Random Forests

Joanna Grzyb

No Institute Given

1 Introduction

Table 1. CART – AUC

Dataset name	SMOTE	polynom-fit-SMOTE	Lee	SMOBD	G-SMOTE	LVQ-SMOTE	Assembled-SMOTE	SMOTE-TomekLinks	JFOTS-pr	JFOTS-rc
*abalone*19	0.561 ± 0.042	0.503 ± 0.015	0.546 ± 0.038	**0.565 ± 0.042**	0.545 ± 0.052	0.537 ± 0.051	0.555 ± 0.047	0.561 ± 0.042	0.505 ± 0.019	0.540 ± 0.045
*abalone*9 − 18	0.665 ± 0.059	0.609 ± 0.040	0.672 ± 0.051	**0.685 ± 0.051**	0.652 ± 0.034	0.684 ± 0.082	0.649 ± 0.038	0.667 ± 0.062	0.658 ± 0.041	0.561 ± 0.075
$ecoli-0-1-3-7\_vs2-6$	0.790 ± 0.115	**0.815 ± 0.063**	0.790 ± 0.115	0.790 ± 0.115	**0.815 ± 0.063**	0.776 ± 0.100	0.790 ± 0.115	0.790 ± 0.115	0.694 ± 0.110	0.609 ± 0.088
$glass-0-1-6\_vs2$	0.629 ± 0.058	0.570 ± 0.054	**0.663 ± 0.054**	0.642 ± 0.063	0.593 ± 0.042	0.588 ± 0.108	0.633 ± 0.108	0.628 ± 0.055	0.653 ± 0.106	0.576 ± 0.043
$glass-0-1-6\_vs5$	0.860 ± 0.133	0.858 ± 0.133	0.860 ± 0.133	0.860 ± 0.133	0.790 ± 0.164	**0.894 ± 0.133**	0.860 ± 0.133	0.860 ± 0.133	0.765 ± 0.151	0.883 ± 0.154
*glass*2	0.591 ± 0.121	0.563 ± 0.077	0.577 ± 0.111	**0.610 ± 0.101**	0.603 ± 0.106	0.582 ± 0.110	0.575 ± 0.094	0.606 ± 0.124	0.586 ± 0.076	0.550 ± 0.077
*glass*4	0.854 ± 0.086	0.835 ± 0.053	0.854 ± 0.087	0.845 ± 0.086	**0.861 ± 0.073**	0.808 ± 0.090	0.853 ± 0.090	0.854 ± 0.086	0.797 ± 0.109	0.764 ± 0.140
*glass*5	0.851 ± 0.154	0.849 ± 0.153	0.851 ± 0.154	0.851 ± 0.154	0.862 ± 0.160	**0.935 ± 0.107**	0.851 ± 0.154	0.851 ± 0.154	0.836 ± 0.150	0.895 ± 0.127
$page-blocks-1-3\_vs\_4$	0.969 ± 0.059	0.949 ± 0.060	0.966 ± 0.068	0.964 ± 0.068	0.972 ± 0.063	0.962 ± 0.050	**0.983 ± 0.032**	0.969 ± 0.059	0.902 ± 0.062	0.884 ± 0.100
$yeast-0-5-6-7-9\_vs4$	0.696 ± 0.057	0.680 ± 0.048	**0.713 ± 0.047**	0.694 ± 0.056	0.677 ± 0.039	0.712 ± 0.055	0.688 ± 0.037	0.701 ± 0.042	0.662 ± 0.046	0.496 ± 0.008
$yeast-1-2-8-9\_vs7$	0.588 ± 0.028	0.578 ± 0.047	0.590 ± 0.030	0.578 ± 0.047	0.599 ± 0.051	**0.647 ± 0.062**	0.586 ± 0.023	0.604 ± 0.044	0.554 ± 0.057	0.511 ± 0.004
$yeast-1-4-5-8\_vs7$	0.532 ± 0.049	**0.554 ± 0.026**	0.535 ± 0.064	0.523 ± 0.045	0.540 ± 0.049	0.518 ± 0.041	0.551 ± 0.029	0.526 ± 0.048	0.506 ± 0.033	0.505 ± 0.003
$yeast-1\_vs7$	0.613 ± 0.057	0.623 ± 0.049	0.601 ± 0.067	0.635 ± 0.052	0.598 ± 0.055	**0.659 ± 0.038**	0.616 ± 0.048	0.609 ± 0.053	0.584 ± 0.046	0.511 ± 0.029
$yeast-2\_vs4$	0.845 ± 0.046	0.840 ± 0.055	0.865 ± 0.043	0.861 ± 0.068	0.854 ± 0.053	0.862 ± 0.041	**0.865 ± 0.042**	0.839 ± 0.037	0.815 ± 0.050	0.583 ± 0.141
