Table S2

Classification Performance of Various Sampling Algorithms

in The LR Model

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Models | Balance - scale1 | | | Glass1 | | |
| Indicators | AUC | G - mean | F - measure | AUC | G - mean | F - measure |
| BSMOTE1 | 0.9383 | 0.9377 | 0.7850 | 0.7457 | 0.7247 | 0.6574 |
| BSMOTE2 | 0.9170 | 0.9145 | 0.6921 | 0.7244 | 0.7046 | 0.6369 |
| ADASYN | 0.9349 | 0.9341 | 0.7716 | 0.7345 | 0.7232 | 0.6470 |
| SVMSMOTE | 0.9383 | 0.9377 | 0.7850 | 0.7409 | 0.7339 | 0.6523 |
| MWMOTE | 0.8201 | 0.8082 | 0.6501 | 0.7305 | 0.7228 | 0.6410 |
| KSMOTE | 0.9297 | 0.9287 | 0.7558 | 0.7681 | 0.7653 | 0.6824 |
| DPCSMOTE | 0.8283 | 0.8199 | 0.6587 | 0.7443 | 0.7389 | 0.6572 |
| LDBSMOTE | 0.9383 | 0.9377 | 0.7850 | 0.7721 | 0.7686 | 0.6863 |
| IBSM | 0.9383 | 0.9377 | 0.7850 | 0.7387 | 0.7331 | 0.6494 |
| SMOTETomek | 0.9366 | 0.9359 | 0.7783 | 0.7544 | 0.7507 | 0.6658 |
| SMOTEEENN | 0.9065 | 0.9032 | 0.6663 | 0.7638 | 0.7334 | 0.6740 |
| TomekLinks | 0.6853 | 0.6036 | 0.4285 | 0.7026 | 0.6917 | 0.5969 |
| AllKNN | 0.9183 | 0.9175 | 0.7642 | 0.7495 | 0.7220 | 0.6607 |
| DSAOC | **0.9655** | **0.9649** | **0.8333** | **0.7725** | **0.7715** | **0.6877** |
| Models | Glass2 | | | Letter - recognition1 | | |
| Indicators | AUC | G - mean | F - measure | AUC | G - mean | F - measure |
| BSMOTE1 | 0.9209 | 0.9207 | 0.8073 | 0.7841 | 0.7832 | 0.3833 |
| BSMOTE2 | 0.9026 | 0.9019 | 0.7827 | 0.8087 | 0.8083 | 0.3817 |
| ADASYN | 0.9208 | 0.9207 | 0.8116 | 0.8204 | 0.8203 | 0.4171 |
| SVMSMOTE | 0.9072 | 0.9043 | 0.8175 | 0.8521 | 0.8507 | 0.4262 |
| MWMOTE | 0.9071 | 0.9058 | 0.8246 | 0.8632 | 0.8626 | 0.4614 |
| KSMOTE | 0.8754 | 0.8661 | 0.7876 | 0.7565 | 0.7323 | 0.4742 |
| DPCSMOTE | 0.9100 | 0.9066 | 0.8271 | **0.8749** | **0.8742** | 0.4828 |
| LDBSMOTE | 0.9035 | 0.9022 | 0.8082 | 0.7760 | 0.7750 | 0.3741 |
| IBSM | 0.9116 | 0.9082 | 0.8363 | 0.8667 | 0.8659 | 0.4810 |
| SMOTETomek | 0.9100 | 0.9070 | 0.8324 | 0.8692 | 0.8691 | **0.4940** |
| SMOTEEENN | 0.9111 | 0.9105 | 0.8101 | 0.8703 | 0.8700 | 0.4846 |
| TomekLinks | 0.8754 | 0.8638 | 0.8236 | 0.6882 | 0.6195 | 0.4055 |
| AllKNN | 0.8907 | 0.8832 | 0.8167 | 0.6886 | 0.6206 | 0.4023 |
