Output tables for the test of Multiple comparisons.

January 10, 2022

Average rankings of Friedman test

Friedman statistic considering reduction performance (distributed according to chi-square with 12 degrees of freedom: 73.811919. P-value computed by Friedman Test: 1.1092249341260185E-10. Average ranks obtained by applying the Friedman procedure

Algorithm	Ranking		
best-precision	8.5192		
best-recall	5.5192		
balanced	3.8846		
promethee-precision	8.5192		
promethee-recall	5.5192		
bac	6.8269		
precision	9.6346		
recall	10.3269		
f1	5.25		
auc	6.3654		
gmean	7.0577		
AdaBoost	7.9615		
Bagging	5.6154		

Table 1: Average Rankings of the algorithms

2 Post hoc comparisons

Results achieved on post hoc comparisons for $\alpha=0.05,\,\alpha=0.10$ and adjusted p-values.

2.1 P-values for $\alpha = 0.05$

Nemenyi's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.000641 .

To balanced vs. precision	i	algorithms	$z = (R_0 - R_i)/SE$	p
76 recall vs. fercall 4.700317 0.000009 74 promethee-recall vs. recall 4.451058 0.000009 73 recall vs. Bagging 4.362037 0.000018 71 balanced vs. promethee-precision 4.29082 0.000018 70 balanced vs. procision 3.810106 0.000139 66 pest-recall vs. precision 3.810106 0.000139 67 balanced vs. AdaBoost 3.774497 0.00016 66 precision vs. Bagging 3.721085 0.000198 65 recall vs. auc 3.667672 0.002472 64 bac vs. recall 3.24037 0.00194 63 precision vs. suc 3.02672 0.002472 64 bac vs. recall 3.02672 0.002472 65 recall vs. gmean 3.02672 0.002472 66 precision vs. brownethee-recall 2.77746 0.005479 55 babanced vs. promethee-recall 2.77746 0.005479 56 best-precision vs. promethee-recall 2.777				
75 best-recall vs. recall 4.451058 0.000009 74 promethee-recall vs. recall 4.451058 0.000009 73 recall vs. Bagging 4.362037 0.000018 72 best-precision vs. Salanced 4.29082 0.000018 70 percision vs. Id 4.059365 0.000018 60 percision vs. Id 4.059365 0.000018 68 promethee-recall vs. precision 3.810106 0.000139 66 percision vs. Bagging 3.721085 0.00018 66 precision vs. Bagging 3.741087 0.00016 64 bac vs. recall 3.20672 0.002472 63 precision vs. suc 3.02672 0.002472 61 perspecision vs. suc 3.02672 0.002472 62 pest-precision vs. fl 3.02672 0.002472 61 promethee-precision vs. fl 3.02672 0.002472 62 pest-precision vs. promethee-recall 2.77746 0.005479 55 best-precision vs. precision				
74 promethee-recall vs. Bagging 4.350387 0.0000013 72 best-precision vs. Balanced 4.29082 0.000018 71 balanced vs. promethee-precision 4.29082 0.000018 70 precision vs. fl 4.053365 0.000049 69 best-recall vs. precision 3.810106 0.000139 68 promethee-recall vs. precision 3.810106 0.000139 66 precision vs. Bagging 3.721085 0.000149 66 precision vs. Bagging 3.721085 0.000149 66 precision vs. Bagging 3.721085 0.000149 67 balanced vs. draBoost 3.774497 0.00016 66 precision vs. Bagging 3.2037 0.001194 63 precision vs. auc 3.06672 0.002472 64 bac vs. recall 3.24037 0.001194 63 precision vs. fl 3.02672 0.002472 60 promethee-precision vs. fl 3.02672 0.002472 61 promethee-precision vs. fl 3.02672 0.002472 62 best-precision vs. fl 3.02672 0.002472 63 passed vs. graen 3.02672 0.002472 64 balanced vs. gmean 2.937698 0.003307 58 best-precision vs. promethee-precision vs. Bagging 2.688439 0.007179 52 promethee-precision vs. Bagging 2.688439 0.007179 53 best-precision vs. Bagging 2.688439 0.007179 54 balanced vs. shae 2.210397 0.01204 55 promethee-precision vs. Bagging 2.688439 0.007179 56 promethee-precision vs. gmean 2.2385767 0.01704 57 best-precision vs. gmean 2.2385767 0.01704 58 balanced vs. auc 2.296746 0.021633 59 promethee-precision vs. auc 1.994074 0.006414 50 promethee-precision vs. auc 1.994074 0.006414 51 promethee-precision vs. auc 1.994074 0.006414 51 promethee-precision vs. auc 1.994074 0.006414 52 promethee-precision vs. bac 1.566772 0.117168 53 precision vs. bac 1.566772 0.117168 54 promethee-precision vs. bac 1.566772 0.117168 55 promethee-precision vs. promethee-precision vs. promethee-precision vs. promethee-precision vs. promethee-precision vs. prometh				
recall vs. Bagging				
Texas		*		
Description 100000000000000000000000000000000000				
70 precision vs. fl 4.059365 0.000049 69 best-recall vs. precision 3.810106 0.000139 68 promethee-recall vs. Andeboost 3.774497 0.00016 66 precision vs. Bagging 3.721085 0.000196 65 recall vs. aue 3.667672 0.000245 64 bac vs. recall 3.24037 0.001194 63 precision vs. fl 3.02672 0.002472 61 pest-precision vs. fl 3.02672 0.002472 61 promethee-precision vs. gmean 3.02672 0.002472 60 recall vs. gmean 3.02672 0.002472 59 balanced vs. bac 2.937608 0.003307 56 best-precision vs. promethee-recall 2.77746 0.005479 55 best-precision vs. promethee-recall 2.77746 0.005479 54 balanced vs. bac 2.721048 0.006449 52 promethee-precision vs. Bagging 2.688439 0.007179 51 bac vs. precision vs. Dagging				
68 promethee-recall vs. precision 3.810106 0.000136 66 precision vs. Bagging 3.721085 0.00016 65 precision vs. auc 3.667672 0.000124 64 bac vs. recall 3.24037 0.00114 63 precision vs. auc 3.02672 0.002472 61 promethee-precision vs. fl 3.02672 0.002472 61 promethee-precision vs. gmean 2.937698 0.003307 58 best-precision vs. promethee-recall 2.77746 0.005479 56 best-precision vs. promethee-recall 2.77746 0.005479 56 best-recall vs. promethee-precisiol 2.77746 0.005479 52 promethee-precision vs. Bagging 2.688439 0.007179 54 balanced vs. bac 2.77446 0.005479 52 promethee-precision vs. Bagging 2.688439 0.007179 52 promethee-precision vs. Bagging 2.688439 0.007179 52 promethee-precision vs. Bagging 2.505418 0.009338 <t< td=""><td>70</td><td></td><td>4.059365</td><td>0.000049</td></t<>	70		4.059365	0.000049
balanced vs. AdaBoost 3.774497 0.00016				0.000139
66 precision vs. Bagging 3,721085 0,000198 65 recall vs. auc 3,24037 0,001245 64 bac vs. recall 3,24037 0,00144 63 precision vs. auc 3,02672 0,002472 61 pomethee-precision vs. fl 3,02672 0,002472 60 recall vs. gmean 3,02672 0,002472 59 balanced vs. gmean 2,937698 0,003307 58 best-precision vs. promethee-recall 2,77746 0,005479 56 best-recall vs. promethee-precision 2,77746 0,005479 56 best-recall vs. promethee-precision 2,77746 0,005479 54 balanced vs. bac 2,77446 0,005479 55 best-recall vs. Bagging 2,688439 0,007179 52 promethee-precision vs. Bagging 2,688439 0,007179 52 promethee-precision vs. Bagging 2,5138 0,0023751 48 balanced vs. Jacc 2,296746 0,01263 49 precision vs. data				