$yeast-2\_vs8$	0.730 ± 0.089	0.762 ± 0.068	0.775 ± 0.104	**0.778 ± 0.084**	0.760 ± 0.070	0.751 ± 0.045	0.747 ± 0.065	0.741 ± 0.087	0.756 ± 0.049	0.520 ± 0.031
*yeast*4	0.675 ± 0.044	0.637 ± 0.032	0.689 ± 0.061	0.690 ± 0.049	0.633 ± 0.041	**0.719 ± 0.055**	0.674 ± 0.083	0.678 ± 0.046	0.676 ± 0.050	0.497 ± 0.009
*yeast*5	0.862 ± 0.073	0.846 ± 0.068	0.846 ± 0.064	0.859 ± 0.068	0.853 ± 0.064	**0.878 ± 0.049**	0.868 ± 0.057	0.864 ± 0.076	0.841 ± 0.048	0.510 ± 0.001
*yeast*6	0.730 ± 0.066	0.692 ± 0.047	0.725 ± 0.067	0.747 ± 0.062	0.743 ± 0.047	**0.768 ± 0.051**	0.742 ± 0.059	0.731 ± 0.064	0.679 ± 0.058	0.521 ± 0.033
$cleveland-0\_vs4$	**0.814 ± 0.055**	0.731 ± 0.129	0.785 ± 0.103	0.782 ± 0.083	0.743 ± 0.137	0.745 ± 0.048	0.801 ± 0.063	**0.814 ± 0.055**	0.756 ± 0.084	0.736 ± 0.097
$ecoli-0-1-4-7\_vs2-3-5-6$	0.792 ± 0.074	0.794 ± 0.048	0.822 ± 0.039	0.790 ± 0.069	0.776 ± 0.061	0.822 ± 0.050	**0.827 ± 0.054**	0.806 ± 0.077	0.721 ± 0.104	0.550 ± 0.083
$ecoli-0-1\_vs2-3-5$	0.799 ± 0.062	0.806 ± 0.102	0.784 ± 0.059	0.749 ± 0.042	0.788 ± 0.041	**0.841 ± 0.058**	0.781 ± 0.050	0.800 ± 0.062	0.753 ± 0.087	0.649 ± 0.137
$ecoli-0-2-6-7\_vs3-5$	0.799 ± 0.045	0.787 ± 0.062	0.809 ± 0.054	0.822 ± 0.075	**0.829 ± 0.057**	0.827 ± 0.063	0.778 ± 0.066	0.802 ± 0.047	0.773 ± 0.057	0.566 ± 0.120
$ecoli-0-6-7\_vs3-5$	0.795 ± 0.069	0.794 ± 0.048	0.810 ± 0.052	0.813 ± 0.063	**0.840 ± 0.064**	0.834 ± 0.060	0.790 ± 0.056	0.796 ± 0.069	0.773 ± 0.056	0.594 ± 0.147
$ecoli-0-6-7\_vs5$	0.840 ± 0.068	0.840 ± 0.074	0.828 ± 0.068	0.838 ± 0.071	0.837 ± 0.064	0.842 ± 0.044	0.825 ± 0.060	0.839 ± 0.070	**0.850 ± 0.078**	0.574 ± 0.127
$glass-0-1-4-6\_vs2$	0.595 ± 0.051	0.560 ± 0.082	0.610 ± 0.072	0.591 ± 0.062	0.606 ± 0.073	**0.638 ± 0.077**	0.558 ± 0.066	0.576 ± 0.062	0.558 ± 0.071	0.557 ± 0.034
$glass-0-1-5\_vs2$	0.689 ± 0.067	0.597 ± 0.068	0.677 ± 0.082	**0.713 ± 0.110**	0.651 ± 0.082	0.605 ± 0.090	0.649 ± 0.079	0.678 ± 0.062	0.598 ± 0.070	0.536 ± 0.072
$yeast-0-2-5-6\_vs3-7-8-9$	0.713 ± 0.037	0.712 ± 0.051	**0.735 ± 0.038**	0.714 ± 0.027	0.715 ± 0.031	0.728 ± 0.046	0.709 ± 0.037	0.700 ± 0.034	0.646 ± 0.062	0.541 ± 0.061
$yeast-0-3-5-9\_vs7-8$	0.598 ± 0.035	**0.638 ± 0.041**	0.621 ± 0.044	0.623 ± 0.050	0.616 ± 0.061	0.629 ± 0.050	0.615 ± 0.028	0.630 ± 0.031	0.550 ± 0.059	0.512 ± 0.016