| DSAOC | **0.9364** | **0.9359** | **0.8646** | 0.8733 | 0.8730 | 0.4932 |
| Models | Letter - recognition2 | | | Letter - recognition3 | | |
| Indicators | AUC | G - mean | F - measure | AUC | G - mean | F - measure |
| BSMOTE1 | 0.6882 | 0.6871 | 0.3986 | 0.6689 | 0.6591 | 0.1593 |
| BSMOTE2 | 0.6643 | 0.6622 | 0.3730 | 0.6390 | 0.6286 | 0.1366 |
| ADASYN | 0.6982 | 0.6959 | 0.4059 | 0.7086 | 0.7060 | 0.1751 |
| SVMSMOTE | 0.7248 | 0.7188 | 0.4264 | 0.8173 | 0.8149 | 0.2208 |
| MWMOTE | **0.7543** | 0.7520 | 0.4669 | **0.8423** | **0.8412** | 0.2596 |
| KSMOTE | 0.7052 | 0.6967 | 0.4527 | 0.8047 | 0.8043 | 0.2537 |
| DPCSMOTE | 0.7498 | 0.7492 | 0.4702 | 0.8402 | 0.8392 | 0.2601 |
| LDBSMOTE | 0.7053 | 0.7050 | 0.4211 | 0.6899 | 0.6751 | 0.1910 |
| IBSM | 0.7505 | 0.7498 | 0.4708 | 0.8318 | 0.8308 | 0.2596 |
| SMOTETomek | 0.7450 | 0.7437 | 0.4601 | 0.8398 | 0.8380 | 0.2484 |
| SMOTEEENN | 0.7444 | 0.7416 | 0.4541 | 0.8421 | 0.8400 | 0.2475 |
| TomekLinks | 0.6084 | 0.4820 | 0.3515 | 0.5003 | 0.0161 | 0.0127 |
| AllKNN | 0.6089 | 0.4860 | 0.3520 | 0.5008 | 0.0322 | 0.0127 |
| DSAOC | 0.7540 | **0.7532** | **0.4743** | 0.8392 | 0.8388 | **0.2686** |
| Models | Phishingdata1 | | | Phishingdata2 | | |
| Indicators | AUC | G - mean | F - measure | AUC | G - mean | F - measure |
| BSMOTE1 | 0.6765 | 0.6754 | 0.2410 | 0.7591 | 0.7577 | 0.5049 |
| BSMOTE2 | 0.6787 | 0.6777 | 0.2433 | 0.7586 | 0.7573 | 0.4925 |
| ADASYN | 0.6907 | 0.6879 | 0.2522 | 0.7679 | 0.7666 | 0.5126 |
| SVMSMOTE | 0.6671 | 0.6645 | 0.2434 | 0.7727 | 0.7717 | 0.5216 |
| MWMOTE | 0.7012 | 0.6945 | 0.2614 | 0.7634 | 0.7608 | 0.5125 |
| KSMOTE | 0.6706 | 0.6622 | 0.2460 | 0.7419 | 0.7375 | 0.5004 |
| DPCSMOTE | 0.6924 | 0.6857 | 0.2519 | 0.7827 | 0.7811 | 0.5465 |
| LDBSMOTE | **0.7184** | **0.7092** | **0.2800** | 0.7886 | **0.7876** | 0.5422 |
| IBSM | 0.6962 | 0.6909 | 0.2546 | 0.7866 | 0.7853 | 0.5443 |
| SMOTETomek | 0.6861 | 0.6794 | 0.2512 | 0.7539 | 0.7510 | 0.5121 |
| SMOTEEENN | 0.6558 | 0.6449 | 0.2311 | 0.7600 | 0.7587 | 0.5104 |
| TomekLinks | 0.5193 | 0.1501 | 0.1200 | 0.7045 | 0.6474 | 0.5469 |
| AllKNN | 0.5224 | 0.1935 | 0.1098 | 0.7206 | 0.6706 | 0.5619 |