65 recall vs. auc 3.24037 0.000245 64 bae vs. recall 3.24037 0.001194 63 precision vs. auc 3.02672 0.002472 61 promethee-precision vs. fl 3.02672 0.002472 60 recall vs. gmean 3.02672 0.002472 59 balanced vs. gmean 2.937698 0.003307 58 best-precision vs. promethee-recall 2.77746 0.005479 57 best-precision vs. promethee-recall 2.77746 0.005479 56 best-precision vs. promethee-recall 2.77746 0.005479 56 promethee-precision vs. promethee-recall 2.77746 0.005479 52 promethee-precision vs. Bagging 2.688439 0.007179 52 promethee-precision vs. Bagging 2.688439 0.007179 51 bac vs. precision 2.599418 0.09338 50 fl vs. AdaBoost 2.510397 0.01206 48 balanced vs. auc 2.296746 0.021633 46 promethee-recall vs				
64 bac vs. recall 3.24037 0.001194 63 precision vs. auc 3.02672 0.002472 61 best-precision vs. f1 3.02672 0.002472 61 promethee-precision vs. f1 3.02672 0.002472 61 promethee-precision vs. f1 3.02672 0.002472 62 best-precision vs. gmean 3.02672 0.002472 63 best-precision vs. best-recall 2.77746 0.005479 65 best-precision vs. promethee-recall 2.77746 0.005479 65 best-recall vs. promethee-precision 2.77746 0.005479 65 best-precision vs. promethee-recall 2.77746 0.005479 65 best-precision vs. Bagging 2.688439 0.007179 65 bac vs. precision 2.599418 0.009338 65 f1 vs. AdaBoost 2.510397 0.01206 64 promethee-precision vs. gmean 2.385767 0.01204 64 promethee-recall vs. AdaBoost 2.261138 0.023751 65 promethee-precision vs. gmean 2.385767 0.017044 66 promethee-recall vs. AdaBoost 2.261138 0.023751 66 promethee-precision vs. auc 1.994074 0.046144 67 promethee-precision vs. auc 1.994074 0.046144 68 does not be started to the started vs. dalaboost 2.189921 0.02853 69 f1 vs. gmean 1.673598 0.09421 60 promethee-precision vs. recall 1.673598 0.09421 61 promethee-precision vs. bac 1.566772 0.117168 62 promethee-precision vs. bac 1.566772 0.117168 63 promethee-precision vs. bac 1.566772 0.117168 63 promethee-precision vs. gmean 1.424339 0.154348 63 balanced vs. Bagging 1.02381 0.19071 64 best-precision vs. gmean 1.424339 0.154348 65 promethee-precision vs. gmean 1.433312 0.176017 67 promethee-precision vs. gmean 1.43339 0.154348 69 promethee-precision vs. gmean 1.43639 0.130188 61 balanced vs. f1 1.104040 0.004644 61 best-precision vs. precision 1.032645 0.30177 61 promethee-precision vs. precision 1.032645 0.30177 61 promethee-precision vs. precision 1.032645 0.30177 61 promethee-precision vs. precision 1.032645 0.30177 6				
63 precision vs. fl 3.02672 0.002472 61 poromethee-precision vs. fl 3.02672 0.002472 60 recall vs. gmean 3.02672 0.002472 59 balanced vs. gmean 2.937698 0.003307 58 best-precision vs. best-recall 2.77746 0.005479 56 best-precision vs. promethee-recall 2.77746 0.005479 56 best-precision vs. promethee-recall 2.77746 0.005479 54 balanced vs. bac 2.724048 0.006449 53 best-precision vs. Bagging 2.688439 0.007179 52 promethee-precision vs. Bagging 2.588439 0.007179 51 bac vs. precision 2.5099148 0.00938 50 fl vs. AdaBoost 2.510397 0.01206 49 precision vs. gmean 2.355767 0.01704 48 balanced vs. auc 2.296746 0.02163 47 best-recall vs. AdaBoost 2.261138 0.023751 46 reocall vs. AdaBoost <t< td=""><td></td><td></td><td></td><td></td></t<>				
62 bost-precision vs. f1 3.02672 0.002472 61 promethee-precision vs. gmean 3.02672 0.002472 59 balanced vs. gmean 2.937698 0.003307 58 best-precision vs. promethee-recall 2.77746 0.005479 56 best-recall vs. promethee-precision 2.77746 0.005479 56 best-recall vs. promethee-precision 2.77746 0.005479 54 balanced vs. bac 2.724048 0.006449 53 best-precision vs. Bagging 2.688439 0.007179 52 promethee-precision vs. Bagging 2.688439 0.007179 51 bac vs. precision 2.599418 0.00938 50 ft vs. AdaBoost 2.510397 0.01206 49 precision vs. gmean 2.385767 0.01704 48 balanced vs. auc 2.296746 0.02163 46 promethee-recall vs. AdaBoost 2.261138 0.023751 46 promethee-precision vs. auc 1.994074 0.046144 41 best-pre				
61 promethee-precision vs. ft 3.02672 0.002472 59 balanced vs. gmean 2.937698 0.003307 58 best-precision vs. best-recall 2.77746 0.005479 57 best-precision vs. promethee-precision 2.77746 0.005479 56 best-precision vs. promethee-precision 2.77746 0.005479 54 balanced vs. bac 2.724048 0.006449 53 best-precision vs. Bagging 2.688439 0.007179 52 promethee-precision vs. Bagging 2.688439 0.007179 51 bac vs. precision 2.599418 0.009338 50 fl vs. AdaBoost 2.510397 0.01203 49 precision vs. gmean 2.385767 0.017044 48 balanced vs. adaBoost 2.261138 0.023751 46 promethee-recall vs. AdaBoost 2.189921 0.02853 45 recall vs. AdaBoost 2.189921 0.02847 43 best-precision vs. recall 1.673598 0.09421 44 AdaBoost				
60 recall vs. gmean 3.02672 0.002472 59 balanced vs. gmean 2.937698 0.003307 58 best-precision vs. best-recall 2.77746 0.005479 57 best-precision vs. promethee-precision 2.77746 0.005479 55 best-recision vs. promethee-recall 2.77746 0.005479 54 balanced vs. bac 2.724048 0.006449 53 best-precision vs. Bagging 2.688439 0.007179 52 promethee-precision vs. Bagging 2.688439 0.007179 51 bac vs. precision 2.599418 0.009338 50 ft vs. AdaBoost 2.51397 0.01206 49 precision vs. gmean 2.385767 0.017044 48 balanced vs. auc 2.296746 0.02163 47 best-preciall vs. AdaBoost 2.189921 0.02853 44 AdaBoost vs. Bagging 2.172116 0.029847 45 recall vs. AdaBoost 1.999074 0.046144 41 best-precision vs. recall				
59 balanced vs. gmean 2.937698 0.003307 58 best-precision vs. promethee-recall 2.77746 0.005479 57 best-precision vs. promethee-precision 2.77746 0.005479 56 best-precision vs. Danger 2.77746 0.005479 54 best-precision vs. Bagging 2.688439 0.007179 53 best-precision vs. Bagging 2.688439 0.007179 51 bac vs. precision 2.59418 0.009338 50 fl vs. AdaBoost 2.510397 0.01206 49 precision vs. gmean 2.385767 0.01704 48 balanced vs. auc 2.296746 0.021633 47 best-recall vs. AdaBoost 2.261138 0.023751 46 promethee-precision vs. auc 1.994074 0.04614 41 promethee-precision vs. auc 1.994074 0.046144 42 promethee-precision vs. recall 1.673598 0.09421 43 best-precision vs. recall 1.673598 0.09421 40 promethee				
56 best-precision vs. promethee-precision 2.77746 0.005479 56 best-recall vs. promethee-precision 2.77746 0.005479 55 promethee-precision vs. bas 2.724048 0.006449 53 best-precision vs. Bagging 2.688439 0.007179 51 bac vs. precision 2.59448 0.009338 50 ft vs. AdaBoost 2.510397 0.01206 49 precision vs. gmean 2.388767 0.01704 48 balanced vs. auc 2.296746 0.021633 47 best-recall vs. AdaBoost 2.261138 0.023751 46 promethee-precision vs. auc 1.994074 0.046144 41 best-precision vs. auc 1.994074 0.046144 42 promethee-precision vs. auc 1.994074 0.046144 41 best-precision vs. recall 1.673598 0.09421 42 promethee-precision vs. recall 1.673598 0.09421 43 best-precision vs. recall 1.673598 0.09421 40 pro				