$abalone-17\_vs7-8-9-10$	0.644 ± 0.041	0.642 ± 0.033	0.643 ± 0.042	0.660 ± 0.045	0.649 ± 0.047	**0.667 ± 0.024**	0.646 ± 0.039	0.642 ± 0.036	0.633 ± 0.055	0.569 ± 0.057
$abalone-19\_vs10-11-12-13$	0.556 ± 0.041	0.517 ± 0.024	0.556 ± 0.050	0.548 ± 0.035	0.541 ± 0.055	**0.576 ± 0.050**	0.557 ± 0.034	0.560 ± 0.028	0.523 ± 0.039	0.514 ± 0.041
$abalone-20\_vs8-9-10$	0.696 ± 0.050	0.584 ± 0.065	0.674 ± 0.065	0.682 ± 0.050	0.633 ± 0.070	**0.789 ± 0.061**	0.681 ± 0.059	0.696 ± 0.050	0.621 ± 0.054	0.589 ± 0.042
$abalone-21\_vs8$	0.726 ± 0.121	0.655 ± 0.074	0.699 ± 0.092	0.691 ± 0.116	0.702 ± 0.065	**0.790 ± 0.070**	0.692 ± 0.105	0.734 ± 0.126	0.712 ± 0.125	0.614 ± 0.092
flare − *F*	0.558 ± 0.035	0.581 ± 0.030	0.570 ± 0.045	0.578 ± 0.038	0.587 ± 0.021	0.580 ± 0.034	0.576 ± 0.048	0.577 ± 0.035	**0.636 ± 0.083**	0.575 ± 0.068
$kddcup-buffer\_overflow\_vs\_back$	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**
$kddcup-rootkit-imap\_vs\_back$	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	0.982 ± 0.036	0.982 ± 0.036
$kr-vs-k-zero\_vs\_eight$	0.961 ± 0.050	0.965 ± 0.051	**0.965 ± 0.052**	0.965 ± 0.051	0.964 ± 0.038	0.954 ± 0.074	0.954 ± 0.058	0.961 ± 0.050	0.771 ± 0.082	0.702 ± 0.042
$poker-8-9\_vs5$	0.572 ± 0.039	0.558 ± 0.049	0.566 ± 0.032	0.572 ± 0.032	0.546 ± 0.035	**0.585 ± 0.070**	0.543 ± 0.028	0.572 ± 0.039	0.531 ± 0.048	0.517 ± 0.054
$poker-8-9\_vs6$	0.680 ± 0.087	0.824 ± 0.141	0.670 ± 0.096	0.644 ± 0.084	0.615 ± 0.064	0.628 ± 0.096	0.657 ± 0.105	0.680 ± 0.087	**0.999 ± 0.001**	0.999 ± 0.001
$poker-8\_vs6$	0.685 ± 0.101	0.685 ± 0.163	0.703 ± 0.123	0.685 ± 0.095	0.761 ± 0.165	0.669 ± 0.162	0.677 ± 0.100	0.685 ± 0.101	**0.931 ± 0.085**	**0.931 ± 0.084**
$poker-9\_vs7$	0.564 ± 0.082	0.548 ± 0.063	0.564 ± 0.082	0.562 ± 0.084	0.571 ± 0.080	0.613 ± 0.127	0.563 ± 0.081	0.564 ± 0.082	**0.686 ± 0.209**	0.647 ± 0.162
$winequality-red-3\_vs5$	0.516 ± 0.043	0.529 ± 0.066	0.506 ± 0.040	0.518 ± 0.045	0.530 ± 0.049	**0.565 ± 0.056**	0.525 ± 0.064	0.516 ± 0.043	0.519 ± 0.047	0.528 ± 0.049
$winequality-red-4$	0.552 ± 0.048	0.528 ± 0.030	**0.576 ± 0.029**	0.572 ± 0.036	0.556 ± 0.037	0.571 ± 0.036	0.548 ± 0.017	0.552 ± 0.050	0.537 ± 0.031	0.531 ± 0.031
$winequality-red-8\_vs6-7$	0.543 ± 0.041	0.557 ± 0.050	0.550 ± 0.039	0.562 ± 0.051	**0.568 ± 0.043**	0.555 ± 0.043	0.545 ± 0.048	0.543 ± 0.041	0.544 ± 0.043	0.529 ± 0.053
