

Synthetic Oversampling of Multi-Label Data based on Local Label Distribution: Supplementary Material

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1 Full Experimental Results

The full numerical results for proposed and competing methods for 6 based learning approaches in terms of macro-averaged F-measure, AUC-ROC, AUCPR are listed in Table 1-18. The detailed results of the statistical test via employing the Friedman test, followed by the Wilcoxon signed rank test with Bergman-Hommel’s correction at the 5% level are listed in Table 19-24, where “↑” (“↓”) denotes the method in the corresponding row is significantly superior (inferior) to the method in the corresponding column, and “-” denotes lack of significant difference between the two methods, the #W/L summarizes the number of significant wins and losses achieved by the corresponding method. For all tables, A_1 , A_2 , EA_1 and, EA_2 stands for MLSMOTE, RHwRSMT, EMLSMOTE and ERHwRSMT, respectively.

Table 1. Full results for BR in terms of macro-averaged F-measure

	BR	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL
bibtex	0.0903(6)	0.12(3)	0.0609(7)	0.108(4)	0.1311(2)	0.0941(5)	0.1499(1)
cal500	0.1202(6)	0.1544(4)	0.056(7)	0.1514(5)	0.1872(2)	0.176(3)	0.1894(1)
Corel5k	0.0183(6)	0.0185(5)	0.0107(7)	0.0224(4)	0.0284(2)	0.0273(3)	0.0363(1)
enron	0.1141(6)	0.1328(4)	0.0662(7)	0.1418(3)	0.1569(2)	0.1312(5)	0.1733(1)
flags	0.6273(6)	0.6518(2)	0.3385(7)	0.642(5)	0.6679(1)	0.648(4)	0.6499(3)
genbase	0.8577(2.5)	0.8577(2.5)	0.58(7)	0.847(5)	0.8587(1)	0.6253(6)	0.8547(4)
medical	0.373(5)	0.3784(4)	0.3382(7)	0.3983(2)	0.3857(3)	0.3641(6)	0.4128(1)
rcv1subset1	0.182(4)	0.1859(3)	0.094(7)	0.1806(5)	0.2095(2)	0.1357(6)	0.2231(1)
rcv1subset2	0.1659(4)	0.174(3)	0.082(7)	0.1657(5)	0.2024(2)	0.1192(6)	0.2066(1)
scene	0.6183(5)	0.6185(4)	0.6071(7)	0.6136(6)	0.6791(3)	0.6911(2)	0.6978(1)
yahoo-Arts1	0.1427(6)	0.1478(5)	0.1155(7)	0.1556(4)	0.1717(2)	0.1585(3)	0.1992(1)
yahoo-Business1	0.1569(5)	0.1647(4)	0.0922(7)	0.182(3)	0.1882(2)	0.1421(6)	0.2061(1)
yeast	0.3846(6)	0.3933(5)	0.2468(7)	0.3934(4)	0.418(3)	0.4316(2)	0.4362(1)
<i>Average Rank</i>	5.19	3.73	7	4.23	2.08	4.38	1.38

Table 2. Full results for BR in terms of macro-averaged AUC-ROC

	BR	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL
bibtex	0.5734(7)	0.6169(2.5)	0.575(5.5)	0.6163(4)	0.6169(2.5)	0.575(5.5)	0.711(1)
cal500	0.5041(7)	0.5073(6)	0.5075(5)	0.5081(4)	0.5182(2)	0.5163(3)	0.5239(1)
Corel5k	0.5118(3)	0.5115(4.5)	0.5076(6.5)	0.5182(2)	0.5115(4.5)	0.5076(6.5)	0.5307(1)
enron	0.5442(5)	0.5582(3.5)	0.537(6.5)	0.5658(2)	0.5582(3.5)	0.537(6.5)	0.6061(1)
flags	0.6267(5)	0.6447(4)	0.5718(7)	0.6465(3)	0.6849(2)	0.5858(6)	0.709(1)
genbase	0.9346(3)	0.9344(4.5)	0.8085(6.5)	0.935(2)	0.9344(4.5)	0.8085(6.5)	0.9352(1)
medical	0.6918(3)	0.6898(4.5)	0.6746(6.5)	0.7154(2)	0.6898(4.5)	0.6746(6.5)	0.7489(1)
rcv1subset1	0.5916(6)	0.5933(4)	0.5679(7)	0.5927(5)	0.6737(2)	0.6044(3)	0.7117(1)
rcv1subset2	0.5905(6)	0.5943(4)	0.5652(7)	0.5931(5)	0.6891(2)	0.598(3)	0.7151(1)
scene	0.7561(6)	0.7484(7)	0.7641(4)	0.7586(5)	0.8847(3)	0.8925(2)	0.9058(1)
yahoo-Arts1	0.5451(7)	0.5501(5)	0.5466(6)	0.5649(3)	0.5695(2)	0.5573(4)	0.6249(1)
yahoo-Business1	0.5459(6)	0.5542(5)	0.5381(7)	0.5784(3)	0.5962(2)	0.5575(4)	0.655(1)
yeast	0.5679(4)	0.5665(6)	0.5533(7)	0.5674(5)	0.6292(2)	0.5852(3)	0.6372(1)
<i>Average Rank</i>	5.23	4.65	6.27	3.46	2.81	4.58	1

Table 3. Full results for BR in terms of macro-averaged AUCPR

	BR	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL
bibtex	0.0733(5)	0.0848(2.5)	0.0604(6.5)	0.0817(4)	0.0848(2.5)	0.0604(6.5)	0.1211(1)
cal500	0.1561(7)	0.1596(4)	0.1573(6)	0.1594(5)	0.1791(1)	0.1696(3)	0.1762(2)
Corel5k	0.0194(5)	0.0195(3.5)	0.0168(6.5)	0.0215(2)	0.0195(3.5)	0.0168(6.5)	0.0287(1)
enron	0.1111(5)	0.1192(3.5)	0.101(6.5)	0.1213(2)	0.1192(3.5)	0.101(6.5)	0.1653(1)
flags	0.5999(5)	0.6078(4)	0.5475(7)	0.6134(3)	0.6509(2)	0.5634(6)	0.6722(1)
genbase	0.8471(3)	0.8471(3)	0.6091(6.5)	0.8369(5)	0.8471(3)	0.6091(6.5)	0.8572(1)
medical	0.3368(5)	0.3391(3.5)	0.3244(6.5)	0.3595(2)	0.3391(3.5)	0.3244(6.5)	0.3986(1)
rcv1subset1	0.1118(3)	0.1114(4)	0.0809(7)	0.1071(5)	0.1554(2)	0.1017(6)	0.1782(1)
rcv1subset2	0.1003(4)	0.1043(3)	0.0731(7)	0.099(5)	0.1465(2)	0.089(6)	0.1629(1)
scene	0.5091(5)	0.5027(6)	0.51(4)	0.4912(7)	0.7271(3)	0.7309(2)	0.7553(1)
yahoo-Arts1	0.1125(6.5)	0.1141(4)	0.1125(6.5)	0.1131(5)	0.1311(2)	0.1205(3)	0.1702(1)
yahoo-Business1	0.1068(5)	0.1081(4)	0.0912(7)	0.1111(3)	0.1363(2)	0.1027(6)	0.1721(1)
yeast	0.3544(4)	0.3521(5)	0.3501(7)	0.3503(6)	0.4264(2)	0.3923(3)	0.4415(1)
<i>Average Rank</i>	4.81	3.85	6.46	4.15	2.46	5.19	1.08