56 best-recall vs. promethee-precision 2.77746 0.005479 54 balanced vs. bac 2.772408 0.005479 54 balanced vs. bac 2.724048 0.006449 52 promethee-precision vs. Bagging 2.688439 0.007179 51 bac vs. precision 2.599418 0.009338 50 fl vs. AdaBoost 2.510397 0.01206 49 precision vs. gmean 2.385767 0.017044 48 balanced vs. auc 2.296746 0.021633 47 best-recall vs. AdaBoost 2.261138 0.023751 46 promethee-recall vs. AdaBoost 2.189921 0.02854 45 recall vs. AdaBoost 2.189921 0.02847 46 promethee-precision vs. auc 1.994074 0.046144 41 best-precision vs. recall 1.673598 0.09421 40 promethee-precision vs. bac 1.566772 0.117168 38 balanced vs. Bagging 1.602381 0.09421 40 promethee-precision vs. bac	58		2.77746	0.005479
55 promethee-precision vs. bac 2.7746 0.005479 54 balanced vs. bac 2.724048 0.006449 53 best-precision vs. Bagging 2.688439 0.007179 52 promethee-precision vs. Bagging 2.688439 0.007179 51 bac vs. precision 2.599418 0.00933 50 fl vs. AdaBoost 2.510397 0.01206 49 precision vs. gmean 2.385767 0.01704 48 balanced vs. auc 2.296746 0.021633 47 best-recall vs. AdaBoost 2.261138 0.023751 46 promethee-recall vs. AdaBoost 2.189921 0.02853 44 AdaBoost vs. Bagging 2.172116 0.029841 43 best-precision vs. auc 1.994074 0.046144 44 promethee-precision vs. recall 1.673598 0.09421 40 promethee-precision vs. recall 1.673598 0.09421 39 fl vs. gmean 1.673598 0.09421 40 promethee-precision vs. bac <t< td=""><td>57</td><td></td><td>2.77746</td><td>0.005479</td></t<>	57		2.77746	0.005479
best-precision vs. Bagging 2.688439 0.006149 best-precision vs. Bagging 2.688439 0.007179 bac vs. precision 2.599418 0.009338 fl vs. AdaBoost 2.510397 0.01206 precision vs. gmean 2.385767 0.017044 balanced vs. auc 2.296746 0.021633 recall vs. AdaBoost 2.261138 0.023751 best-recall vs. AdaBoost 2.261138 0.023751 creall vs. AdaBoost 2.261138 0.023751 best-precision vs. gmean 2.189921 0.02853 best-precision vs. auc 1.994074 0.046144 promethee-precision vs. auc 1.994074 0.046144 promethee-precision vs. recall 1.673598 0.09421 promethee-precision vs. recall 1.673598 0.09421 promethee-precision vs. recall 1.673598 0.09421 promethee-precision vs. bac 1.566772 0.117168 precision vs. bac 1.566772 0.117168 precision vs. bac 1.54868 0.121383 balanced vs. promethee-recall 1.51336 0.130188 balanced vs. gmean 1.424339 0.154348 best-precision vs. gmean 1.353122 0.176017 promethee-precision vs. gmean 1.353122 0.176017 promethee-precision vs. gmean 1.353122 0.176017 gmean vs. Bagging 1.335317 0.181772 bac vs. Bagging 1.032645 0.30177 gmean vs. AdaBoost 1.05045 0.293511 bac vs. AdaBoost 1.05045 0.293511 bac vs. AdaBoost 0.516323 0.605629 promethee-recall vs. auc 0.783386 0.4334 d auc vs. Bagging 0.694365 0.487453 d auc vs. gmean 0.640952 0.521554 bac vs. auc 0.783386 0.4334 d auc vs. Bagging 0.694365 0.487453 d auc vs. gmean 0.640952 0.521554 bac vs. auc 0.783386 0.4334 d auc vs. gmean 0.640952 0.521554 best-precision vs. AdaBoost 0.516323 0.605629 promethee-recall vs. fl 0.249259 0.80316 best-precision vs. precision 0.089021				
53 best-precision vs. Bagging 2.688439 0.007179 51 bac vs. precision 2.599418 0.009338 50 fl vs. AdaBoost 2.510397 0.01206 49 precision vs. gmean 2.385767 0.01704 48 balanced vs. auc 2.296746 0.02163 47 best-recall vs. AdaBoost 2.261138 0.023751 46 promethee-recall vs. AdaBoost 2.189921 0.02853 44 AdaBoost vs. Bagging 2.172116 0.029853 44 AdaBoost vs. Sagging 2.172116 0.028853 44 AdaBoost vs. Sagging 2.172116 0.028853 44 promethee-precision vs. auc 1.994074 0.046144 41 best-precision vs. recall 1.673598 0.09421 40 promethee-precision vs. recall 1.673598 0.09421 39 fl vs. gmean 1.673598 0.09421 38 balanced vs. Bagging 1.602381 0.109071 36 promethee-precision vs. bac 1.566772 </td <td></td> <td></td> <td></td> <td></td>				
52 promethee-precision vs. Bagging 2.688439 0.007179 51 bac vs. precision 2.599418 0.009338 50 fl vs. AdaBoost 2.510397 0.01206 49 precision vs. gmean 2.385767 0.017044 48 balanced vs. auc 2.296746 0.021631 47 best-recall vs. AdaBoost 2.261138 0.023751 46 promethee-recall vs. AdaBoost 2.261138 0.023751 47 best-precision vs. AdaBoost 2.189921 0.02883 44 AdaBoost vs. Bagging 2.172116 0.029847 43 best-precision vs. auc 1.994074 0.046144 41 best-precision vs. recall 1.673598 0.09421 40 promethee-precision vs. recall 1.673598 0.09421 30 fl vs. gmean 1.673598 0.09421 31 best-precision vs. bac 1.566772 0.117168 36 promethee-precision vs. bac 1.566772 0.117168 37 best-precision vs. bac <				
51 bae vs. precision 2.599418 0.009338 50 fl vs. AdaBoost 2.510397 0.01206 49 precision vs. gmean 2.385767 0.017044 48 balanced vs. aue 2.296746 0.023751 46 promethee-recall vs. AdaBoost 2.261138 0.023751 45 recall vs. AdaBoost 2.189921 0.02853 44 AdaBoost vs. Bagging 2.172116 0.029847 43 best-precision vs. aue 1.994074 0.046144 42 promethee-precision vs. aue 1.994074 0.046144 41 best-precision vs. recall 1.673598 0.09421 40 promethee-precision vs. recall 1.673598 0.09421 39 ft vs. gmean 1.673598 0.09421 39 ft vs. gmean 1.673598 0.09421 30 pest-precision vs. bac 1.566772 0.117168 36 promethee-precision vs. bac 1.566772 0.117168 35 precision vs. AdaBoost 1.548968				
50 fl vs. ÅdaBoost 2.510397 0.01206 49 precision vs. gmean 2.385767 0.017044 48 balanced vs. aue 2.296746 0.021633 47 best-recall vs. AdaBoost 2.261138 0.023751 46 promethee-recall vs. AdaBoost 2.189921 0.02853 44 AdaBoost vs. Bagging 2.172116 0.029847 43 best-precision vs. auc 1.994074 0.046144 42 promethee-precision vs. recall 1.673598 0.09421 40 promethee-precision vs. recall 1.673598 0.09421 40 promethee-precision vs. recall 1.673598 0.09421 39 fl vs. gmean 1.673598 0.09421 36 promethee-precision vs. bac 1.566772 0.117168 36 promethee-precision vs. bac 1.566772 0.117168 36 promethee-precision vs. bac 1.51336 0.130188 31 bast-precall vs. balanced 1.51336 0.130188 32 auc vs. AdaBoost				