$winequality-red-8\_vs6$	0.609 ± 0.052	0.608 ± 0.064	0.605 ± 0.046	0.603 ± 0.067	0.601 ± 0.064	0.614 ± 0.058	**0.630 ± 0.056**	0.609 ± 0.052	0.577 ± 0.044	0.566 ± 0.063
$winequality-white-3-9\_vs5$	0.566 ± 0.063	0.544 ± 0.047	0.540 ± 0.054	0.546 ± 0.056	0.529 ± 0.063	**0.643 ± 0.056**	0.535 ± 0.037	0.566 ± 0.063	0.528 ± 0.031	0.509 ± 0.019
$winequality-white-3\_vs7$	0.539 ± 0.045	0.557 ± 0.060	0.576 ± 0.061	0.567 ± 0.055	0.593 ± 0.060	**0.737 ± 0.086**	0.524 ± 0.047	0.539 ± 0.045	0.546 ± 0.032	0.578 ± 0.076
$winequality-white-9\_vs4$	**0.722 ± 0.163**	0.672 ± 0.100	0.721 ± 0.162	0.721 ± 0.162	0.699 ± 0.138	0.692 ± 0.141	0.721 ± 0.162	**0.722 ± 0.163**	0.573 ± 0.112	0.573 ± 0.112
zoo − 3	0.658 ± 0.189	0.608 ± 0.123	0.665 ± 0.158	0.650 ± 0.156	0.635 ± 0.160	**0.738 ± 0.159**	0.639 ± 0.122	0.658 ± 0.189	0.509 ± 0.127	0.509 ± 0.127
*ecoli*1	0.841 ± 0.056	0.818 ± 0.039	0.827 ± 0.049	0.836 ± 0.039	0.837 ± 0.041	0.842 ± 0.033	0.822 ± 0.048	**0.860 ± 0.041**	0.751 ± 0.067	0.556 ± 0.105
*ecoli*2	0.855 ± 0.028	0.838 ± 0.035	0.850 ± 0.033	0.852 ± 0.036	0.848 ± 0.028	**0.866 ± 0.037**	0.852 ± 0.041	0.855 ± 0.028	0.777 ± 0.083	0.578 ± 0.113
*ecoli*3	0.745 ± 0.049	0.748 ± 0.065	0.768 ± 0.067	0.772 ± 0.049	0.766 ± 0.053	**0.833 ± 0.049**	0.775 ± 0.051	0.755 ± 0.053	0.760 ± 0.050	0.554 ± 0.100
*glass*0	0.767 ± 0.036	0.770 ± 0.060	0.772 ± 0.038	0.787 ± 0.033	0.777 ± 0.042	**0.802 ± 0.041**	0.794 ± 0.040	0.774 ± 0.025	0.746 ± 0.051	0.673 ± 0.069
*glass*1	0.719 ± 0.029	**0.733 ± 0.031**	0.727 ± 0.054	0.726 ± 0.058	0.714 ± 0.045	0.717 ± 0.046	0.726 ± 0.061	0.716 ± 0.033	0.676 ± 0.081	0.591 ± 0.058
haberman	0.584 ± 0.035	0.567 ± 0.025	0.573 ± 0.041	0.563 ± 0.045	0.572 ± 0.052	0.577 ± 0.038	0.565 ± 0.055	**0.596 ± 0.045**	0.584 ± 0.025	0.536 ± 0.058
$page-blocks0$	0.917 ± 0.012	0.898 ± 0.010	0.915 ± 0.010	0.914 ± 0.008	0.906 ± 0.009	0.900 ± 0.009	**0.919 ± 0.011**	0.917 ± 0.008	0.907 ± 0.013	0.895 ± 0.014
pima	0.665 ± 0.020	0.673 ± 0.023	0.660 ± 0.021	0.665 ± 0.015	0.660 ± 0.023	**0.678 ± 0.027**	0.658 ± 0.021	0.670 ± 0.025	0.659 ± 0.030	0.600 ± 0.041
*vehicle*1	0.668 ± 0.024	0.668 ± 0.021	0.680 ± 0.032	0.671 ± 0.025	0.666 ± 0.027	**0.685 ± 0.023**	0.674 ± 0.024	0.676 ± 0.014	0.663 ± 0.019	0.665 ± 0.021
*vehicle*3	0.666 ± 0.023	**0.690 ± 0.023**	0.655 ± 0.023	0.677 ± 0.028	0.669 ± 0.016	0.685 ± 0.014	0.674 ± 0.020	0.667 ± 0.013	0.662 ± 0.038	0.680 ± 0.023