| DSAOC | 0.7046 | 0.6958 | 0.2679 | **0.7950** | 0.7829 | **0.6209** |
| Models | Phishingdata3 | | | Poker - hand1 | | |
| Indicators | AUC | G - mean | F - measure | AUC | G - mean | F - measure |
| BSMOTE1 | 0.8612 | 0.8585 | 0.5939 | 0.4913 | 0.4753 | 0.1225 |
| BSMOTE2 | 0.8064 | 0.7993 | 0.4674 | 0.4907 | 0.4712 | 0.1212 |
| ADASYN | 0.8552 | 0.8521 | 0.5819 | 0.4907 | 0.4725 | 0.1216 |
| SVMSMOTE | 0.8493 | 0.8470 | 0.5735 | 0.4845 | 0.4729 | 0.1200 |
| MWMOTE | 0.8619 | 0.8610 | 0.6072 | 0.5078 | 0.5073 | 0.1360 |
| KSMOTE | 0.8552 | 0.8526 | 0.6130 | 0.4933 | 0.4552 | 0.1187 |
| DPCSMOTE | 0.8633 | 0.8624 | 0.6017 | 0.5074 | 0.5072 | 0.1361 |
| LDBSMOTE | 0.8435 | 0.8429 | 0.5894 | 0.5061 | 0.5056 | 0.1352 |
| IBSM | 0.8583 | 0.8572 | 0.5978 | **0.5113** | **0.5111** | **0.1380** |
| SMOTETomek | 0.8578 | 0.8555 | 0.6034 | 0.4910 | 0.4748 | 0.1222 |
| SMOTEEENN | **0.8743** | **0.8732** | **0.6200** | 0.4961 | 0.4868 | 0.1343 |
| TomekLinks | 0.6548 | 0.5588 | 0.4323 | 0.5000 | 0.0000 | NaN |
| AllKNN | 0.7141 | 0.6605 | 0.5206 | 0.5000 | 0.0000 | NaN |
| DSAOC | 0.8683 | 0.8675 | 0.6159 | 0.5110 | 0.5085 | 0.1367 |
| Models | Rice | | | Transfusion | | |
| Indicators | AUC | G - mean | F - measure | AUC | G - mean | F - measure |
| BSMOTE1 | 0.9265 | 0.9263 | 0.9140 | 0.6924 | 0.6887 | 0.5137 |
| BSMOTE2 | 0.9259 | 0.9256 | 0.9130 | 0.6876 | 0.6846 | 0.5120 |
| ADASYN | 0.9260 | 0.9258 | 0.9134 | **0.6984** | **0.6942** | 0.5191 |
| SVMSMOTE | 0.9264 | 0.9263 | 0.9142 | 0.6974 | 0.6937 | **0.5195** |
| MWMOTE | 0.9275 | 0.9275 | 0.9158 | 0.6939 | 0.6897 | 0.5152 |
| KSMOTE | 0.9293 | 0.9292 | 0.9192 | 0.6756 | 0.6728 | 0.4956 |
| DPCSMOTE | 0.9282 | 0.9282 | 0.9171 | 0.6918 | 0.6874 | 0.5123 |
| LDBSMOTE | 0.9270 | 0.9269 | 0.9149 | 0.6673 | 0.6327 | 0.4928 |
| IBSM | 0.9286 | 0.9285 | 0.9176 | 0.6873 | 0.6830 | 0.5079 |
| SMOTETomek | 0.9276 | 0.9275 | 0.9165 | 0.6932 | 0.6894 | 0.5148 |
| SMOTEEENN | 0.9200 | 0.9200 | 0.9078 | 0.6750 | 0.6696 | 0.4946 |
| TomekLinks | 0.9282 | 0.9282 | 0.9170 | 0.5827 | 0.4421 | 0.3058 |
| AllKNN | 0.9159 | 0.9149 | 0.9009 | 0.6724 | 0.6602 | 0.5032 |
