8421
spectrometer	0.9406	0.9307	0.8911	0.9307
student-weekend	0.9123	0.9123	0.9123	0.9123
student-workday	0.9298	0.9298	0.9298	0.9298
theorem	0.9107	0.9107	0.9107	0.9107
voice	0.9903	0.9839	0.9839	0.9839
zip	0.9688	0.9648	0.9688	0.9648

TABLE XXXIII
 κ RESULTS FOR THE ENSEMBLE APPROACH USING BOOSTING AND THE
FCBF METHOD AND SVMs.

Dataset	Voting	Grab'Em.1	Grab'Em.2	Grab'Em.3
ads	0.8210	0.8210	0.8663	0.8331
adult	0.5361	0.5381	0.5361	0.5381
AID1284Morered	-0.1163	-0.1163	-0.1163	-0.1163
AID1284red	0.2241	0.1628	0.1628	0.1628
AID1608Morered	-0.0173	-0.0173	-0.0173	-0.0311
AID1608red	-0.0300	0.0000	0.0000	0.0000
AID362red	-0.0040	0.2447	0.2447	0.2149
AID373AID439red	0.0000	0.0000	0.0000	0.0000
AID373red	0.0000	0.0000	0.0000	0.0000
AID439Morered	0.0000	0.0000	0.0000	0.0000
AID439red	0.0000	0.0000	0.0000	0.0000
AID456red	0.0000	0.0000	0.0000	0.0000
AID604AID644_AllRed	0.0000	0.0000	0.0000	0.0000
AID644Morered	-0.1905	-0.0526	-0.2500	-0.0870
AID644red	-0.1765	-0.0526	-0.1765	0.0000
AID687AID721red	0.0000	0.0000	0.0000	0.0000
AID687red	0.0000	0.0000	0.0000	0.0000
AID688red	0.0000	0.0000	0.0000	0.0000
AID721morered	-0.1739	0.0000	0.0000	0.0000
AID721red	-0.1739	0.6087	-0.1739	0.0000
AID746AID1284red	0.0000	0.0000	0.0000	0.0000
AID746red	0.0000	0.0000	0.0000	0.0000
all-aml	0.5714	1.0000	0.5714	0.5714
anneal	0.9759	0.9759	0.9759	0.9047
antivirus	1.0000	1.0000	1.0000	1.0000
arcene	0.1304	-0.0784	0.0000	0.0000
arrhythmia	0.4123	0.5580	0.5580	0.5580
audiology	0.7456	0.7456	0.7456	0.6960
autos	0.7333	0.7333	0.7333	0.7333
bank	0.0000	0.0000	0.0000	0.0000
barleyblumeria	0.6562	0.6521	0.6937	0.6521
basehock	0.8092	0.8092	0.8092	0.8092
card	0.6804	0.6804	0.6804	0.6804
cargo2k	1.0000	1.0000	1.0000	1.0000
central-nervous-system	0.0000	0.0000	0.0000	0.0000
cjs	0.9913	0.9913	0.9913	0.9913
cnac-9	0.8021	0.8021	0.8021	0.8021
collins	1.0000	1.0000	1.0000	1.0000
colon-tumor	0.0000	0.0000	0.0000	0.0000
cottonmeloiodogyne	0.4003	0.3837	0.3941	0.3462
cyclopentane	0.4000	0.2623	0.4000	0.2623
cylinder-bands	0.5186	0.5714	0.5561	0.5561
dlbcl-stanford	1.0000	0.6154	0.6154	0.6154
eeg	0.2941	0.2814	0.2938	0.2941
eucalyptus	0.4164	0.3926	0.4164	0.4164
fbis-wc	0.6254	0.6081	0.6160	0.6160
flags	0.3038	0.6178	0.6178	0.6178
gas	0.9258	0.9241	0.9258	0.9258
gene	0.8691	0.8691	0.8691	0.8691
german	0.1260	0.2092	0.1260	0.2211
gina	0.6767	0.7460	0.6878	0.6878
hERG-121inputs	0.3000	1.0000	0.3000	0.3000
hERG-64inputs	0.0000	0.0000	0.0000	0.0000
hiv1-proteasa	0.5087	0.4602	0.5127	0.5127
hiva	0.1102	0.1102	0.1102	0.1102
horse	0.2163	0.2033	0.2163	0.2163
isolet	0.7811	0.6756	0.7824	0.7824
libra	0.6725	0.8507	0.8804	0.6727
lrs	0.5346	0.7141	0.6855	0.7412
lung-cancer-ontario	0.4000	0.4000	0.4000	0.4000
madelon	0.2538	0.2538	0.2538	0.2538
mfeat-fac	0.9444	0.9389	0.9333	0.9333
mfeat-fou	0.8611	0.8667	0.8667	0.8667
mfeat-kar	0.9833	0.2333	0.2333	0.2333
mfeat-pix	0.8556	0.8722	0.8722	0.8722
mice-prot	1.0000	1.0000	1.0000	1.0000
mushroom	0.9655	0.9729	0.9729	0.9729
musk	0.7181	0.7181	0.7181	0.7181
newspop	0.2554	0.2561	0.2475	0.2287
optdigits	0.9407	0.9347	0.9347	0.9347
ovarian-cancer	1.0000	1.0000	1.0000	1.0000
ozone1hr	0.1516	-0.0131	-0.0131	-0.0131
ozone8hr	0.2123	0.1397	0.2946	0.2410
pcmac	-0.0182	0.0089	0.0514	0.0260
polish-1st	0.0594	0.0000	0.0000	0.0000
polish-2nd	-0.0185	0.0000	0.0000	0.0000
polish-3rd	-0.0087	0.0000	0.0000	0.0000
polish-4th	0.1320	0.0000	0.0000	0.0000
polish-5th	0.0363	0.0000	0.0325	0.0000
polya	0.3854	0.3896	0.3854	0.3854
profb	0.2265	0.2265	0.2265	0.2265
promoters	1.0000	1.0000	0.8000	0.8000
prostate	0.5532	0.5532	0.1250	0.1250
re0-wc	0.6156	0.6156	0.6156	0.6156
re1-wc	0.6666	0.6805	0.6805	0.6264
secom	0.1452	-0.0118	0.0000	0.0000
semeion	0.9264	0.8610	0.9264	0.9264
soybean	0.9198	0.7738	0.7738	0.8056
spambase	0.8191	0.8150	0.8191	0.8009
spectrometer	0.5603	0.6408	0.7008	0.6408
student-weekend	0.2404	0.2404	0.2404	0.2404
student-workday	-0.0605	-0.0605	-0.0605	-0.0605
theorem	1.0000	1.0000	1.0000	1.0000
voice	0.6250	0.5714	0.4000	0.4000
zip	0.7854	0.8422	0.8145	0.8265