*yeast*1	0.643 ± 0.017	**0.653 ± 0.017**	0.653 ± 0.016	0.650 ± 0.011	0.649 ± 0.013	0.653 ± 0.017	0.652 ± 0.021	0.641 ± 0.009	0.610 ± 0.045	0.507 ± 0.002
*yeast*3	0.864 ± 0.029	0.832 ± 0.033	0.863 ± 0.024	0.849 ± 0.015	0.848 ± 0.025	0.860 ± 0.027	0.854 ± 0.031	**0.867 ± 0.030**	0.826 ± 0.029	0.504 ± 0.003

Table 2. SVM – AUC

Dataset name	SMOTE	polynom-fit-SMOTE	Lee	SMOBD	G-SMOTE	LVQ-SMOTE	Assembled-SMOTE	SMOTE-TomekLinks	JFOTS-pr	JFOTS-rc
$abalone19$	0.593 ± 0.063	0.569 ± 0.048	0.593 ± 0.057	0.599 ± 0.065	0.602 ± 0.063	**0.655 ± 0.056**	0.593 ± 0.062	0.593 ± 0.063	0.620 ± 0.082	0.597 ± 0.083
$abalone9-18$	0.740 ± 0.052	0.698 ± 0.036	0.745 ± 0.035	0.750 ± 0.042	0.742 ± 0.051	**0.782 ± 0.043**	0.739 ± 0.038	0.739 ± 0.051	0.678 ± 0.060	0.661 ± 0.091
$ecoli-0-1-3-7_vs2-6$	0.845 ± 0.075	**0.847 ± 0.078**	0.838 ± 0.074	0.842 ± 0.076	0.842 ± 0.079	0.828 ± 0.078	0.844 ± 0.075	0.845 ± 0.075	0.844 ± 0.110	0.840 ± 0.110
$glass-0-1-6_vs2$	0.740 ± 0.099	0.697 ± 0.081	**0.744 ± 0.090**	0.740 ± 0.079	0.693 ± 0.080	0.622 ± 0.083	0.743 ± 0.072	0.740 ± 0.100	0.724 ± 0.090	0.673 ± 0.092
$glass-0-1-6_vs5$	0.820 ± 0.098	0.792 ± 0.117	0.820 ± 0.098	0.820 ± 0.098	0.810 ± 0.123	0.843 ± 0.147	0.820 ± 0.098	0.820 ± 0.098	0.784 ± 0.123	**0.869 ± 0.153**
$glass2$	0.642 ± 0.143	0.638 ± 0.134	0.648 ± 0.140	0.637 ± 0.137	0.647 ± 0.143	**0.677 ± 0.158**	0.648 ± 0.146	0.641 ± 0.143	0.626 ± 0.130	0.631 ± 0.118
$glass4$	**0.892 ± 0.094**	0.852 ± 0.116	0.883 ± 0.108	0.876 ± 0.121	0.884 ± 0.102	0.870 ± 0.111	0.876 ± 0.082	**0.892 ± 0.094**	0.821 ± 0.068	0.788 ± 0.142
$glass5$	0.818 ± 0.106	0.809 ± 0.103	0.828 ± 0.099	0.828 ± 0.099	0.808 ± 0.093	0.854 ± 0.155	0.818 ± 0.106	0.818 ± 0.106	0.788 ± 0.098	**0.870 ± 0.119**
$page-blocks-1-3_vs4$	0.904 ± 0.114	0.791 ± 0.070	**0.908 ± 0.112**	0.907 ± 0.112	0.904 ± 0.119	0.796 ± 0.048	0.888 ± 0.116	0.904 ± 0.114	0.819 ± 0.074	0.862 ± 0.073
$yeast-0-5-6-7-9_vs4$	0.749 ± 0.047	0.741 ± 0.037	0.762 ± 0.040	0.752 ± 0.049	0.747 ± 0.055	**0.765 ± 0.030**	0.749 ± 0.041	0.746 ± 0.047	0.696 ± 0.066	0.496 ± 0.008
$yeast-1-2-8-9_vs7$	0.606 ± 0.041	0.594 ± 0.054	0.608 ± 0.050	0.605 ± 0.049	0.620 ± 0.049	**0.673 ± 0.069**	0.605 ± 0.053	0.610 ± 0.038	0.566 ± 0.052	0.511 ± 0.004
$yeast-1-4-5-8_vs7$	0.571 ± 0.051	0.568 ± 0.051	0.564 ± 0.047	0.561 ± 0.037	0.582 ± 0.055	**0.600 ± 0.034**	0.557 ± 0.035	0.571 ± 0.050	0.543 ± 0.035	0.505 ± 0.003
