Table S3

Classification Performance of Various Sampling Algorithms

in The DT Model

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Models | Balance - scale1 | | | Glass1 | | |
| Indicators | AUC | G - mean | F - measure | AUC | G - mean | F - measure |
| BSMOTE1 | 0.6654 | 0.6153 | 0.4057 | 0.8101 | 0.8068 | 0.7324 |
| BSMOTE2 | **0.7202** | **0.7127** | 0.4446 | 0.7701 | 0.7574 | 0.6829 |
| ADASYN | 0.7120 | 0.6812 | **0.4689** | 0.7597 | 0.7529 | 0.6740 |
| SVMSMOTE | 0.6742 | 0.6151 | 0.4011 | 0.7950 | 0.7898 | 0.7215 |
| MWMOTE | 0.5063 | 0.2017 | 0.2916 | 0.7842 | 0.7790 | 0.7043 |
| KSMOTE | 0.5986 | 0.5181 | 0.3042 | **0.8268** | **0.8211** | **0.7589** |
| DPCSMOTE | 0.5174 | 0.2642 | 0.2347 | 0.7879 | 0.7817 | 0.7100 |
| LDBSMOTE | 0.5310 | 0.3788 | 0.2062 | 0.8041 | 0.8004 | 0.7347 |
| IBSM | 0.5357 | 0.3739 | 0.2086 | 0.8021 | 0.7969 | 0.7300 |
| SMOTETomek | 0.6851 | 0.6514 | 0.4269 | 0.8067 | 0.8037 | 0.7355 |
| SMOTEEENN | 0.6175 | 0.5414 | 0.3331 | 0.7838 | 0.7789 | 0.6978 |
| TomekLinks | 0.5700 | 0.4747 | 0.2615 | 0.7762 | 0.7696 | 0.6946 |
| AllKNN | 0.5522 | 0.5324 | 0.3707 | 0.7575 | 0.7465 | 0.6693 |
| DSAOC | 0.6302 | 0.5866 | 0.3621 | 0.8091 | 0.8046 | 0.7372 |
| Models | Glass2 | | | Letter - recognition1 | | |
| Indicators | AUC | G - mean | F - measure | AUC | G - mean | F - measure |
| BSMOTE1 | 0.8719 | 0.8664 | 0.7900 | 0.9333 | 0.9318 | 0.8583 |
| BSMOTE2 | **0.9265** | **0.9257** | 0.8611 | 0.9341 | 0.9336 | 0.7783 |
| ADASYN | 0.8583 | 0.8500 | 0.7621 | 0.9343 | 0.9329 | 0.8632 |
| SVMSMOTE | 0.9044 | 0.8988 | 0.8371 | 0.9425 | 0.9416 | 0.8508 |
| MWMOTE | 0.8651 | 0.8577 | 0.7960 | 0.9435 | 0.9423 | 0.8802 |
| KSMOTE | 0.8650 | 0.8584 | 0.8028 | 0.9369 | 0.9355 | 0.8686 |
| DPCSMOTE | 0.9196 | 0.9164 | **0.8686** | 0.9353 | 0.9339 | 0.8648 |
| LDBSMOTE | 0.8865 | 0.8812 | 0.8175 | 0.9250 | 0.9230 | 0.8501 |
| IBSM | 0.8810 | 0.8750 | 0.8021 | 0.9346 | 0.9332 | 0.8635 |
| SMOTETomek | 0.8803 | 0.8745 | 0.8013 | **0.9539** | **0.9533** | **0.8869** |
| SMOTEEENN | 0.9010 | 0.8898 | 0.8047 | 0.9493 | 0.9486 | 0.8730 |
| TomekLinks | 0.8091 | 0.8044 | 0.8512 | 0.9322 | 0.9305 | 0.8698 |