Table 4. Full results for MLkNN in terms of macro-averaged F-measure

	MLkNN	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL
bibtex	0.0382(6)	0.0676(5)	0.0359(7)	0.0684(4)	0.1324(2)	0.1164(3)	0.1354(1)
cal500	0.0541(6)	0.1107(4)	0.0114(7)	0.0894(5)	0.1859(2)	0.178(3)	0.1947(1)
Corel5k	0.0064(5)	0.0059(6)	0.0035(7)	0.0121(4)	0.0363(2)	0.0314(3)	0.0402(1)
enron	0.0801(6)	0.0846(5)	0.0284(7)	0.117(4)	0.1985(1)	0.1882(2)	0.1844(3)
flags	0.5505(6)	0.6141(4)	0.2971(7)	0.5877(5)	0.6477(1)	0.6368(3)	0.6426(2)
genbase	0.5603(6)	0.5963(5)	0.4577(7)	0.8149(4)	0.8659(2)	0.8602(3)	0.9016(1)
medical	0.2053(5)	0.193(6)	0.1527(7)	0.2407(4)	0.3028(2)	0.2961(3)	0.3069(1)
rcv1subset1	0.0663(6)	0.0953(5)	0.0521(7)	0.1332(4)	0.2314(2)	0.2107(3)	0.25(1)
rcv1subset2	0.05(6)	0.0773(5)	0.0452(7)	0.1197(4)	0.2057(2)	0.1819(3)	0.2214(1)
scene	0.7221(5.5)	0.7327(4)	0.7199(7)	0.7221(5.5)	0.7567(1)	0.7547(2)	0.7437(3)
yahoo-Arts1	0.0372(6)	0.0405(5)	0.0306(7)	0.0597(4)	0.149(1)	0.1387(2)	0.1384(3)
yahoo-Business1	0.0671(6)	0.075(5)	0.0477(7)	0.1286(4)	0.1745(1)	0.1629(2)	0.1569(3)
yeast	0.3574(6)	0.3752(5)	0.1991(7)	0.4092(4)	0.4633(2)	0.4548(3)	0.4646(1)
<i>Average Rank</i>	5.81	4.92	7	4.27	1.62	2.69	1.69

Table 5. Full results for MLkNN in terms of macro-averaged AUC-ROC

	MLkNN	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL
bibtex	0.6799(2)	0.6446(4.5)	0.6216(6.5)	0.6705(3)	0.6446(4.5)	0.6216(6.5)	0.7068(1)
cal500	0.5134(6)	0.5208(3)	0.512(7)	0.5203(4)	0.5213(2)	0.5146(5)	0.5271(1)
Corel5k	0.5339(2)	0.5206(4.5)	0.5198(6.5)	0.5335(3)	0.5206(4.5)	0.5198(6.5)	0.5459(1)
enron	0.6337(2)	0.6333(3.5)	0.6201(6.5)	0.6291(5)	0.6333(3.5)	0.6201(6.5)	0.6386(1)
flags	0.6131(5)	0.6537(3)	0.5892(7)	0.6306(4)	0.6577(2)	0.5973(6)	0.6849(1)
genbase	0.9599(7)	0.961(3.5)	0.9608(5.5)	0.962(2)	0.961(3.5)	0.9608(5.5)	0.9629(1)
medical	0.7813(4)	0.7882(2.5)	0.7799(5.5)	0.7773(7)	0.7882(2.5)	0.7799(5.5)	0.7936(1)
rcv1subset1	0.648(7)	0.6703(4)	0.6511(6)	0.6769(3)	0.6864(2)	0.6637(5)	0.7227(1)
rcv1subset2	0.6341(7)	0.6522(5)	0.6359(6)	0.6663(3)	0.6799(2)	0.6553(4)	0.7079(1)
scene	0.9266(6)	0.9283(4)	0.9275(5)	0.9239(7)	0.9325(2)	0.9318(3)	0.9359(1)
yahoo-Arts1	0.5692(5)	0.5722(3)	0.5644(7)	0.5669(6)	0.58(1)	0.5716(4)	0.5732(2)
yahoo-Business1	0.6029(5)	0.6111(3)	0.5927(7)	0.6072(4)	0.6195(2)	0.5995(6)	0.6242(1)
yeast	0.6667(3)	0.6615(5)	0.6403(7)	0.6643(4)	0.6757(2)	0.6543(6)	0.6815(1)
<i>Average Rank</i>	4.69	3.73	6.35	4.23	2.58	5.35	1.08