$yeast-1_vs7$	0.690 ± 0.041	0.671 ± 0.046	0.691 ± 0.039	**0.692 ± 0.043**	0.664 ± 0.066	0.686 ± 0.064	0.683 ± 0.040	0.689 ± 0.041	0.596 ± 0.086	0.512 ± 0.030
$yeast-2_vs4$	0.870 ± 0.039	0.862 ± 0.040	0.873 ± 0.039	**0.875 ± 0.045**	0.871 ± 0.046	0.869 ± 0.034	0.868 ± 0.046	0.870 ± 0.038	0.848 ± 0.033	0.605 ± 0.174
$yeast-2_vs8$	0.736 ± 0.046	0.773 ± 0.051	0.747 ± 0.043	0.756 ± 0.040	0.738 ± 0.047	**0.795 ± 0.064**	0.740 ± 0.063	0.736 ± 0.046	0.756 ± 0.071	0.517 ± 0.025
$yeast4$	0.765 ± 0.034	0.746 ± 0.032	0.769 ± 0.042	0.768 ± 0.032	0.760 ± 0.033	**0.792 ± 0.032**	0.757 ± 0.024	0.764 ± 0.034	0.688 ± 0.023	0.497 ± 0.009
$yeast5$	0.927 ± 0.029	0.924 ± 0.030	0.927 ± 0.029	0.927 ± 0.029	0.928 ± 0.026	**0.941 ± 0.024**	0.927 ± 0.029	0.927 ± 0.029	0.900 ± 0.064	0.510 ± 0.001
$yeast6$	0.843 ± 0.049	0.840 ± 0.046	0.848 ± 0.054	0.840 ± 0.049	0.844 ± 0.049	**0.862 ± 0.034**	0.842 ± 0.053	0.843 ± 0.049	0.756 ± 0.054	0.520 ± 0.031
$cleveland-0_vs4$	0.719 ± 0.089	0.681 ± 0.082	0.728 ± 0.101	0.736 ± 0.099	0.721 ± 0.109	**0.845 ± 0.052**	0.719 ± 0.088	0.719 ± 0.089	0.718 ± 0.048	0.666 ± 0.101
$ecoli-0-1-4-7_vs2-3-5-6$	0.872 ± 0.032	0.851 ± 0.020	0.867 ± 0.029	0.866 ± 0.019	0.866 ± 0.030	**0.884 ± 0.033**	0.871 ± 0.037	0.872 ± 0.032	0.758 ± 0.130	0.595 ± 0.135
$ecoli-0-1_vs2-3-5$	0.854 ± 0.041	0.865 ± 0.044	0.863 ± 0.044	0.861 ± 0.043	0.856 ± 0.041	**0.886 ± 0.047**	0.858 ± 0.045	0.853 ± 0.041	0.793 ± 0.088	0.692 ± 0.199
$ecoli-0-2-6-7_vs3-5$	0.834 ± 0.056	0.842 ± 0.061	0.838 ± 0.056	0.843 ± 0.056	0.848 ± 0.060	**0.871 ± 0.050**	0.835 ± 0.059	0.834 ± 0.056	0.827 ± 0.054	0.667 ± 0.149
$ecoli-0-6-7_vs3-5$	0.846 ± 0.055	0.851 ± 0.056	0.843 ± 0.056	0.857 ± 0.059	0.850 ± 0.061	**0.869 ± 0.060**	0.846 ± 0.061	0.846 ± 0.055	0.845 ± 0.051	0.680 ± 0.159
$ecoli-0-6-7_vs5$	0.861 ± 0.043	0.863 ± 0.043	0.863 ± 0.044	0.859 ± 0.043	0.860 ± 0.042	**0.887 ± 0.047**	0.859 ± 0.044	0.862 ± 0.042	0.861 ± 0.044	0.647 ± 0.163
$glass-0-1-4-6_vs2$	0.710 ± 0.101	0.669 ± 0.128	0.713 ± 0.107	0.702 ± 0.131	0.654 ± 0.115	0.625 ± 0.090	**0.716 ± 0.127**	0.709 ± 0.101	0.609 ± 0.085	0.662 ± 0.083
$glass-0-1-5_vs2$	0.696 ± 0.063	0.659 ± 0.067	0.701 ± 0.062	**0.711 ± 0.071**	0.675 ± 0.079	0.581 ± 0.049	0.685 ± 0.068	0.696 ± 0.063	0.673 ± 0.066	0.616 ± 0.162
$yeast-0-2-5-6_vs3-7-8-9$	0.782 ± 0.026	0.775 ± 0.041	0.778 ± 0.032	0.788 ± 0.019	0.773 ± 0.036	**0.791 ± 0.030**	0.781 ± 0.029	0.783 ± 0.026	0.735 ± 0.062	0.559 ± 0.109