| AllKNN | 0.8898 | 0.8864 | 0.7933 | 0.9400 | 0.9388 | 0.8709 |
| DSAOC | 0.9018 | 0.8962 | 0.8486 | 0.9473 | 0.9466 | 0.8731 |
| Models | Letter - recognition2 | | | Letter - recognition3 | | |
| Indicators | AUC | G - mean | F - measure | AUC | G - mean | F - measure |
| BSMOTE1 | 0.9188 | 0.9175 | 0.8485 | 0.9054 | 0.9012 | 0.8102 |
| BSMOTE2 | 0.9062 | 0.9056 | 0.7868 | 0.9170 | 0.9146 | 0.7176 |
| ADASYN | 0.9258 | 0.9249 | 0.8551 | 0.9286 | 0.9265 | 0.8246 |
| SVMSMOTE | 0.9222 | 0.9215 | 0.8353 | **0.9363** | **0.9348** | 0.8089 |
| MWMOTE | 0.9218 | 0.9205 | 0.8598 | 0.9091 | 0.9053 | 0.8113 |
| KSMOTE | 0.9183 | 0.9170 | 0.8453 | 0.9196 | 0.9165 | 0.8253 |
| DPCSMOTE | 0.9160 | 0.9144 | 0.8487 | 0.9096 | 0.9056 | 0.8081 |
| LDBSMOTE | 0.9167 | 0.9152 | 0.8498 | 0.9116 | 0.9078 | 0.8131 |
| IBSM | 0.9197 | 0.9184 | 0.8537 | 0.9044 | 0.9001 | 0.8025 |
| SMOTETomek | 0.9252 | 0.9241 | 0.8607 | 0.9264 | 0.9240 | 0.8274 |
| SMOTEEENN | 0.9289 | 0.9284 | 0.8443 | 0.9340 | 0.9323 | 0.8227 |
| TomekLinks | 0.9263 | 0.9251 | 0.8689 | 0.9148 | 0.9113 | 0.8352 |
| AllKNN | 0.9292 | 0.9284 | 0.8594 | 0.9170 | 0.9139 | 0.8257 |
| DSAOC | **0.9309** | **0.9298** | **0.8769** | 0.9316 | 0.9295 | **0.8521** |
| Models | Phishingdata1 | | | Phishingdata2 | | |
| Indicators | AUC | G - mean | F - measure | AUC | G - mean | F - measure |
| BSMOTE1 | 0.8636 | 0.8584 | 0.6546 | 0.9171 | 0.9146 | 0.8530 |
| BSMOTE2 | 0.8669 | 0.8618 | 0.6543 | 0.8586 | 0.8536 | 0.7312 |
| ADASYN | 0.9223 | 0.9204 | 0.8271 | 0.8925 | 0.8896 | 0.8128 |
| SVMSMOTE | 0.9209 | 0.9175 | 0.8110 | 0.9061 | 0.9026 | 0.8241 |
| MWMOTE | 0.8842 | 0.8767 | 0.7870 | 0.9166 | 0.9140 | 0.8371 |
| KSMOTE | 0.9259 | 0.9234 | 0.8102 | 0.9131 | 0.9107 | 0.8402 |
| DPCSMOTE | 0.8795 | 0.8720 | 0.7828 | 0.9068 | 0.9037 | 0.8409 |
| LDBSMOTE | 0.8934 | 0.8881 | 0.7939 | 0.9170 | 0.9149 | 0.8404 |
| IBSM | 0.8938 | 0.8878 | 0.7960 | 0.9104 | 0.9084 | 0.8307 |
| SMOTETomek | 0.9173 | 0.9142 | 0.8089 | 0.9125 | 0.9109 | 0.8189 |
| SMOTEEENN | 0.9161 | 0.9138 | 0.7678 | 0.8464 | 0.8382 | 0.7506 |
| TomekLinks | 0.8838 | 0.8751 | 0.7875 | 0.8975 | 0.8939 | 0.8181 |
| AllKNN | 0.9318 | 0.9309 | 0.8471 | 0.9385 | 0.9379 | 0.8347 |