48 balanced vs. auc 2.285767 0.017044 48 balanced vs. auc 2.296746 0.021633 47 best-recall vs. AdaBoost 2.261138 0.023751 46 promethee-recall vs. AdaBoost 2.261138 0.023751 45 recall vs. AdaBoost 2.189921 0.02853 44 AdaBoost 2.189921 0.02853 44 AdaBoost vs. Bagging 2.172116 0.029847 43 best-precision vs. auc 1.994074 0.046144 41 best-precision vs. recall 1.673598 0.09421 40 promethee-precision vs. recall 1.673598 0.09421 41 best-precision vs. recall 1.673598 0.09421 42 promethee-precision vs. recall 1.673598 0.09421 43 balanced vs. Bagging 1.602381 0.109971 37 best-precision vs. bac 1.566772 0.117168 36 promethee-precision vs. bac 1.566772 0.117168 37 precision vs. AdaBoost 1.548968 0.121389 38 balanced vs. Balanced 1.51336 0.130188 39 promethee-precision vs. bac 1.566772 0.117168 30 promethee-precision vs. bac 1.548968 0.121389 31 balanced vs. ApaBoost 1.548968 0.121389 32 auc vs. AdaBoost 1.548968 0.130188 33 balanced vs. promethee-recall 1.51336 0.130188 34 best-recall vs. gmean 1.424339 0.154348 29 promethee-recall vs. gmean 1.424339 0.154348 29 promethee-recall vs. gmean 1.424339 0.154348 29 promethee-recall vs. gmean 1.424339 0.154348 20 promethee-precision vs. gmean 1.353122 0.176017 27 promethee-precision vs. gmean 1.353122 0.176017 26 gmean vs. Bagging 1.335317 0.181772 27 balanced vs. f1 1.264101 0.206194 28 best-precision vs. precision 1.032645 0.30177 29 promethee-precision vs. precision 1.032645 0.30177 19 promethee-precision vs. precision 1.032645 0.30177 29 promethee-precision vs. precision 1.032645 0.30177 20 best-precision vs. AdaBoost 0.516323 0.605629 20 bac vs. auc 0.427302 0.66916 21 bac vs. gmean 0.640952 0.521554 22 precision vs. AdaBoost 0.516323 0.605629 23 promethee-r				
48 balanced vs. AdaBoost 2.261138 0.023751 46 promethee-recall vs. AdaBoost 2.261138 0.023751 45 recall vs. AdaBoost 2.189921 0.02853 44 AdaBoost vs. Bagging 2.172116 0.029847 43 best-precision vs. auc 1.994074 0.046144 42 promethee-precision vs. recall 1.673598 0.09421 40 promethee-precision vs. recall 1.673598 0.09421 40 promethee-precision vs. recall 1.673598 0.09421 39 fl vs. gmean 1.673598 0.09421 38 balanced vs. Bagging 1.602381 0.109071 37 best-precision vs. bac 1.566772 0.117168 36 promethee-precision vs. bac 1.566772 0.117168 35 precision vs. AdaBoost 1.51336 0.130188 33 balanced vs. promethee-recall 1.51336 0.130188 33 balanced vs. gmean 1.424339 0.154348 29 promethee-precision vs.				
47 best-recall vs. AdaBoost 2.261138 0.023751 46 promethee-recall vs. AdaBoost 2.261138 0.023751 45 recall vs. AdaBoost 2.189921 0.02853 44 AdaBoost vs. Bagging 2.172116 0.029847 43 best-precision vs. auc 1.994074 0.046144 42 promethee-precision vs. recall 1.673598 0.09421 40 promethee-precision vs. recall 1.673598 0.09421 40 promethee-precision vs. recall 1.673598 0.09421 39 fl vs. gmean 1.673598 0.09421 38 balanced vs. Bagging 1.602381 0.199071 36 promethee-precision vs. bac 1.566772 0.117168 35 precision vs. AdaBoost 1.5466772 0.117168 34 best-recall vs. balanced 1.51336 0.130188 33 balanced vs. promethee-recall 1.51336 0.130188 32 aux vs. AdaBoost 1.477751 0.13947 31 bac vs. fl				
45				
44 AdaBoost vs. Bagging 2.172116 0.029847 43 best-precision vs. auc 1.994074 0.046144 42 promethee-precision vs. recall 1.673598 0.09421 40 promethee-precision vs. recall 1.673598 0.09421 39 fl vs. gmean 1.673598 0.09421 38 balanced vs. Bagging 1.602381 0.109071 37 best-precision vs. bac 1.566772 0.117168 36 promethee-precision vs. bac 1.566772 0.117168 35 precision vs. AdaBoost 1.548968 0.121389 34 best-recall vs. balanced 1.51336 0.130188 33 balanced vs. promethee-recall 1.51336 0.130188 34 best-recall vs. gmean 1.427751 0.139474 35 precision vs. fl 1.459947 0.143436 36 promethee-precision vs. gmean 1.424339 0.154348 39 promethee-recall vs. gmean 1.353122 0.176017 27 promethee-precision vs.				0.023751
43 best-precision vs. auc 1.994074 0.046144 42 promethee-precision vs. auc 1.994074 0.046144 41 best-precision vs. recall 1.673598 0.09421 40 promethee-precision vs. recall 1.673598 0.09421 39 fl vs. gmean 1.673598 0.09421 38 balanced vs. Bagging 1.602381 0.109071 37 best-precision vs. bac 1.566772 0.117168 36 promethee-precision vs. bac 1.566772 0.117168 35 precision vs. AdaBoost 1.548968 0.121389 34 best-recall vs. balanced 1.51336 0.130188 33 balanced vs. promethee-recall 1.51336 0.130188 32 auc vs. AdaBoost 1.477751 0.13447 30 best-recall vs. gmean 1.424339 0.154348 29 promethee-recall vs. gmean 1.353122 0.176017 27 promethee-precision vs. gmean 1.353122 0.176017 28 best-precision vs.	45	recall vs. AdaBoost	2.189921	0.02853
42 promethee-precision vs. recall 1.673598 0.09421 41 best-precision vs. recall 1.673598 0.09421 39 fl vs. gmean 1.673598 0.09421 38 balanced vs. Bagging 1.602381 0.109071 37 best-precision vs. bac 1.566772 0.117168 36 promethee-precision vs. AdaBoost 1.548968 0.121389 34 best-recall vs. balanced 1.51336 0.130188 33 balanced vs. promethee-recall 1.51336 0.130188 32 auc vs. AdaBoost 1.477751 0.139474 31 bac vs. fl 1.459947 0.144305 30 best-recall vs. gmean 1.424339 0.154348 29 promethee-recall vs. gmean 1.353122 0.176017 27 promethee-precision vs. gmean 1.353122 0.176017 27 promethee-precision vs. gmean 1.353122 0.176017 27 promethee-precision vs. bac 1.210688 0.226015 28 best-recall vs. bac </td <td></td> <td></td> <td>2.172116</td> <td>0.029847</td>			2.172116	0.029847
41 best-precision vs. recall 1.673598 0.09421 40 promethee-precision vs. recall 1.673598 0.09421 38 fl vs. gmean 1.673598 0.09421 38 balanced vs. Bagging 1.602381 0.109071 37 best-precision vs. bac 1.566772 0.117168 36 promethee-precision vs. bac 1.566772 0.117168 35 precision vs. AdaBoost 1.548968 0.121389 34 best-recall vs. balanced 1.51336 0.130188 32 auc vs. AdaBoost 1.477751 0.139474 31 bac vs. fl 1.459947 0.144305 30 best-recall vs. gmean 1.424339 0.154348 29 promethee-recall vs. gmean 1.353122 0.176017 27 promethee-precision vs. gmean 1.353122 0.176017 27 promethee-precision vs. gmean 1.353122 0.176017 26 gmean vs. Bagging 1.35312 0.176017 27 balanced vs. fl 1.264101 </td <td></td> <td></td> <td></td> <td></td>				
40 promethee-precision vs. recall 1.673598 0.09421 39 fl vs. gmean 1.673598 0.09421 38 balanced vs. Bagging 1.602381 0.109071 37 best-precision vs. bac 1.566772 0.117168 36 promethee-precision vs. AdaBoost 1.54868 0.121389 34 best-recall vs. balanced 1.51336 0.130188 32 auc vs. AdaBoost 1.477751 0.139474 31 bac vs. fl 1.477951 0.144305 30 best-recall vs. gmean 1.424339 0.154348 29 promethee-recall vs. gmean 1.424339 0.154348 29 promethee-recall vs. gmean 1.353122 0.176017 27 promethee-precision vs. gmean 1.353122 0.176017 27 promethee-precision vs. gmean 1.353122 0.176017 27 promethee-precision vs. gmean 1.353122 0.176017 24 best-recall vs. bac 1.210688 0.226015 23 promethee-recall vs. bac <td></td> <td></td> <td></td> <td></td>				