Table 6. Full results for MLkNN in terms of macro-averaged AUCPR

	MLkNN	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL
bibtex	0.0884(3)	0.0777(4.5)	0.0641(6.5)	0.0886(2)	0.0777(4.5)	0.0641(6.5)	0.1135(1)
cal500	0.1637(6.5)	0.1694(5)	0.1637(6.5)	0.1699(4)	0.1782(2)	0.1729(3)	0.1816(1)
Corel5k	0.0239(3)	0.0206(6.5)	0.0207(4.5)	0.0245(2)	0.0206(6.5)	0.0207(4.5)	0.0339(1)
enron	0.1452(7)	0.1479(3.5)	0.1468(5.5)	0.154(2)	0.1479(3.5)	0.1468(5.5)	0.172(1)
flags	0.604(4)	0.6205(3)	0.5726(7)	0.6034(5)	0.6379(2)	0.5824(6)	0.6569(1)
genbase	0.8258(7)	0.856(5.5)	0.8588(3.5)	0.9131(2)	0.856(5.5)	0.8588(3.5)	0.9216(1)
medical	0.2872(2)	0.2859(3.5)	0.2742(6.5)	0.2843(5)	0.2859(3.5)	0.2742(6.5)	0.3362(1)
rcv1subset1	0.1377(7)	0.1513(5)	0.1388(6)	0.1599(3)	0.1691(2)	0.153(4)	0.2053(1)
rcv1subset2	0.1162(7)	0.1229(5)	0.1168(6)	0.138(3)	0.1418(2)	0.1286(4)	0.1759(1)
scene	0.7777(6)	0.784(4)	0.7801(5)	0.7608(7)	0.8011(2)	0.798(3)	0.8134(1)
yahoo-Arts1	0.1089(5)	0.1117(4)	0.1086(6)	0.1069(7)	0.1162(2)	0.1128(3)	0.1173(1)
yahoo-Business1	0.1112(5)	0.1139(3)	0.1061(7)	0.1096(6)	0.1226(2)	0.1129(4)	0.1267(1)
yeast	0.4559(3)	0.4472(6)	0.4291(7)	0.4495(5)	0.4731(2)	0.4522(4)	0.4877(1)
<i>Average Rank</i>	5.04	4.5	5.92	4.08	3.04	4.42	1

Table 7. Full results for CLR in terms of macro-averaged F-measure

	CLR	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL
bibtex	0.0528(6)	0.0677(4)	0.0351(7)	0.0613(5)	0.1669(3)	0.1672(2)	0.1688(1)
cal500	0.0563(6)	0.0885(4)	0.0109(7)	0.0851(5)	0.1063(3)	0.11(2)	0.1139(1)
Corel5k	0.0064(5)	0.0062(6)	0.0031(7)	0.008(4)	0.0542(1.5)	0.0539(3)	0.0542(1.5)
enron	0.1111(6)	0.1156(5)	0.0661(7)	0.138(4)	0.2085(3)	0.2107(2)	0.2153(1)
flags	0.6502(3)	0.6686(1)	0.3667(7)	0.6647(2)	0.6307(4)	0.629(6)	0.6306(5)
genbase	0.8513(1.5)	0.8513(1.5)	0.5867(7)	0.8337(4)	0.8465(3)	0.808(6)	0.8166(5)
medical	0.3638(5)	0.3599(6)	0.3314(7)	0.3647(4)	0.4174(2)	0.4237(1)	0.4017(3)
rcv1subset1	0.0975(5)	0.096(6)	0.0544(7)	0.0988(4)	0.2139(2)	0.2219(1)	0.2127(3)
rcv1subset2	0.0873(6)	0.0887(5)	0.0508(7)	0.0947(4)	0.2002(3)	0.2006(2)	0.2012(1)
scene	0.6313(4)	0.6306(5)	0.6221(7)	0.6248(6)	0.716(2)	0.7145(3)	0.7442(1)
yahoo-Arts1	0.1192(6)	0.1199(5)	0.0938(7)	0.1299(4)	0.2176(2)	0.2183(1)	0.211(3)
yahoo-Business1	0.1311(6)	0.1313(5)	0.073(7)	0.1555(4)	0.2003(3)	0.2025(2)	0.2101(1)
yeast	0.3798(6)	0.3961(5)	0.2276(7)	0.3993(4)	0.4043(2)	0.4024(3)	0.4114(1)
<i>Average Rank</i>	5.04	4.5	7	4.15	2.58	2.62	2.12

Table 8. Full results for CLR in terms of macro-averaged AUC-ROC

	CLR	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL
bibtex	0.8553(2)	0.8505(4.5)	0.8499(6.5)	0.8531(3)	0.8505(4.5)	0.8499(6.5)	0.8572(1)
cal500	0.5523(4)	0.5499(7)	0.5519(5)	0.5515(6)	0.5536(3)	0.5541(2)	0.5551(1)
Corel5k	0.619(3)	0.6168(6.5)	0.6174(4.5)	0.6199(2)	0.6168(6.5)	0.6174(4.5)	0.6223(1)
enron	0.6886(4)	0.6885(5.5)	0.6889(2.5)	0.687(7)	0.6885(5.5)	0.6889(2.5)	0.6922(1)
flags	0.639(5)	0.648(3)	0.605(7)	0.644(4)	0.6586(2)	0.6098(6)	0.6717(1)
genbase	0.9335(2)	0.9335(2)	0.9247(6.5)	0.9254(5)	0.9335(2)	0.9247(6.5)	0.9283(4)
medical	0.8719(5)	0.8724(2.5)	0.8713(6.5)	0.8721(4)	0.8724(2.5)	0.8713(6.5)	0.88(1)
rcv1subset1	0.8794(4.5)	0.8786(6)	0.8781(7)	0.88(3)	0.8812(2)	0.8794(4.5)	0.8843(1)
rcv1subset2	0.8712(6)	0.8741(4)	0.8739(5)	0.8702(7)	0.8777(1)	0.8756(2)	0.875(3)
scene	0.8957(5)	0.8965(4)	0.8946(6)	0.8941(7)	0.9142(2)	0.9133(3)	0.9332(1)
yahoo-Arts1	0.6982(6)	0.7004(4)	0.6999(5)	0.6909(7)	0.7066(2)	0.7021(3)	0.7073(1)
yahoo-Business1	0.7276(4)	0.7255(6)	0.7225(7)	0.727(5)	0.734(2)	0.728(3)	0.7403(1)
yeast	0.6429(6)	0.6412(7)	0.6436(4)	0.6433(5)	0.6689(2)	0.6516(3)	0.6805(1)
<i>Average Rank</i>	4.35	4.77	5.58	5	2.85	4.08	1.38