$yeast-0-3-5-9_vs7-8$	**0.696 ± 0.035**	0.640 ± 0.032	0.687 ± 0.036	0.690 ± 0.045	0.693 ± 0.043	0.660 ± 0.053	0.692 ± 0.034	0.695 ± 0.036	0.634 ± 0.069	0.516 ± 0.027
$abalone-17_vs7-8-9-10$	0.814 ± 0.021	0.742 ± 0.040	0.809 ± 0.024	0.810 ± 0.034	0.804 ± 0.028	**0.823 ± 0.025**	0.816 ± 0.024	0.813 ± 0.019	0.677 ± 0.073	0.722 ± 0.090
$abalone-19_vs10-11-12-13$	0.633 ± 0.062	0.582 ± 0.058	0.637 ± 0.061	0.636 ± 0.052	0.633 ± 0.059	**0.659 ± 0.075**	0.629 ± 0.067	0.633 ± 0.062	0.631 ± 0.085	0.594 ± 0.058
$abalone-20_vs8-9-10$	0.806 ± 0.048	0.775 ± 0.041	0.809 ± 0.043	0.802 ± 0.047	0.801 ± 0.052	**0.884 ± 0.051**	0.798 ± 0.055	0.806 ± 0.048	0.743 ± 0.109	0.742 ± 0.103
$abalone-21_vs8$	0.798 ± 0.117	0.788 ± 0.120	0.798 ± 0.116	0.804 ± 0.117	0.799 ± 0.122	**0.839 ± 0.070**	0.798 ± 0.117	0.799 ± 0.117	0.771 ± 0.144	0.728 ± 0.125
$flare-F$	0.738 ± 0.040	0.689 ± 0.046	0.732 ± 0.044	0.743 ± 0.049	0.720 ± 0.042	**0.777 ± 0.047**	0.738 ± 0.045	0.738 ± 0.040	0.681 ± 0.073	0.575 ± 0.068
$kddcup-buffer\_overflow\_vs\_back$	0.993 ± 0.013	0.997 ± 0.010	0.993 ± 0.013	0.993 ± 0.013	0.993 ± 0.013	**1.000 ± 0.000**	0.993 ± 0.013	0.993 ± 0.013	0.997 ± 0.010	0.997 ± 0.010
$kddcup-rootkit-imap\_vs\_back$	**0.977 ± 0.023**	**0.977 ± 0.023**	**0.977 ± 0.023**	**0.977 ± 0.023**	**0.977 ± 0.023**	**0.977 ± 0.023**	0.973 ± 0.030	**0.977 ± 0.023**	0.977 ± 0.042	0.977 ± 0.042
$kr-vs-k-zero\_vs\_eight$	0.937 ± 0.052	0.934 ± 0.057	0.937 ± 0.052	0.937 ± 0.052	0.934 ± 0.057	**0.950 ± 0.050**	0.934 ± 0.057	0.937 ± 0.052	0.845 ± 0.076	0.701 ± 0.041
$poker-8-9_vs5$	0.625 ± 0.067	0.588 ± 0.066	0.617 ± 0.058	0.613 ± 0.056	0.598 ± 0.064	**0.677 ± 0.074**	0.614 ± 0.047	0.625 ± 0.067	0.634 ± 0.079	0.562 ± 0.085
$poker-8-9_vs6$	0.757 ± 0.064	0.724 ± 0.047	0.757 ± 0.064	0.744 ± 0.054	0.732 ± 0.063	0.937 ± 0.055	0.749 ± 0.086	0.757 ± 0.064	0.979 ± 0.041	**0.986 ± 0.037**
$poker-8_vs6$	0.783 ± 0.073	0.712 ± 0.059	0.783 ± 0.073	0.789 ± 0.066	0.759 ± 0.081	**0.968 ± 0.051**	0.789 ± 0.065	0.783 ± 0.073	0.869 ± 0.123	0.950 ± 0.107
$poker-9_vs7$	0.636 ± 0.104	0.624 ± 0.097	0.636 ± 0.104	0.636 ± 0.104	0.648 ± 0.122	0.680 ± 0.135	0.611 ± 0.087	0.636 ± 0.104	**0.729 ± 0.163**	0.686 ± 0.139
$winequality-red-3_vs5$	0.540 ± 0.049	0.542 ± 0.050	0.539 ± 0.049	0.540 ± 0.049	0.551 ± 0.051	**0.608 ± 0.057**	0.550 ± 0.050	0.540 ± 0.049	0.539 ± 0.096	0.526 ± 0.117
$winequality-red-4$	0.638 ± 0.034	0.611 ± 0.029	0.632 ± 0.033	**0.644 ± 0.035**	0.629 ± 0.036	0.617 ± 0.029	0.641 ± 0.034	0.637 ± 0.033	0.548 ± 0.026	0.599 ± 0.051