| DSAOC | **0.9299** | **0.9298** | **0.9200** | 0.6927 | 0.6884 | 0.5136 |
| Models | Winequality1 | | | Winequality2 | | |
| Indicators | AUC | G - mean | F - measure | AUC | G - mean | F - measure |
| BSMOTE1 | 0.7363 | 0.7359 | 0.5183 | 0.7291 | 0.7286 | 0.6651 |
| BSMOTE2 | **0.7385** | 0.7370 | 0.5162 | 0.7290 | 0.7283 | 0.6659 |
| ADASYN | 0.7377 | 0.7374 | 0.5220 | 0.7294 | 0.7291 | 0.6655 |
| SVMSMOTE | 0.7334 | 0.7333 | 0.5184 | 0.7304 | 0.7302 | 0.6665 |
| MWMOTE | 0.7356 | 0.7353 | 0.5186 | 0.7291 | 0.7288 | 0.6643 |
| KSMOTE | 0.7262 | 0.7257 | 0.5153 | 0.7229 | 0.7227 | 0.6562 |
| DPCSMOTE | 0.7333 | 0.7330 | 0.5156 | 0.7303 | 0.7300 | 0.6660 |
| LDBSMOTE | 0.7156 | 0.7151 | 0.4986 | 0.7199 | 0.7193 | 0.6506 |
| IBSM | 0.7353 | 0.7349 | 0.5169 | 0.7285 | 0.7282 | 0.6639 |
| SMOTETomek | 0.7366 | 0.7363 | 0.5193 | 0.7306 | 0.7302 | 0.6665 |
| SMOTEEENN | 0.7286 | 0.7228 | 0.4966 | 0.7178 | 0.7109 | 0.6599 |
| TomekLinks | 0.6100 | 0.5088 | 0.3665 | 0.7111 | 0.7032 | 0.6300 |
| AllKNN | 0.6986 | 0.6833 | 0.5049 | 0.7165 | 0.7077 | 0.6588 |
| DSAOC | 0.7380 | **0.7378** | **0.5238** | **0.7320** | **0.7317** | **0.6681** |
| Models | Winequality3 | | | Winequality4 | | |
| Indicators | AUC | G - mean | F - measure | AUC | G - mean | F - measure |
| BSMOTE1 | 0.6504 | 0.6491 | 0.2563 | 0.5699 | 0.5687 | 0.2878 |
| BSMOTE2 | **0.6537** | **0.6531** | 0.2568 | 0.5680 | 0.5655 | 0.2857 |
| ADASYN | 0.6488 | 0.6475 | 0.2515 | 0.5725 | 0.5690 | 0.2881 |
| SVMSMOTE | 0.6403 | 0.6234 | **0.2715** | 0.5475 | 0.5177 | 0.2542 |
| MWMOTE | 0.6377 | 0.6337 | 0.2528 | 0.5772 | 0.5756 | 0.2940 |
| KSMOTE | 0.6031 | 0.5903 | 0.2225 | 0.5539 | 0.5467 | 0.2690 |
| DPCSMOTE | 0.6391 | 0.6388 | 0.2441 | 0.5701 | 0.5694 | 0.2884 |
| LDBSMOTE | 0.5653 | 0.5449 | 0.1954 | 0.5621 | 0.5509 | 0.2767 |
| IBSM | 0.6277 | 0.6269 | 0.2363 | 0.5733 | 0.5714 | 0.2901 |
| SMOTETomek | 0.6362 | 0.6359 | 0.2432 | 0.5780 | 0.5769 | 0.2943 |
| SMOTEEENN | 0.6332 | 0.6160 | 0.2279 | 0.5811 | 0.5458 | 0.2985 |
| TomekLinks | 0.5044 | 0.0610 | 0.0449 | 0.5000 | 0.0000 | NaN |
| AllKNN | 0.5030 | 0.0609 | 0.0435 | 0.5080 | 0.1094 | 0.0641 |
| DSAOC | 0.6457 | 0.6389 | 0.2647 | **0.5915** | **0.5896** | **0.3051** |