| DSAOC | **0.9475** | **0.9452** | **0.8504** | **0.9411** | **0.9404** | **0.8839** |
| Models | Phishingdata3 | | | Poker - hand1 | | |
| Indicators | AUC | G - mean | F - measure | AUC | G - mean | F - measure |
| BSMOTE1 | 0.9727 | 0.9724 | 0.9047 | 0.5597 | 0.4805 | 0.1749 |
| BSMOTE2 | 0.9627 | 0.9624 | 0.8551 | 0.5627 | **0.5121** | 0.1738 |
| ADASYN | 0.9598 | 0.9593 | 0.8980 | 0.5527 | 0.4800 | 0.1656 |
| SVMSMOTE | **0.9788** | **0.9787** | **0.9185** | 0.5695 | 0.4789 | 0.1885 |
| MWMOTE | 0.9036 | 0.9000 | 0.8253 | 0.5347 | 0.3868 | 0.1424 |
| KSMOTE | 0.9407 | 0.9399 | 0.8827 | 0.5684 | 0.4908 | 0.1866 |
| DPCSMOTE | 0.9089 | 0.9053 | 0.8341 | 0.5381 | 0.3922 | 0.1480 |
| LDBSMOTE | 0.9043 | 0.9007 | 0.8291 | 0.5431 | 0.4044 | 0.1558 |
| IBSM | 0.8986 | 0.8947 | 0.8197 | 0.5365 | 0.3946 | 0.1457 |
| SMOTETomek | 0.9569 | 0.9561 | 0.9052 | 0.5564 | 0.4831 | 0.1698 |
| SMOTEEENN | 0.9605 | 0.9556 | 0.8821 | 0.5694 | 0.4661 | 0.1775 |
| TomekLinks | 0.9122 | 0.9086 | 0.8434 | 0.5745 | 0.4680 | 0.2049 |
| AllKNN | 0.9620 | 0.9616 | 0.8780 | 0.5832 | 0.4173 | **0.2370** |
| DSAOC | 0.9593 | 0.9587 | 0.8972 | **0.5839** | 0.4813 | 0.2215 |
| Models | Rice | | | Transfusion | | |
| Indicators | AUC | G - mean | F - measure | AUC | G - mean | F - measure |
| BSMOTE1 | 0.8836 | 0.8836 | 0.8665 | 0.5817 | 0.5548 | 0.3736 |
| BSMOTE2 | 0.8743 | 0.8740 | 0.8562 | 0.5876 | 0.5566 | 0.3779 |
| ADASYN | 0.8823 | 0.8821 | 0.8650 | 0.5994 | 0.5875 | 0.4041 |
| SVMSMOTE | 0.8891 | 0.8891 | 0.8728 | 0.5925 | 0.5603 | 0.3851 |
| MWMOTE | 0.8857 | 0.8856 | 0.8689 | 0.5690 | 0.5202 | 0.3419 |
| KSMOTE | 0.8922 | 0.8920 | 0.8768 | 0.5929 | 0.5547 | 0.3850 |
| DPCSMOTE | 0.8841 | 0.8840 | 0.8672 | 0.5790 | 0.5424 | 0.3629 |
| LDBSMOTE | 0.8880 | 0.8879 | 0.8715 | 0.6006 | 0.5488 | 0.3808 |
| IBSM | 0.8906 | 0.8904 | 0.8745 | 0.5828 | 0.5494 | 0.3697 |
| SMOTETomek | 0.8935 | 0.8934 | 0.8778 | **0.6190** | 0.6014 | 0.4245 |
| SMOTEEENN | **0.9115** | **0.9115** | **0.8986** | 0.6066 | 0.5508 | **0.4879** |
| TomekLinks | 0.8946 | 0.8945 | 0.8790 | 0.5903 | 0.5420 | 0.3715 |
| AllKNN | 0.8875 | 0.8856 | 0.8700 | 0.6080 | **0.6047** | 0.4561 |