39 fl vs. gmean 1.673598 0.09421 38 balanced vs. Bagging 1.602381 0.109071 37 best-precision vs. bac 1.566772 0.117168 36 promethee-precision vs. AdaBoost 1.548968 0.121389 34 best-recall vs. balanced 1.51336 0.130188 32 auc vs. AdaBoost 1.477751 0.139474 31 bac vs. fl 1.459947 0.144305 30 best-recall vs. gmean 1.424339 0.154348 29 promethee-recall vs. gmean 1.424339 0.154348 28 best-precision vs. gmean 1.353122 0.176017 27 promethee-precision vs. gmean 1.353122 0.176017 26 gmean vs. Bagging 1.335317 0.181772 25 balanced vs. fl 1.264101 0.206194 24 best-recall vs. bac 1.210688 0.226015 23 promethee-recall vs. bac 1.210688 0.226015 24 bac vs. Bagging 1.121667				
38 balanced vs. Bagging 1.602381 0.109071 37 best-precision vs. bac 1.566772 0.117168 36 promethee-precision vs. bac 1.566772 0.117168 35 precision vs. AdaBoost 1.548968 0.121389 34 best-recall vs. balanced 1.51336 0.130188 33 balanced vs. promethee-recall 1.51336 0.130188 32 auc vs. AdaBoost 1.477751 0.139474 31 bac vs. f1 1.459947 0.144305 30 best-recall vs. gmean 1.424339 0.154348 28 best-precision vs. gmean 1.353122 0.176017 27 promethee-precision vs. gmean 1.353122 0.176017 26 gmean vs. Bagging 1.335317 0.181772 25 balanced vs. f1 1.264101 0.206194 24 best-recall vs. bac 1.210688 0.226015 23 promethee-recall vs. bac 1.210688 0.226015 24 bac vs. Bagging 1.121667				
37 best-precision vs. bac 1.566772 0.117168 36 promethee-precision vs. bac 1.566772 0.117168 35 precision vs. AdaBoost 1.548968 0.121389 34 best-recall vs. balanced 1.51336 0.130188 33 balanced vs. promethee-recall 1.51336 0.130188 32 auc vs. AdaBoost 1.477751 0.139474 31 bac vs. f1 1.459947 0.144305 30 best-recall vs. gmean 1.424339 0.154348 29 promethee-recall vs. gmean 1.353122 0.176017 27 promethee-precision vs. gmean 1.353122 0.176017 26 gmean vs. Bagging 1.335312 0.176017 25 balanced vs. f1 1.264101 0.206194 24 best-recall vs. bac 1.210688 0.226015 23 promethee-recall vs. bac 1.210688 0.226015 24 bac vs. Bagging 1.121667 0.262004 21 bac vs. Bagging 1.032645				
36 promethee-precision vs. bac 1.566772 0.117168 35 precision vs. AdaBoost 1.548968 0.121389 34 best-recall vs. balanced 1.51336 0.130188 33 balanced vs. promethee-recall 1.51336 0.130188 32 auc vs. AdaBoost 1.477751 0.139474 31 bac vs. fl 1.459947 0.144305 30 best-recall vs. gmean 1.424339 0.154348 29 promethee-recall vs. gmean 1.353122 0.176017 27 promethee-precision vs. gmean 1.353122 0.176017 26 gmean vs. Bagging 1.353172 0.181772 25 balanced vs. fl 1.264101 0.206194 24 best-recall vs. bac 1.210688 0.226015 23 promethee-recall vs. bac 1.210688 0.226015 24 bac vs. AdaBoost 1.05045 0.293511 20 best-precision vs. precision 1.032645 0.30177 19 promethee-precision vs. precision <t< td=""><td></td><td></td><td></td><td></td></t<>				
35 precision vs. AdaBoost 1.548968 0.121389 34 best-recall vs. balanced 1.51336 0.130188 33 balanced vs. promethee-recall 1.51336 0.130188 32 auc vs. AdaBoost 1.477751 0.139474 31 bac vs. f1 1.459947 0.144305 30 best-recall vs. gmean 1.424339 0.154348 29 promethee-recil vs. gmean 1.353122 0.176017 27 promethee-precision vs. gmean 1.353122 0.176017 26 gmean vs. Bagging 1.335312 0.176017 26 gmean vs. Bagging 1.335312 0.176017 25 balanced vs. f1 1.264101 0.206194 24 best-recall vs. bac 1.210688 0.226015 23 promethee-recall vs. bac 1.210688 0.226015 24 bac vs. Bagging 1.121667 0.262004 25 bac vs. Bagging 1.032645 0.30177 20 best-precision vs. precision 1.032645 0				
33 balanced vs. AdaBoost 1.477751 0.139474 31 bac vs. f1 1.459947 0.144305 30 best-recall vs. gmean 1.424339 0.154348 29 promethee-recall vs. gmean 1.353122 0.176017 27 promethee-precision vs. gmean 1.353122 0.176017 26 gmean vs. Bagging 1.335317 0.181772 25 balanced vs. f1 1.264101 0.206194 24 best-recall vs. bac 1.210688 0.226015 23 promethee-recall vs. bac 1.210688 0.226015 22 bac vs. Bagging 1.121667 0.262004 21 bac vs. AdaBoost 1.032645 0.30177 19 promethee-precision vs. precision 1.032645 0.30177 19 promethee-precision vs. precision 1.032645 0.30177 17 gmean vs. AdaBoost 0.836799 0.402706 16 best-recall vs. auc 0.783386 0.4334 14 auc vs. gmean 0.640952				
32 auc vs. AdaBoost 1.477751 0.139474 31 bac vs. f1 1.459947 0.144305 30 best-recall vs. gmean 1.424339 0.154348 29 promethee-recall vs. gmean 1.324339 0.154348 28 best-precision vs. gmean 1.353122 0.176017 27 promethee-precision vs. gmean 1.353122 0.176017 26 gmean vs. Bagging 1.335317 0.181772 25 balanced vs. f1 1.264101 0.206194 24 best-recall vs. bac 1.210688 0.226015 23 promethee-recall vs. bac 1.210688 0.226015 22 bac vs. AdaBoost 1.05045 0.293511 20 best-precision vs. precision 1.032645 0.30177 19 promethee-precision vs. precision 1.032645 0.30177 17 gmean vs. AdaBoost 0.836799 0.402706 16 best-recall vs. auc 0.783386 0.4334 15 promethee-recall vs. auc 0.783386	34	best-recall vs. balanced	1.51336	0.130188
31 bac vs. f1 1.459947 0.144305 30 best-recall vs. gmean 1.424339 0.154348 29 promethee-recall vs. gmean 1.424339 0.154348 28 best-precision vs. gmean 1.353122 0.176017 27 promethee-precision vs. gmean 1.353122 0.176017 26 gmean vs. Bagging 1.335317 0.181772 25 balanced vs. f1 1.264101 0.206194 24 best-recall vs. bac 1.210688 0.226015 23 promethee-recall vs. bac 1.210688 0.226015 22 bac vs. Bagging 1.121667 0.262004 21 bac vs. AdaBoost 1.032645 0.30177 19 promethee-precision vs. precision 1.032645 0.30177 18 f1 vs. auc 1.032645 0.30177 17 gmean vs. AdaBoost 0.836799 0.402706 16 best-recall vs. auc 0.783386 0.4334 14 auc vs. gmean 0.640952 0.521554 </td <td>33</td> <td>balanced vs. promethee-recall</td> <td>1.51336</td> <td>0.130188</td>	33	balanced vs. promethee-recall	1.51336	0.130188
30 best-recall vs. gmean 1.424339 0.154348 29 promethee-recall vs. gmean 1.424339 0.154348 28 best-precision vs. gmean 1.353122 0.176017 27 promethee-precision vs. gmean 1.353122 0.176017 26 gmean vs. Bagging 1.335317 0.181772 25 balanced vs. f1 1.264101 0.206194 24 best-recall vs. bac 1.210688 0.226015 23 promethee-recall vs. bac 1.210688 0.226015 23 promethee-recall vs. bac 1.210688 0.226015 21 bac vs. Bagging 1.121667 0.262004 21 bac vs. AdaBoost 1.05045 0.293511 20 best-precision vs. precision 1.032645 0.30177 19 promethee-precision vs. precision 1.032645 0.30177 19 promethee-precision vs. precision 1.032645 0.30177 17 gmean vs. AdaBoost 0.836799 0.402706 16 best-recall vs. auc				