Table 9. Full results for CLR in terms of macro-averaged AUCPR

	CLR	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL
bibtex	0.1695(2)	0.1615(4.5)	0.161(6.5)	0.1661(3)	0.1615(4.5)	0.161(6.5)	0.1781(1)
cal500	0.1934(5)	0.1909(7)	0.1922(6)	0.1937(4)	0.1948(3)	0.1949(2)	0.197(1)
Corel5k	0.0505(3)	0.0504(4.5)	0.0503(6.5)	0.0508(2)	0.0504(4.5)	0.0503(6.5)	0.0539(1)
enron	0.201(2)	0.1977(5.5)	0.1997(3.5)	0.1975(7)	0.1977(5.5)	0.1997(3.5)	0.2142(1)
flags	0.5921(6)	0.6017(3)	0.5815(7)	0.5981(4)	0.6231(2)	0.5967(5)	0.6384(1)
genbase	0.8442(2)	0.8442(2)	0.8068(5.5)	0.8038(7)	0.8442(2)	0.8068(5.5)	0.826(4)
medical	0.4238(4)	0.4221(5.5)	0.4248(2.5)	0.4114(7)	0.4221(5.5)	0.4248(2.5)	0.4458(1)
rcv1subset1	0.2575(5)	0.256(6.5)	0.256(6.5)	0.2577(4)	0.2684(2)	0.2642(3)	0.2743(1)
rcv1subset2	0.2349(6)	0.235(5)	0.2344(7)	0.2352(4)	0.248(2)	0.2422(3)	0.2529(1)
scene	0.6692(5)	0.6717(4)	0.6677(6)	0.6632(7)	0.7554(2)	0.755(3)	0.7991(1)
yahoo-Arts1	0.1926(5)	0.1929(4)	0.1921(6)	0.1838(7)	0.2139(2)	0.2014(3)	0.22(1)
yahoo-Business1	0.1667(5)	0.1666(6)	0.1599(7)	0.1732(4)	0.1898(2)	0.1748(3)	0.2114(1)
yeast	0.4238(4)	0.4213(6)	0.4204(7)	0.4221(5)	0.4668(2)	0.4431(3)	0.4792(1)
<i>Average Rank</i>	4.15	4.88	5.92	5	3	3.81	1.23

Table 10. Full results for RAKEL in terms of macro-averaged F-measure

	RAkEL	A_1	A_2	MLSOSL	EA ₁	EA ₂	EMLSOSL
bibtex	0.0796(6)	0.113(3)	0.0549(7)	0.0998(4)	0.1525(2)	0.0967(5)	0.1641(1)
cal500	0.1373(6)	0.1396(5)	0.0412(7)	0.1465(4)	0.201(2)	0.1825(3)	0.209(1)
Corel5k	0.0177(6)	0.0179(5)	0.0105(7)	0.0221(3)	0.0286(2)	0.0214(4)	0.0376(1)
enron	0.1159(6)	0.1321(4)	0.0552(7)	0.1479(3)	0.1797(2)	0.1173(5)	0.1889(1)
flags	0.6597(4)	0.6704(1)	0.4456(7)	0.6625(3)	0.6483(5)	0.6011(6)	0.6653(2)
genbase	0.8577(1.5)	0.8577(1.5)	0.5816(7)	0.8532(3.5)	0.8457(5)	0.6077(6)	0.8532(3.5)
medical	0.3683(5)	0.3771(4)	0.3364(7)	0.4021(2)	0.3878(3)	0.3594(6)	0.412(1)
rcv1subset1	0.1661(5)	0.1765(4)	0.0865(7)	0.1782(3)	0.2295(2)	0.1342(6)	0.241(1)
rcv1subset2	0.1572(5)	0.1643(3)	0.0779(7)	0.1591(4)	0.2208(2)	0.1238(6)	0.2239(1)
scene	0.6957(4)	0.687(6)	0.6779(7)	0.6908(5)	0.732(1)	0.7165(2)	0.7087(3)
yahoo-Arts1	0.1415(6)	0.1464(5)	0.116(7)	0.158(4)	0.1976(2)	0.1688(3)	0.2113(1)
yahoo-Business1	0.1513(5)	0.1591(4)	0.0874(7)	0.1848(3)	0.2088(2)	0.1403(6)	0.2207(1)
yeast	0.3909(6)	0.3948(5)	0.2595(7)	0.3993(4)	0.4588(2)	0.4138(3)	0.4697(1)
<i>Average Rank</i>	5.04	3.88	7	3.5	2.46	4.69	1.42

Table 11. Full results for RAKEL in terms of macro-averaged AUC-ROC

	RAkEL	A_1	A_2	MLSOSL	EA ₁	EA ₂	EMLSOSL
bibtex	0.56(5)	0.5888(2)	0.5406(6)	0.5793(4)	0.5887(3)	0.5405(7)	0.631(1)
cal500	0.5228(3)	0.5211(5)	0.5092(7)	0.5215(4)	0.533(2)	0.5204(6)	0.536(1)
Corel5k	0.5075(4)	0.5075(4)	0.5042(6)	0.5095(2)	0.5075(4)	0.5041(7)	0.5162(1)
enron	0.5732(5)	0.5869(2)	0.5358(7)	0.5857(4)	0.5864(3)	0.5366(6)	0.6167(1)
flags	0.7175(4)	0.7186(3)	0.5806(7)	0.7094(5)	0.74(2)	0.5979(6)	0.7486(1)
genbase	0.9354(1.5)	0.9352(4)	0.796(6)	0.9352(4)	0.9352(4)	0.7946(7)	0.9354(1.5)
medical	0.698(5)	0.7008(4)	0.6758(7)	0.7175(2)	0.7011(3)	0.6759(6)	0.7354(1)
rcv1subset1	0.6481(5)	0.6549(3)	0.5669(7)	0.6543(4)	0.7185(2)	0.5926(6)	0.7387(1)
rcv1subset2	0.6432(5)	0.6523(3)	0.5555(7)	0.6493(4)	0.7228(2)	0.5788(6)	0.7325(1)
scene	0.8942(5.5)	0.8942(5.5)	0.888(7)	0.8973(4)	0.9335(2)	0.9306(3)	0.9383(1)
yahoo-Arts1	0.5774(5)	0.581(4)	0.5573(7)	0.5916(3)	0.6061(2)	0.5691(6)	0.6244(1)
yahoo-Business1	0.591(5)	0.5947(4)	0.5449(7)	0.6113(3)	0.6225(2)	0.5612(6)	0.6596(1)
yeast	0.6231(4)	0.6225(5)	0.5827(7)	0.6237(3)	0.6667(2)	0.6171(6)	0.6758(1)
<i>Average Rank</i>	4.38	3.73	6.77	3.54	2.54	6	1.04