| DSAOC | 0.8941 | 0.8939 | 0.8788 | 0.6083 | 0.5605 | 0.3971 |
| Models | Winequality1 | | | Winequality2 | | |
| Indicators | AUC | G - mean | F - measure | AUC | G - mean | F - measure |
| BSMOTE1 | 0.7739 | 0.7683 | 0.6104 | 0.7525 | 0.7510 | 0.6878 |
| BSMOTE2 | 0.7707 | 0.7671 | 0.5970 | 0.7607 | 0.7601 | 0.6986 |
| ADASYN | 0.7865 | 0.7821 | **0.6262** | 0.7651 | 0.7644 | 0.7039 |
| SVMSMOTE | 0.7821 | 0.7772 | 0.6232 | 0.7682 | 0.7671 | 0.7072 |
| MWMOTE | 0.7751 | 0.7695 | 0.6133 | 0.7679 | 0.7669 | 0.7071 |
| KSMOTE | 0.7588 | 0.7492 | 0.5969 | 0.7583 | 0.7567 | 0.6948 |
| DPCSMOTE | 0.7715 | 0.7670 | 0.6026 | 0.7549 | 0.7539 | 0.6913 |
| LDBSMOTE | 0.7639 | 0.7574 | 0.5976 | 0.7567 | 0.7551 | 0.6928 |
| IBSM | 0.7666 | 0.7599 | 0.6023 | 0.7507 | 0.7494 | 0.6859 |
| SMOTETomek | 0.7595 | 0.7535 | 0.5882 | 0.7535 | 0.7526 | 0.6896 |
| SMOTEEENN | 0.7693 | 0.7689 | 0.5758 | 0.7176 | 0.7172 | 0.6532 |
| TomekLinks | 0.7559 | 0.7437 | 0.5995 | 0.7580 | 0.7571 | 0.6951 |
| AllKNN | 0.7755 | 0.7748 | 0.5847 | 0.7343 | 0.7278 | 0.6766 |
| DSAOC | **0.7870** | **0.7834** | 0.6253 | **0.7705** | **0.7701** | **0.7108** |
| Models | Winequality3 | | | Winequality4 | | |
| Indicators | AUC | G - mean | F - measure | AUC | G - mean | F - measure |
| BSMOTE1 | 0.6342 | 0.5838 | 0.3023 | 0.7180 | 0.7062 | 0.4709 |
| BSMOTE2 | 0.6318 | 0.5944 | 0.2820 | 0.6938 | 0.6848 | 0.4290 |
| ADASYN | 0.6176 | 0.5623 | 0.2723 | 0.6959 | 0.6803 | 0.4468 |
| SVMSMOTE | 0.6240 | 0.5546 | 0.2961 | 0.6820 | 0.6559 | 0.4336 |
| MWMOTE | 0.6224 | 0.5543 | 0.2964 | 0.6724 | 0.6483 | 0.4172 |
| KSMOTE | 0.6333 | 0.5773 | 0.3033 | 0.7030 | 0.6790 | 0.4679 |
| DPCSMOTE | 0.6311 | 0.5823 | 0.2953 | 0.6990 | 0.6879 | 0.4402 |
| LDBSMOTE | 0.6380 | 0.5769 | 0.3207 | 0.7056 | 0.6914 | 0.4639 |
| IBSM | 0.6366 | 0.5903 | 0.3019 | 0.6730 | 0.6558 | 0.4128 |
| SMOTETomek | 0.6112 | 0.5562 | 0.2641 | 0.6940 | 0.6812 | 0.4406 |
| SMOTEEENN | 0.6407 | **0.6185** | 0.2726 | 0.6597 | 0.6505 | 0.3836 |
| TomekLinks | 0.6225 | 0.5437 | 0.3068 | 0.7171 | 0.6979 | 0.4962 |
| AllKNN | 0.6402 | 0.5872 | 0.3153 | 0.7121 | 0.7055 | 0.4560 |
| DSAOC | **0.6632** | 0.6148 | **0.3616** | **0.7438** | **0.7287** | **0.5430** |