29 promethee-recall vs. gmean 1.424339 0.154348 28 best-precision vs. gmean 1.353122 0.176017 27 promethee-precision vs. gmean 1.353122 0.176017 26 gmean vs. Bagging 1.353122 0.176017 25 balanced vs. fl 1.264101 0.206194 24 best-recall vs. bac 1.210688 0.226015 23 promethee-recall vs. bac 1.210688 0.226015 22 bac vs. Bagging 1.121667 0.262004 21 bac vs. AdaBoost 1.032645 0.30177 19 promethee-precision vs. precision 1.032645 0.30177 18 fl vs. auc 1.032645 0.30177 17 gmean vs. AdaBoost 0.836799 0.402706 16 best-recall vs. auc 0.783386 0.4334 15 promethee-recall vs. auc 0.783386 0.4334 14 auc vs. gmean 0.640952 0.521554 12 precision vs. AdaBoost 0.516323 0.60562				
28 best-precision vs. gmean 1.353122 0.176017 27 promethee-precision vs. gmean 1.353122 0.176017 26 gmean vs. Bagging 1.335317 0.181772 25 balanced vs. f1 1.264101 0.206194 24 best-recall vs. bac 1.210688 0.226015 23 promethee-recall vs. bac 1.210688 0.226015 22 bac vs. AdaBoost 1.05045 0.293511 20 best-precision vs. precision 1.032645 0.30177 19 promethee-precision vs. precision 1.032645 0.30177 18 fl vs. auc 1.032645 0.30177 17 gmean vs. AdaBoost 0.836799 0.402706 16 best-recall vs. auc 0.783386 0.4334 15 promethee-recall vs. auc 0.783386 0.4334 14 auc vs. gmean 0.640952 0.521554 12 precision vs. recall 0.640952 0.521554 11 best-precision vs. AdaBoost 0.516323				
27 promethee-precision vs. gmean 1.353122 0.176017 26 gmean vs. Bagging 1.335317 0.181772 25 balanced vs. f1 1.264101 0.206194 24 best-recall vs. bac 1.210688 0.226015 23 promethee-recall vs. bac 1.210688 0.226015 22 bac vs. AdaBoost 1.05045 0.293511 20 best-precision vs. precision 1.032645 0.30177 19 promethee-precision vs. precision 1.032645 0.30177 18 fl vs. auc 1.032645 0.30177 17 gmean vs. AdaBoost 0.836799 0.402706 16 best-recall vs. auc 0.783386 0.4334 15 promethee-recall vs. auc 0.783386 0.4334 14 auc vs. Bagging 0.694365 0.487453 13 auc vs. gmean 0.640952 0.521554 12 precision vs. recall 0.640952 0.521554 11 best-precision vs. AdaBoost 0.516323 0.605				
26 gmean vs. Bagging 1.335317 0.181772 25 balanced vs. f1 1.264101 0.206194 24 best-recall vs. bac 1.210688 0.226015 23 promethee-recall vs. bac 1.210688 0.226015 22 bac vs. Bagging 1.121667 0.262004 21 bac vs. AdaBoost 1.03045 0.293511 20 best-precision vs. precision 1.032645 0.30177 19 promethee-precision vs. precision 1.032645 0.30177 18 f1 vs. auc 1.032645 0.30177 17 gmean vs. AdaBoost 0.836799 0.402706 16 best-recall vs. auc 0.783386 0.4334 15 promethee-recall vs. auc 0.783386 0.4334 14 auc vs. Bagging 0.694365 0.487453 13 auc vs. gmean 0.640952 0.521554 11 best-precision vs. AdaBoost 0.516323 0.605629 10 promethee-precision vs. AdaBoost 0.516323 0.60562				
25 balanced vs. f1 1.264101 0.206194 24 best-recall vs. bac 1.210688 0.226015 23 promethee-recall vs. bac 1.210688 0.226015 22 bac vs. Bagging 1.121667 0.262004 21 bac vs. AdaBoost 1.05045 0.293511 20 best-precision vs. precision 1.032645 0.30177 19 promethee-precision vs. precision 1.032645 0.30177 18 f1 vs. auc 1.032645 0.30177 17 gmean vs. AdaBoost 0.836799 0.402706 16 best-recall vs. auc 0.783386 0.4334 15 promethee-recall vs. auc 0.783386 0.4334 14 auc vs. Bagging 0.694365 0.487453 13 auc vs. gmean 0.640952 0.521554 12 precision vs. AdaBoost 0.516323 0.605629 10 promethee-precision vs. AdaBoost 0.516323 0.605629 10 promethee-precision vs. AdaBoost 0.516323 <				
24 best-recall vs. bac 1.210688 0.226015 23 promethee-recall vs. bac 1.210688 0.226015 22 bac vs. Bagging 1.121667 0.262004 21 bac vs. AdaBoost 1.05045 0.293511 20 best-precision vs. precision 1.032645 0.30177 19 promethee-precision vs. precision 1.032645 0.30177 18 fl vs. auc 1.032645 0.30177 17 gmean vs. AdaBoost 0.836799 0.402706 16 best-recall vs. auc 0.783386 0.4334 15 promethee-recall vs. auc 0.783386 0.4334 14 auc vs. Bagging 0.694365 0.487453 13 auc vs. gmean 0.640952 0.521554 12 precision vs. recall 0.640952 0.521554 11 best-precision vs. AdaBoost 0.516323 0.605629 10 promethee-precision vs. AdaBoost 0.516323 0.605629 9 bac vs. auc 0.427302 0.66916 </td <td></td> <td>0 00 0</td> <td></td> <td></td>		0 00 0		
22 bac vs. AdaBoost 1.121667 0.262004 21 bac vs. AdaBoost 1.05045 0.293511 20 best-precision vs. precision 1.032645 0.30177 19 promethee-precision vs. precision 1.032645 0.30177 18 fl vs. auc 1.032645 0.30177 17 gmean vs. AdaBoost 0.836799 0.402706 16 best-recall vs. auc 0.783386 0.4334 15 promethee-recall vs. auc 0.783386 0.4334 14 auc vs. Bagging 0.694365 0.487453 13 auc vs. gmean 0.640952 0.521554 12 precision vs. recall 0.640952 0.521554 11 best-precision vs. AdaBoost 0.516323 0.605629 9 bac vs. auc 0.427302 0.66916 8 fl vs. Bagging 0.33828 0.735152 7 best-recall vs. fl 0.249259 0.80316 6 promethee-recall vs. fl 0.249259 0.80316	24	best-recall vs. bac	1.210688	0.226015
21 bac vs. AdaBoost 1.05045 0.293511 20 best-precision vs. precision 1.032645 0.30177 19 promethee-precision vs. precision 1.032645 0.30177 18 fl vs. auc 1.032645 0.30177 17 gmean vs. AdaBoost 0.836799 0.402706 16 best-recall vs. auc 0.783386 0.4334 15 promethee-recall vs. auc 0.783386 0.4334 14 auc vs. Bagging 0.694365 0.487453 13 auc vs. gmean 0.640952 0.521554 12 precision vs. recall 0.640952 0.521554 11 best-precision vs. AdaBoost 0.516323 0.605629 10 promethee-precision vs. AdaBoost 0.516323 0.605629 9 bac vs. auc 0.427302 0.66916 8 fl vs. Bagging 0.33828 0.735152 7 best-recall vs. fl 0.249259 0.80316 6 promethee-recall vs. Bagging 0.089021 0.929065				0.226015
20 best-precision vs. precision 1.032645 0.30177 19 promethee-precision vs. precision 1.032645 0.30177 18 fl vs. auc 1.032645 0.30177 17 gmean vs. AdaBoost 0.836799 0.402706 16 best-recall vs. auc 0.783386 0.4334 15 promethee-recall vs. auc 0.783386 0.4334 14 auc vs. Bagging 0.694365 0.487453 13 auc vs. gmean 0.640952 0.521554 12 precision vs. recall 0.640952 0.521554 11 best-precision vs. AdaBoost 0.516323 0.605629 10 promethee-precision vs. AdaBoost 0.516323 0.605629 9 bac vs. auc 0.427302 0.66916 8 fl vs. Bagging 0.33828 0.735152 7 best-recall vs. fl 0.249259 0.80316 6 promethee-recall vs. fl 0.249259 0.80316 5 bac vs. gmean 0.213651 0.830819 <td></td> <td></td> <td></td> <td></td>				