Table 12. Full results for RAKEL in terms of macro-averaged AUCPR

	RAKEL	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL
bibtex	0.0734(5)	0.0854(2)	0.0537(6)	0.0825(4)	0.0853(3)	0.0536(7)	0.1138(1)
cal500	0.1691(4.5)	0.1684(6)	0.1611(7)	0.1691(4.5)	0.1808(2)	0.1719(3)	0.1837(1)
Corel5k	0.0175(4)	0.0175(4)	0.0149(6)	0.0183(2)	0.0175(4)	0.0148(7)	0.024(1)
enron	0.135(5)	0.1503(2)	0.1039(7)	0.1483(4)	0.1494(3)	0.104(6)	0.1795(1)
flags	0.6687(3)	0.6613(4)	0.5669(7)	0.6567(5)	0.6957(2)	0.5977(6)	0.7072(1)
genbase	0.8582(2)	0.854(3.5)	0.5912(6)	0.8529(5)	0.854(3.5)	0.5885(7)	0.8642(1)
medical	0.3497(5)	0.352(4)	0.3207(7)	0.3704(2)	0.3528(3)	0.321(6)	0.3989(1)
rcv1subset1	0.1305(5)	0.1346(3.5)	0.0843(7)	0.1346(3.5)	0.1732(2)	0.1032(6)	0.1896(1)
rcv1subset2	0.1188(5)	0.1232(3)	0.0748(7)	0.1209(4)	0.1616(2)	0.0889(6)	0.1711(1)
scene	0.7126(4)	0.71(5)	0.7029(7)	0.7076(6)	0.8072(2)	0.803(3)	0.8142(1)
yahoo-Arts1	0.1393(6)	0.1423(4)	0.1285(7)	0.1433(3)	0.1635(2)	0.1413(5)	0.18(1)
yahoo-Business1	0.1392(5)	0.1402(4)	0.1019(7)	0.148(3)	0.1641(2)	0.1153(6)	0.191(1)
yeast	0.4045(4)	0.4027(6)	0.375(7)	0.4039(5)	0.4664(2)	0.4159(3)	0.4751(1)
<i>Average Rank</i>	4.42	3.92	6.77	3.92	2.5	5.46	1

Table 13. Full results for COCOA in terms of macro-averaged F-measure

	COCOA	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL
bibtex	0.1748(2)	0.1569(6)	0.1548(7)	0.1688(5)	0.1691(4)	0.1702(3)	0.1761(1)
cal500	0.1579(2)	0.1454(4)	0.1063(7)	0.1597(1)	0.1421(5)	0.1328(6)	0.149(3)
Corel5k	0.0475(5)	0.0479(3.5)	0.0465(7)	0.0472(6)	0.0479(3.5)	0.0487(2)	0.0534(1)
enron	0.1956(6)	0.1994(4)	0.1862(7)	0.1996(3)	0.2012(2)	0.1961(5)	0.2195(1)
flags	0.677(1)	0.6663(3)	0.5787(7)	0.6536(5)	0.667(2)	0.6484(6)	0.6561(4)
genbase	0.8339(3)	0.8328(5.5)	0.8349(2)	0.793(7)	0.8328(5.5)	0.8515(1)	0.8336(4)
medical	0.4075(1)	0.4071(2.5)	0.3911(7)	0.4021(5)	0.4071(2.5)	0.3968(6)	0.4054(4)
rcv1subset1	0.2391(4)	0.2359(5)	0.2259(7)	0.2326(6)	0.2438(2)	0.241(3)	0.2565(1)
rcv1subset2	0.2227(5)	0.2272(4)	0.2101(7)	0.2173(6)	0.2349(2)	0.228(3)	0.2431(1)
scene	0.6704(4)	0.6599(5)	0.6582(6)	0.658(7)	0.6872(3)	0.6936(2)	0.7111(1)
yahoo-Arts1	0.2082(5.5)	0.2112(4)	0.2082(5.5)	0.1987(7)	0.2155(3)	0.2168(2)	0.2226(1)
yahoo-Business1	0.1961(4)	0.196(5)	0.1928(6)	0.1905(7)	0.208(3)	0.2082(2)	0.2269(1)
yeast	0.406(4)	0.4012(6)	0.3843(7)	0.4066(3)	0.4058(5)	0.4078(2)	0.4176(1)
<i>Average Rank</i>	3.58	4.42	6.35	5.23	3.27	3.31	1.85

Table 14. Full results for COCOA in terms of macro-averaged AUC-ROC

	COCOA	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL
bibtex	0.8399(2)	0.8272(6.5)	0.8278(4.5)	0.8397(3)	0.8272(6.5)	0.8278(4.5)	0.8591(1)
cal500	0.5339(6)	0.5325(7)	0.5345(5)	0.5357(4)	0.5437(3)	0.5446(2)	0.5513(1)
Corel5k	0.6036(3)	0.6024(6.5)	0.603(4.5)	0.6077(2)	0.6024(6.5)	0.603(4.5)	0.6279(1)
enron	0.6721(7)	0.6798(3.5)	0.6788(5.5)	0.6812(2)	0.6798(3.5)	0.6788(5.5)	0.697(1)
flags	0.7179(3)	0.7055(5)	0.6663(7)	0.7157(4)	0.7263(2)	0.6688(6)	0.7464(1)
genbase	0.931(5)	0.9306(6.5)	0.934(2.5)	0.9323(4)	0.9306(6.5)	0.934(2.5)	0.9355(1)
medical	0.8572(6)	0.8649(2.5)	0.8605(4.5)	0.8529(7)	0.8649(2.5)	0.8605(4.5)	0.8663(1)
rcv1subset1	0.8546(6)	0.859(4)	0.8532(7)	0.8572(5)	0.8711(2)	0.8617(3)	0.8868(1)
rcv1subset2	0.8458(6)	0.8502(4)	0.8444(7)	0.8469(5)	0.8657(2)	0.8554(3)	0.8752(1)
scene	0.9153(6)	0.9164(4)	0.9157(5)	0.9124(7)	0.9372(2)	0.9366(3)	0.9419(1)
yahoo-Arts1	0.6801(6)	0.6964(2)	0.6876(5)	0.6795(7)	0.6932(4)	0.6936(3)	0.6997(1)
yahoo-Business1	0.7315(7)	0.7369(4)	0.7343(6)	0.7355(5)	0.7453(2)	0.7412(3)	0.7582(1)
yeast	0.6556(5)	0.6515(6)	0.6508(7)	0.6566(4)	0.6858(2)	0.6781(3)	0.6954(1)
<i>Average Rank</i>	5.23	4.73	5.42	4.54	3.42	3.65	1