19 promethee-precision vs. precision 1.032645 0.30177 18 fl vs. auc 1.032645 0.30177 17 gmean vs. AdaBoost 0.836799 0.402706 16 best-recall vs. auc 0.783386 0.4334 15 promethee-recall vs. auc 0.783386 0.4334 14 auc vs. Bagging 0.694365 0.487453 13 auc vs. gmean 0.640952 0.521554 12 precision vs. recall 0.640952 0.521554 11 best-precision vs. AdaBoost 0.516323 0.605629 10 promethee-precision vs. AdaBoost 0.516323 0.605629 9 bac vs. auc 0.427302 0.66916 8 fl vs. Bagging 0.33828 0.735152 7 best-recall vs. fl 0.249259 0.80316 6 promethee-recall vs. Bagging 0.089021 0.830819 4 best-recall vs. Bagging 0.089021 0.929065 3 promethee-recall vs. Bagging 0.089021 0.9290				
18 fl vs. auc 1.032645 0.30177 17 gmean vs. AdaBoost 0.836799 0.402706 16 best-recall vs. auc 0.783386 0.4334 15 promethee-recall vs. auc 0.783386 0.4334 14 auc vs. Bagging 0.694365 0.487453 13 auc vs. gmean 0.640952 0.521554 12 precision vs. recall 0.640952 0.521554 11 best-precision vs. AdaBoost 0.516323 0.605629 10 promethee-precision vs. AdaBoost 0.516323 0.605629 9 bac vs. auc 0.427302 0.66916 8 fl vs. Bagging 0.33828 0.735152 7 best-recall vs. fl 0.249259 0.80316 6 promethee-recall vs. fl 0.249259 0.80316 5 bac vs. gmean 0.213651 0.830819 4 best-recall vs. Bagging 0.089021 0.929065 3 promethee-recall vs. Bagging 0.089021 0.929065				
17 gmean vs. AdaBoost 0.836799 0.402706 16 best-recall vs. auc 0.783386 0.4334 15 promethee-recall vs. auc 0.783386 0.4334 14 auc vs. Bagging 0.694365 0.487453 13 auc vs. gmean 0.640952 0.521554 12 precision vs. recall 0.640952 0.521554 11 best-precision vs. AdaBoost 0.516323 0.605629 9 bac vs. auc 0.427302 0.66916 8 fl vs. Bagging 0.33828 0.735152 7 best-recall vs. fl 0.249259 0.80316 6 promethee-recall vs. fl 0.249259 0.80316 5 bac vs. gmean 0.213651 0.830819 4 best-recall vs. Bagging 0.089021 0.929065 3 promethee-recall vs. Bagging 0.089021 0.929065 2 best-precision vs. promethee-precision 0 1				
16 best-recall vs. auc 0.783386 0.4334 15 promethee-recall vs. auc 0.783386 0.4334 14 auc vs. Bagging 0.694365 0.487453 13 auc vs. gmean 0.640952 0.521554 12 precision vs. recall 0.640952 0.521554 11 best-precision vs. AdaBoost 0.516323 0.605629 10 promethee-precision vs. AdaBoost 0.516323 0.605629 9 bac vs. auc 0.427302 0.66916 8 f1 vs. Bagging 0.33828 0.735152 7 best-recall vs. f1 0.249259 0.80316 6 promethee-recall vs. f1 0.249259 0.80316 5 bac vs. gmean 0.213651 0.830819 4 best-recall vs. Bagging 0.089021 0.929065 3 promethee-recall vs. Bagging 0.089021 0.929065 2 best-precision vs. promethee-precision 0 1				
15 promethee-recall vs. auc 0.783386 0.4334 14 auc vs. Bagging 0.694365 0.487453 13 auc vs. gmean 0.640952 0.521554 12 precision vs. recall 0.640952 0.521554 11 best-precision vs. AdaBoost 0.516323 0.605629 10 promethee-precision vs. AdaBoost 0.516323 0.605629 9 bac vs. auc 0.427302 0.66916 8 f1 vs. Bagging 0.33828 0.735152 7 best-recall vs. f1 0.249259 0.80316 6 promethee-recall vs. f1 0.249259 0.80316 5 bac vs. gmean 0.213651 0.830819 4 best-recall vs. Bagging 0.089021 0.929065 3 promethee-recall vs. Bagging 0.089021 0.929065 2 best-precision vs. promethee-precision 0 1				
14 auc vs. Bagging 0.694365 0.487453 13 auc vs. gmean 0.640952 0.521554 12 precision vs. recall 0.640952 0.521554 11 best-precision vs. AdaBoost 0.516323 0.605629 10 promethee-precision vs. AdaBoost 0.516323 0.605629 9 bac vs. auc 0.427302 0.66916 8 f1 vs. Bagging 0.33828 0.735152 7 best-recall vs. f1 0.249259 0.80316 6 promethee-recall vs. f1 0.249259 0.80316 5 bac vs. gmean 0.213651 0.830819 4 best-recall vs. Bagging 0.089021 0.929065 3 promethee-recall vs. Bagging 0.089021 0.929065 2 best-precision vs. promethee-precision 0 1				
13 auc vs. gmean 0.640952 0.521554 12 precision vs. recall 0.640952 0.521554 11 best-precision vs. AdaBoost 0.516323 0.605629 10 promethee-precision vs. AdaBoost 0.516323 0.605629 9 bac vs. auc 0.427302 0.66916 8 fl vs. Bagging 0.33828 0.735152 7 best-recall vs. fl 0.249259 0.80316 6 promethee-recall vs. fl 0.249259 0.80316 5 bac vs. gmean 0.213651 0.830819 4 best-recall vs. Bagging 0.089021 0.929065 3 promethee-recall vs. Bagging 0.089021 0.929065 2 best-precision vs. promethee-precision 0 1		1		
12 precision vs. recall 0.640952 0.521554 11 best-precision vs. AdaBoost 0.516323 0.605629 10 promethee-precision vs. AdaBoost 0.516323 0.605629 9 bac vs. auc 0.427302 0.66916 8 fl vs. Bagging 0.33828 0.735152 7 best-recall vs. fl 0.249259 0.80316 6 promethee-recall vs. fl 0.249259 0.80316 5 bac vs. gmean 0.213651 0.830819 4 best-recall vs. Bagging 0.089021 0.929065 3 promethee-recall vs. Bagging 0.089021 0.929065 2 best-precision vs. promethee-precision 0 1				
10 promethee-precision vs. AdaBoost 0.516323 0.605629 9 bac vs. auc 0.427302 0.66916 8 f1 vs. Bagging 0.33828 0.735152 7 best-recall vs. f1 0.249259 0.80316 6 promethee-recall vs. f1 0.249259 0.80316 5 bac vs. gmean 0.213651 0.830819 4 best-recall vs. Bagging 0.089021 0.929065 3 promethee-recall vs. Bagging 0.089021 0.929065 2 best-precision vs. promethee-precision 0 1		precision vs. recall	0.640952	0.521554
9 bac vs. auc 0.427302 0.66916 8 f1 vs. Bagging 0.33828 0.735152 7 best-recall vs. f1 0.249259 0.80316 6 promethee-recall vs. f1 0.249259 0.80316 5 bac vs. gmean 0.213651 0.830819 4 best-recall vs. Bagging 0.089021 0.929065 3 promethee-recall vs. Bagging 0.089021 0.929065 2 best-precision vs. promethee-precision 0 1				
8 f1 vs. Bagging 0.33828 0.735152 7 best-recall vs. f1 0.249259 0.80316 6 promethee-recall vs. f1 0.249259 0.80316 5 bac vs. gmean 0.213651 0.830819 4 best-recall vs. Bagging 0.089021 0.929065 3 promethee-recall vs. Bagging 0.089021 0.929065 2 best-precision vs. promethee-precision 0 1				
7 best-recall vs. f1 0.249259 0.80316 6 promethee-recall vs. f1 0.249259 0.80316 5 bac vs. gmean 0.213651 0.830819 4 best-recall vs. Bagging 0.089021 0.929065 3 promethee-recall vs. Bagging 0.089021 0.929065 2 best-precision vs. promethee-precision 0 1				
6 promethee-recall vs. f1 0.249259 0.80316 5 bac vs. gmean 0.213651 0.830819 4 best-recall vs. Bagging 0.089021 0.929065 3 promethee-recall vs. Bagging 0.089021 0.929065 2 best-precision vs. promethee-precision 0 1				
5 bac vs. gmean 0.213651 0.830819 4 best-recall vs. Bagging 0.089021 0.929065 3 promethee-recall vs. Bagging 0.089021 0.929065 2 best-precision vs. promethee-precision 0 1				
4 best-recall vs. Bagging 0.089021 0.929065 3 promethee-recall vs. Bagging 0.089021 0.929065 2 best-precision vs. promethee-precision 0 1				
$\begin{array}{cccccccccccccccccccccccccccccccccccc$				
2 best-precision vs. promethee-precision 0 1				
1 1				
	1		0	1