Table 15. Full results for COCOA in terms of macro-averaged AUCPR

	COCOA	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL
bibtex	0.1383(2)	0.1303(6.5)	0.1313(4.5)	0.1371(3)	0.1303(6.5)	0.1313(4.5)	0.1689(1)
cal500	0.1838(5)	0.1816(7)	0.1836(6)	0.1864(4)	0.1902(3)	0.1907(2)	0.1949(1)
Corel5k	0.0349(5)	0.0345(6.5)	0.0352(3.5)	0.0356(2)	0.0345(6.5)	0.0352(3.5)	0.0454(1)
enron	0.1731(7)	0.1801(3)	0.1737(5.5)	0.1812(2)	0.18(4)	0.1737(5.5)	0.2121(1)
flags	0.6957(3)	0.6815(5)	0.6415(7)	0.6941(4)	0.7061(2)	0.6435(6)	0.7232(1)
genbase	0.8429(6)	0.844(4.5)	0.848(2.5)	0.7942(7)	0.844(4.5)	0.848(2.5)	0.8496(1)
medical	0.3832(4)	0.3843(2.5)	0.3816(6)	0.382(5)	0.3843(2.5)	0.3814(7)	0.4234(1)
rcv1subset1	0.199(7)	0.2046(4)	0.204(5)	0.2008(6)	0.2305(2)	0.2193(3)	0.2563(1)
rcv1subset2	0.1844(7)	0.1922(4)	0.1865(6)	0.1897(5)	0.2181(2)	0.2035(3)	0.2418(1)
scene	0.7503(5)	0.7513(4)	0.7496(6)	0.7431(7)	0.8138(2)	0.8124(3)	0.8266(1)
yahoo-Arts1	0.1847(7)	0.1889(4)	0.1877(5)	0.1848(6)	0.2002(2)	0.1972(3)	0.2189(1)
yahoo-Business1	0.1564(7)	0.163(5)	0.1598(6)	0.1658(4)	0.1787(2)	0.1747(3)	0.2088(1)
yeast	0.4529(4)	0.4477(7)	0.448(6)	0.452(5)	0.4849(2)	0.4786(3)	0.496(1)
<i>Average Rank</i>	5.31	4.85	5.31	4.62	3.15	3.77	1

Table 16. Full results for ECCRU3 in terms of macro-averaged F-measure

	ECCRU3	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL
bibtex	0.1742(3)	0.1525(6)	0.1498(7)	0.1658(5)	0.1721(4)	0.1747(2)	0.1782(1)
cal500	0.1515(1)	0.1367(4)	0.0983(6)	0.1497(2)	0.1253(5)	0.0877(7)	0.1393(3)
Corel5k	0.0488(2)	0.0481(3)	0.0443(7)	0.0467(6)	0.0478(5)	0.0479(4)	0.0555(1)
enron	0.2001(3)	0.1873(6)	0.1793(7)	0.2007(2)	0.1929(5)	0.1934(4)	0.2196(1)
flags	0.6787(1)	0.6669(3)	0.5726(7)	0.6478(5)	0.6614(4)	0.6344(6)	0.6728(2)
genbase	0.9438(1)	0.941(2.5)	0.9282(6)	0.8778(7)	0.941(2.5)	0.9291(5)	0.9294(4)
medical	0.4193(1)	0.4088(6)	0.411(3)	0.4087(7)	0.4102(4)	0.4169(2)	0.4093(5)
rcv1subset1	0.2395(4)	0.2367(5)	0.2201(7)	0.2257(6)	0.2497(3)	0.2498(2)	0.2559(1)
rcv1subset2	0.2283(4)	0.2258(5)	0.2109(7)	0.2173(6)	0.2408(1)	0.2372(3)	0.2402(2)
scene	0.7025(4)	0.7022(5)	0.7017(6)	0.7012(7)	0.728(3)	0.7294(2)	0.7327(1)
yahoo-Arts1	0.2129(5)	0.2155(4)	0.2092(6)	0.1978(7)	0.2258(2)	0.2229(3)	0.2332(1)
yahoo-Business1	0.2162(4)	0.2136(5)	0.2111(6)	0.202(7)	0.2232(3)	0.2283(2)	0.2371(1)
yeast	0.3976(6)	0.4025(5)	0.3714(7)	0.4051(4)	0.4132(2)	0.4095(3)	0.4221(1)
<i>Average Rank</i>	3	4.58	6.31	5.46	3.35	3.46	1.85

Table 17. Full results for ECCRU3 in terms of macro-averaged AUC-ROC

	ECCRU3	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL
bibtex	0.8361(3)	0.8254(4.5)	0.8246(6.5)	0.8362(2)	0.8254(4.5)	0.8246(6.5)	0.8575(1)
cal500	0.5374(5.5)	0.5374(5.5)	0.5303(7)	0.5381(4)	0.5473(2)	0.5431(3)	0.5527(1)
Corel5k	0.639(3)	0.6284(6.5)	0.6312(4.5)	0.6446(2)	0.6284(6.5)	0.6312(4.5)	0.6763(1)
enron	0.6898(2)	0.6866(3.5)	0.6858(5.5)	0.6824(7)	0.6866(3.5)	0.6858(5.5)	0.6955(1)
flags	0.7314(4)	0.7371(3)	0.6457(7)	0.7263(5)	0.746(2)	0.6493(6)	0.7478(1)
genbase	0.99(4)	0.9908(2.5)	0.9896(5.5)	0.9879(7)	0.9908(2.5)	0.9896(5.5)	0.9948(1)
medical	0.9014(6)	0.9038(2.5)	0.9022(4.5)	0.9012(7)	0.9038(2.5)	0.9022(4.5)	0.9121(1)
rcv1subset1	0.884(5)	0.8841(4)	0.8792(7)	0.8825(6)	0.8975(2)	0.8906(3)	0.9035(1)
rcv1subset2	0.865(6)	0.8695(4)	0.8632(7)	0.8663(5)	0.8832(2)	0.8764(3)	0.8873(1)
scene	0.9214(6)	0.9232(5)	0.9241(4)	0.9207(7)	0.9364(2)	0.9363(3)	0.9398(1)
yahoo-Arts1	0.6897(6)	0.6964(4)	0.6919(5)	0.68(7)	0.7042(1)	0.6991(3)	0.7009(2)
yahoo-Business1	0.7507(5)	0.7504(6)	0.7517(4)	0.7435(7)	0.7591(2)	0.7583(3)	0.7631(1)
yeast	0.6513(6)	0.6533(4)	0.6493(7)	0.6517(5)	0.6843(2)	0.6799(3)	0.6925(1)
<i>Average Rank</i>	4.73	4.23	5.73	5.46	2.65	4.12	1.08

Table 18. Full results for ECCRU3 in terms of macro-averaged AUCPR

	ECCRU3	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL
bibtex	0.1294(7)	0.134(2.5)	0.1324(4.5)	0.1299(6)	0.134(2.5)	0.1324(4.5)	0.1621(1)
cal500	0.1847(4)	0.183(6)	0.1812(7)	0.1844(5)	0.1906(2)	0.1877(3)	0.195(1)
Corel5k	0.0401(2.5)	0.0392(4.5)	0.0391(6.5)	0.0401(2.5)	0.0392(4.5)	0.0391(6.5)	0.0547(1)
enron	0.1892(3)	0.1843(4.5)	0.1831(6.5)	0.191(2)	0.1843(4.5)	0.1831(6.5)	0.2167(1)
flags	0.7053(3)	0.6984(5)	0.6349(7)	0.7021(4)	0.7183(2)	0.6478(6)	0.7275(1)
genbase	0.9497(4)	0.9514(2.5)	0.9463(5.5)	0.8907(7)	0.9514(2.5)	0.9463(5.5)	0.9602(1)
medical	0.4115(2)	0.4016(6.5)	0.4023(4.5)	0.4106(3)	0.4016(6.5)	0.4023(4.5)	0.4384(1)
rcv1subset1	0.2228(6)	0.2291(4)	0.2229(5)	0.2221(7)	0.2559(2)	0.2478(3)	0.2691(1)
rcv1subset2	0.2054(7)	0.2123(4)	0.2065(6)	0.2099(5)	0.2389(2)	0.231(3)	0.2533(1)
scene	0.769(6)	0.7712(5)	0.774(4)	0.7601(7)	0.8127(2)	0.8107(3)	0.8215(1)
yahoo-Arts1	0.1889(6)	0.1927(4)	0.1906(5)	0.1852(7)	0.2076(2)	0.2042(3)	0.2206(1)
yahoo-Business1	0.182(7)	0.1851(6)	0.1924(4)	0.1876(5)	0.2034(3)	0.2035(2)	0.2217(1)
yeast	0.4394(7)	0.4414(4)	0.4396(6)	0.4409(5)	0.4806(2)	0.4778(3)	0.4884(1)
<i>Average Rank</i>	4.96	4.5	5.5	5.04	2.88	4.12	1

Table 19. Statistical test results for BR

F-measure	BR	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL	#W/L
BR	n/a	↓	↑	↓	↓	-	↓	1/4
A_1	↑	n/a	↑	-	↓	-	↓	2/2
A_2	↓	↓	n/a	↓	↓	↓	↓	0/6
MLSOSL	↑	-	↑	n/a	↓	-	↓	2/2
EA_1	↑	↑	↑	↑	n/a	↑	↓	5/1
EA_2	-	-	↑	-	↓	n/a	↓	1/2
EMLSOSL	↑	↑	↑	↑	↑	↑	n/a	6/0
AUC-ROC	BR	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL	
BR	n/a	-	↑	↓	↓	-	↓	1/3
A_1	-	n/a	↑	↓	↓	-	↓	1/3
A_2	↓	↓	n/a	↓	↓	↓	↓	0/6
MLSOSL	↑	↑	↑	n/a	-	-	↓	3/1
EA_1	↑	↑	↑	-	n/a	↑	↓	4/1
EA_2	-	-	↑	-	↓	n/a	↓	1/2
EMLSOSL	↑	↑	↑	↑	↑	↑	n/a	6/0
AUC-PR	BR	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL	
BR	n/a	-	↑	-	↓	-	↓	1/2
A_1	-	n/a	↑	-	↓	-	↓	1/2
A_2	↓	↓	n/a	↓	↓	↓	↓	0/6
MLSOSL	-	-	↑	n/a	↓	-	↓	1/2
EA_1	↑	↑	↑	↑	n/a	↑	↓	5/1
EA_2	-	-	↑	-	↓	n/a	↓	1/2
EMLSOSL	↑	↑	↑	↑	↑	↑	n/a	6/0

Table 20. Statistical test results for MLkNN

F-measure	MLkNN	A_1	A_2	MLSOSL	EA ₁	EA ₂	EMLSOSL	#W/L
MLkNN	n/a	↓	↑	↓	↓	↓	↓	1/5
A_1	↑	n/a	↑	↓	↓	↓	↓	2/4
A_2	↓	↓	n/a	↓	↓	↓	↓	0/6
MLSOSL	↑	↑	↑	n/a	↓	↓	↓	3/3
EA ₁	↑	↑	↑	↑	n/a	↑	-	5/0
EA ₂	↑	↑	↑	↑	↓	n/a	↓	4/2
EMLSOSL	↑	↑	↑	↑	-	↑	n/a	5/0
AUC-ROC	MLkNN	A_1	A_2	MLSOSL	EA ₁	EA ₂	EMLSOSL	
MLkNN	n/a	-	↑	-	-	-	↓	1/1
A_1	-	n/a	↑	-	↓	↑	↓	2/2
A_2	↓	↓	n/a	↓	↓	↓	↓	0/6
MLSOSL	-	-	↑	n/a	-	↑	↓	2/1
EA ₁	-	↑	↑	-	n/a	↑	↓	3/1
EA ₂	-	↓	↑	↓	↓	n/a	↓	1/4
EMLSOSL	↑	↑	↑	↑	↑	↑	n/a	6/0
AUC-PR	MLkNN	A_1	A_2	MLSOSL	EA ₁	EA ₂	EMLSOSL	
MLkNN	n/a	-	-	-	↓	-	↓	0/2
A_1	-	n/a	↑	-	↓	-	↓	1/2
A_2	-	↓	n/a	↓	↓	↓	↓	0/5
MLSOSL	-	-	↑	n/a	-	-	↓	1/1
EA ₁	↑	↑	↑	-	n/a	↑	↓	4/1
EA ₂	-	-	↑	-	↓	n/a	↓	1/2
EMLSOSL	↑	↑	↑	↑	↑	↑	n/a	6/0