Table 2: P-values Table for $\alpha = 0.05$

2.2 P-values for $\alpha = 0.10$

Nemenyi's procedure rejects those hypotheses that have an unadjusted p-value ≤ 0.001282 .

i	algorithms	$z = (R_0 - R_i)/SE$	p
78	balanced vs. recall	5.964418	0
77	balanced vs. precision	5.323466	0
76	recall vs. f1	4.700317	0.000003
75	best-recall vs. recall	4.451058	0.000009
74	promethee-recall vs. recall	4.451058	0.000009
73	recall vs. Bagging	4.362037	0.000013
72	best-precision vs. balanced	4.29082	0.000018
71	balanced vs. promethee-precision	4.29082	0.000018
70	precision vs. f1	4.059365	0.000049
69	best-recall vs. precision	3.810106	0.000139
68	promethee-recall vs. precision	3.810106 3.774497	0.000139
67 66	balanced vs. AdaBoost precision vs. Bagging	3.721085	0.00016 0.000198
65	recall vs. auc	3.667672	0.000198 0.000245
64	bac vs. recall	3.24037	0.001194
63	precision vs. auc	3.02672	0.002472
62	best-precision vs. f1	3.02672	0.002472
61	promethee-precision vs. f1	3.02672	0.002472
60	recall vs. gmean	3.02672	0.002472
59	balanced vs. gmean	2.937698	0.003307
58	best-precision vs. best-recall	2.77746	0.005479
57	best-precision vs. promethee-recall	2.77746	0.005479
56	best-recall vs. promethee-precision	2.77746	0.005479
55	promethee-precision vs. promethee-recall	2.77746	0.005479
54	balanced vs. bac	2.724048	0.006449
53	best-precision vs. Bagging	2.688439	0.007179
52	promethee-precision vs. Bagging	2.688439	0.007179
51	bac vs. precision	2.599418	0.009338
50	fl vs. AdaBoost	2.510397	0.01206
49	precision vs. gmean	2.385767	0.017044
48	balanced vs. auc	2.296746	0.021633
$\frac{47}{46}$	best-recall vs. AdaBoost promethee-recall vs. AdaBoost	2.261138 2.261138	0.023751
$\frac{40}{45}$	recall vs. AdaBoost	2.189921	$0.023751 \\ 0.02853$
44	AdaBoost vs. Bagging	2.172116	0.02833
43	best-precision vs. auc	1.994074	0.046144
42	promethee-precision vs. auc	1.994074	0.046144
41	best-precision vs. recall	1.673598	0.09421
40	promethee-precision vs. recall	1.673598	0.09421
39	fl vs. gmean	1.673598	0.09421
38	balanced vs. Bagging	1.602381	0.109071
37	best-precision vs. bac	1.566772	0.117168
36	promethee-precision vs. bac	1.566772	0.117168
35	precision vs. AdaBoost	1.548968	0.121389
34	best-recall vs. balanced	1.51336	0.130188
33	balanced vs. promethee-recall	1.51336	0.130188
32	auc vs. AdaBoost	1.477751	0.139474
31	bac vs. f1	1.459947	0.144305
30	best-recall vs. gmean	1.424339	0.154348
29	promethee-recall vs. gmean	1.424339	0.154348
$\frac{28}{27}$	best-precision vs. gmean promethee-precision vs. gmean	1.353122 1.353122	0.176017 0.176017
26		1.335317	0.181772
$\frac{20}{25}$	gmean vs. Bagging balanced vs. f1	1.264101	0.161772
$\frac{25}{24}$	best-recall vs. bac	1.210688	0.200194 0.226015
23	promethee-recall vs. bac	1.210688	0.226015
22	bac vs. Bagging	1.121667	0.262004
21	bac vs. AdaBoost	1.05045	0.293511
20	best-precision vs. precision	1.032645	0.30177
19	promethee-precision vs. precision	1.032645	0.30177
18	f1 vs. auc	1.032645	0.30177
17	gmean vs. AdaBoost	0.836799	0.402706
16	best-recall vs. auc	0.783386	0.4334
15	promethee-recall vs. auc	0.783386	0.4334
14	auc vs. Bagging	0.694365	0.487453
13	auc vs. gmean	0.640952	0.521554
12	precision vs. recall	0.640952	0.521554
11	best-precision vs. AdaBoost	0.516323	0.605629
10	promethee-precision vs. AdaBoost	0.516323	0.605629
9	bac vs. auc	0.427302	0.66916
8 7	f1 vs. Bagging best-recall vs. f1	0.33828 0.249259	0.735152 0.80316
6	promethee-recall vs. f1	0.249259 0.249259	0.80316 0.80316
5	bac vs. gmean	0.249259 0.213651	0.830819
4	best-recall vs. Bagging	0.089021	0.929065
3	promethee-recall vs. Bagging	0.089021	0.929065
2	best-precision vs. promethee-precision	0	1
1	best-recall vs. promethee-recall	0	1

Table 3: P-values Table for $\alpha = 0.10$

i	hypothesis	unadjusted p	p_{Neme}
1	balanced vs . recall	0	0
2	balanced vs . precision	0	0.000008
3	recall vs . f1	0.000003	0.000203
$\frac{4}{2}$	best-recall vs . recall	0.000009	0.000666
5	promethee-recall vs. recall	0.000009	0.000666
6	recall vs .Bagging	0.000013	0.001005
7	best-precision vs . balanced	0.000018	0.001389
8	balanced vs . promethee-precision	0.000018	0.001389
9	precision vs . f1	0.000049	0.003838
10	best-recall vs . precision	0.000139	0.010835 0.010835
11	promethee-recall vs . precision balanced vs .AdaBoost	0.000139	
12	precision vs .Bagging	0.00016	0.012506
$\frac{13}{14}$	1 00 0	0.000198 0.000245	0.015473
15	recall vs . auc bac vs . recall	0.000245 0.001194	0.019092 0.093112
16	precision vs . auc	0.001194 0.002472	0.093112 0.192834
17	best-precision vs . f1	0.002472	0.192834
18	promethee-precision vs . f1	0.002472	0.192834
19	recall vs . gmean	0.002472	0.192834
20	balanced vs . gmean	0.002472	0.192834 0.257914
21	best-precision vs . best-recall	0.005479	0.427327
22	best-precision vs . promethee-recall	0.005479	0.427327 0.427327
23	best-recall vs . promethee-precision	0.005479	0.427327
$\frac{23}{24}$	promethee-precision vs . promethee-recall	0.005479	0.427327
25	balanced vs . bac	0.006449	0.503
26	best-precision vs .Bagging	0.007179	0.559938
27	promethee-precision vs .Bagging	0.007179	0.559938
28	bac vs . precision	0.009338	0.72838
29	f1 vs .AdaBoost	0.01206	0.940645
30	precision vs . gmean	0.017044	1.329396
31	balanced vs . auc	0.021633	1.687394
32	best-recall vs .AdaBoost	0.023751	1.852558
33	promethee-recall vs .AdaBoost	0.023751	1.852558
34	recall vs .AdaBoost	0.02853	2.22534
35	AdaBoost vs .Bagging	0.029847	2.328057
36	best-precision vs . auc	0.046144	3.599229
37	promethee-precision vs . auc	0.046144	3.599229
38	best-precision vs . recall	0.09421	7.348353
39	promethee-precision vs . recall	0.09421	7.348353
40	f1 vs. gmean	0.09421	7.348353
41	balanced vs .Bagging	0.109071	8.507569
42	best-precision vs . bac	0.117168	9.139095
43	promethee-precision vs . bac	0.117168	9.139095
44	precision vs .AdaBoost	0.121389	9.46837
45	best-recall vs . balanced	0.130188	10.154687
46	balanced vs . promethee-recall	0.130188	10.154687
47	auc vs .AdaBoost	0.139474	10.879
48	bac vs . f1	0.144305	11.25576
49	best-recall vs . gmean	0.154348	12.039181
50	promethee-recall vs. gmean	0.154348	12.039181
51	best-precision vs . gmean	0.176017	13.729307
52	promethee-precision vs. gmean	0.176017	13.729307
53	gmean vs .Bagging	0.181772	14.178253
54	balanced vs . f1	0.206194	16.083128
55	best-recall vs . bac	0.226015	17.629176
56	promethee-recall vs. bac	0.226015	17.629176
57	bac vs .Bagging bac vs .AdaBoost	0.262004	20.436327
58 50		0.293511	22.893889
59 60	best-precision vs. precision	0.30177	23.538047
61	$ \text{promethee-precision vs. precision} \\ \text{f1 vs. auc} $	0.30177 0.30177	23.538047 23.538047
62	gmean vs .AdaBoost	0.30177	31.411036
63	best-recall vs . auc	0.4334	33.805226
64	promethee-recall vs . auc	0.4334 0.4334	33.805226
65	auc vs .Bagging	0.487453	38.021357
66	auc vs . bagging auc vs . gmean	0.521554	40.681183
67	precision vs . recall	0.521554 0.521554	40.681183
68	best-precision vs . AdaBoost	0.605629	47.239063
69	promethee-precision vs .AdaBoost	0.605629	47.239063
70	bac vs . auc	0.66916	52.194455
70	f1 vs .Bagging	0.735152	57.341846
72	best-recall vs . f1	0.80316	62.646499
73	promethee-recall vs . f1	0.80316	62.646499
74	bac vs . gmean	0.830819	64.803912
75	best-recall vs .Bagging	0.929065	72.467077
76	promethee-recall vs .Bagging	0.929065	72.467077
77	best-precision vs . promethee-precision	1	78
78	best-recall vs . promethee-recall	1	78

Table 4: Adjusted p-values