Table 21. Statistical test results for CLR

F-measure	CLR	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL	#W/L
CLR	n/a	-	↑	-	↓	↓	↓	1/3
A_1	-	n/a	↑	-	↓	↓	↓	1/3
A_2	↓	↓	n/a	↓	↓	↓	↓	0/6
MLSOSL	-	-	↑	n/a	↓	↓	↓	1/3
EA_1	↑	↑	↑	↑	n/a	-	-	4/0
EA_2	↑	↑	↑	↑	-	n/a	-	4/0
EMLSOSL	↑	↑	↑	↑	-	-	n/a	4/0
AUC-ROC	CLR	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL	
CLR	n/a	-	-	-	-	-	↓	0/1
A_1	-	n/a	-	-	↓	-	↓	0/2
A_2	-	-	n/a	-	↓	↓	↓	0/3
MLSOSL	-	-	-	n/a	↓	-	↓	0/2
EA_1	-	↑	↑	↑	n/a	↑	↓	4/1
EA_2	-	-	↑	-	↓	n/a	↓	1/2
EMLSOSL	↑	↑	↑	↑	↑	↑	n/a	6/0
AUC-PR	CLR	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL	
CLR	n/a	-	↑	-	-	-	↓	1/1
A_1	-	n/a	-	-	↓	-	↓	0/2
A_2	↓	-	n/a	-	↓	↓	↓	0/4
MLSOSL	-	-	-	n/a	↓	↓	↓	0/3
EA_1	-	↑	↑	↑	n/a	-	↓	3/1
EA_2	-	-	↑	↑	-	n/a	↓	2/1
EMLSOSL	↑	↑	↑	↑	↑	↑	n/a	6/0

Table 22. Statistical test results for RAKEL

F-measure	RAkEL	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL	#W/L
RAkEL	n/a	↓	↑	↓	↓	-	↓	1/4
A_1	↑	n/a	↑	-	↓	-	↓	2/2
A_2	↓	↓	n/a	↓	↓	↓	↓	0/6
MLSOSL	↑	-	↑	n/a	↓	-	↓	2/2
EA_1	↑	↑	↑	↑	n/a	↑	↓	5/1
EA_2	-	-	↑	-	↓	n/a	↓	1/2
EMLSOSL	↑	↑	↑	↑	↑	↑	n/a	6/0
AUC-ROC	RAkEL	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL	
RAkEL	n/a	↓	↑	↓	↓	↑	↓	2/4
A_1	↑	n/a	↑	-	↓	↑	↓	3/2
A_2	↓	↓	n/a	↓	↓	↓	↓	0/6
MLSOSL	↑	-	↑	n/a	↓	↑	↓	3/2
EA_1	↑	↑	↑	↑	n/a	↑	↓	5/1
EA_2	↓	↓	↑	↓	↓	n/a	↓	1/5
EMLSOSL	↑	↑	↑	↑	↑	↑	n/a	6/0
AUC-PR	RAkEL	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL	
RAkEL	n/a	-	↑	-	↓	-	↓	1/2
A_1	-	n/a	↑	-	↓	-	↓	1/2
A_2	↓	↓	n/a	↓	↓	↓	↓	0/6
MLSOSL	-	-	↑	n/a	↓	-	↓	1/2
EA_1	↑	↑	↑	↑	n/a	↑	↓	5/1
EA_2	-	-	↑	-	↓	n/a	↓	1/2
EMLSOSL	↑	↑	↑	↑	↑	↑	n/a	6/0

Table 23. Statistical test results for COCOA

F-measure	COCOA	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL	#W/L
COCOA	n/a	-	↑	-	-	-	-	1/0
A_1	-	n/a	↑	-	-	-	↓	1/1
A_2	↓	↓	n/a	-	↓	↓	↓	0/5
MLSOSL	-	-	-	n/a	-	-	↓	0/1
EA_1	-	-	↑	-	n/a	-	-	1/0
EA_2	-	-	↑	-	-	n/a	-	1/0
EMLSOSL	-	↑	↑	↑	-	-	n/a	3/0
AUC-ROC	COCOA	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL	
COCOA	n/a	-	-	-	-	-	↓	0/1
A_1	-	n/a	-	-	-	-	↓	0/1
A_2	-	-	n/a	-	-	-	↓	0/1
MLSOSL	-	-	-	n/a	-	-	↓	0/1
EA_1	-	-	-	-	n/a	-	↓	0/1
EA_2	-	-	-	-	-	n/a	↓	0/1
EMLSOSL	↑	↑	↑	↑	↑	↑	n/a	6/0
AUC-PR	COCOA	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL	
COCOA	n/a	-	-	-	-	-	↓	0/1
A_1	-	n/a	-	-	-	-	↓	0/1
A_2	-	-	n/a	-	-	-	↓	0/1
MLSOSL	-	-	-	n/a	-	-	↓	0/1
EA_1	-	-	-	-	n/a	-	↓	0/1
EA_2	-	-	-	-	-	n/a	↓	0/1
EMLSOSL	↑	↑	↑	↑	↑	↑	n/a	6/0

Table 24. Statistical test results for ECCRU3

F-measure	ECCRU3	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL	#W/L
ECCRU3	n/a	-	↑	↑	-	-	-	2/0
A_1	-	n/a	↑	-	-	-	↓	1/1
A_2	↓	↓	n/a	-	↓	↓	↓	0/5
MLSOSL	↓	-	-	n/a	-	-	↓	0/2
EA_1	-	-	↑	-	n/a	-	-	1/0
EA_2	-	-	↑	-	-	n/a	↓	1/1
EMLSOSL	-	↑	↑	↑	-	↑	n/a	4/0
AUC-ROC	ECCRU3	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL	
ECCRU3	n/a	-	-	-	-	-	↓	0/1
A_1	-	n/a	-	-	↓	-	↓	0/2
A_2	-	-	n/a	-	↓	↓	↓	0/3
MLSOSL	-	-	-	n/a	-	-	↓	0/1
EA_1	-	↑	↑	-	n/a	↑	↓	3/1
EA_2	-	-	↑	-	↓	n/a	↓	1/2
EMLSOSL	↑	↑	↑	↑	↑	↑	n/a	6/0
AUC-PR	ECCRU3	A_1	A_2	MLSOSL	EA_1	EA_2	EMLSOSL	
ECCRU3	n/a	-	-	-	↓	-	↓	0/2
A_1	-	n/a	-	-	↓	-	↓	0/2
A_2	-	-	n/a	-	↓	↓	↓	0/3
MLSOSL	-	-	-	n/a	↓	-	↓	0/2
EA_1	↑	↑	↑	↑	n/a	↑	↓	5/1
EA_2	-	-	↑	-	↓	n/a	↓	1/2
EMLSOSL	↑	↑	↑	↑	↑	↑	n/a	6/0