$winequality-red-8_vs6-7$	0.571 ± 0.054	0.550 ± 0.055	**0.572 ± 0.054**	0.571 ± 0.054	0.531 ± 0.052	0.541 ± 0.063	0.557 ± 0.048	0.571 ± 0.054	0.542 ± 0.067	0.518 ± 0.081
$winequality-red-8_vs6$	0.614 ± 0.031	0.610 ± 0.024	0.615 ± 0.031	0.615 ± 0.030	0.620 ± 0.032	0.627 ± 0.065	0.625 ± 0.030	0.614 ± 0.031	**0.637 ± 0.044**	0.609 ± 0.096
$winequality-white-3-9_vs5$	0.565 ± 0.051	0.529 ± 0.045	0.559 ± 0.057	0.560 ± 0.048	0.541 ± 0.039	**0.685 ± 0.039**	0.557 ± 0.051	0.565 ± 0.051	0.519 ± 0.064	0.528 ± 0.055
$winequality-white-3_vs7$	0.533 ± 0.049	0.528 ± 0.041	0.549 ± 0.066	0.547 ± 0.067	0.535 ± 0.044	**0.756 ± 0.077**	0.539 ± 0.047	0.533 ± 0.049	0.561 ± 0.063	0.607 ± 0.121
$winequality-white-9_vs4$	0.815 ± 0.134	0.815 ± 0.134	0.815 ± 0.134	0.699 ± 0.218	**0.815 ± 0.134**	0.695 ± 0.214	0.815 ± 0.134	0.815 ± 0.134	0.707 ± 0.175	0.707 ± 0.175
$zoo-3$	**0.611 ± 0.162**	**0.611 ± 0.162**	**0.611 ± 0.162**	0.597 ± 0.163	**0.611 ± 0.162**	0.595 ± 0.161	**0.611 ± 0.162**	**0.611 ± 0.162**	0.547 ± 0.174	0.547 ± 0.174
$ecoli1$	0.885 ± 0.027	0.886 ± 0.020	0.886 ± 0.020	0.884 ± 0.020	0.883 ± 0.024	**0.889 ± 0.015**	0.881 ± 0.022	0.884 ± 0.026	0.875 ± 0.033	0.576 ± 0.145
$ecoli2$	0.940 ± 0.024	0.932 ± 0.034	0.941 ± 0.024	0.940 ± 0.026	0.939 ± 0.025	0.938 ± 0.021	**0.942 ± 0.022**	0.939 ± 0.025	0.860 ± 0.082	0.604 ± 0.146
$ecoli3$	0.889 ± 0.022	0.893 ± 0.024	0.887 ± 0.022	**0.894 ± 0.017**	0.894 ± 0.021	0.893 ± 0.019	0.887 ± 0.021	0.892 ± 0.021	0.858 ± 0.056	0.602 ± 0.169
$glass0$	0.779 ± 0.040	0.790 ± 0.020	0.785 ± 0.039	0.778 ± 0.037	**0.793 ± 0.038**	0.771 ± 0.032	0.792 ± 0.034	0.778 ± 0.036	0.742 ± 0.032	0.724 ± 0.065
$glass1$	0.701 ± 0.038	0.689 ± 0.043	0.690 ± 0.038	0.696 ± 0.034	**0.703 ± 0.040**	0.677 ± 0.038	0.698 ± 0.039	0.701 ± 0.044	0.694 ± 0.062	0.598 ± 0.048
$haberman$	0.611 ± 0.026	**0.642 ± 0.035**	0.619 ± 0.026	0.597 ± 0.031	0.611 ± 0.039	0.627 ± 0.027	0.614 ± 0.034	0.611 ± 0.028	0.613 ± 0.039	0.559 ± 0.092
$page-blocks0$	0.931 ± 0.008	0.900 ± 0.008	0.931 ± 0.007	0.923 ± 0.009	0.931 ± 0.008	0.848 ± 0.016	0.930 ± 0.008	**0.932 ± 0.008**	0.879 ± 0.034	0.892 ± 0.025
$pima$	0.727 ± 0.030	0.722 ± 0.027	0.729 ± 0.023	0.726 ± 0.022	0.729 ± 0.025	0.730 ± 0.017	**0.732 ± 0.028**	0.728 ± 0.032	0.706 ± 0.018	0.666 ± 0.030
$vehicle1$	0.789 ± 0.027	0.749 ± 0.023	0.790 ± 0.026	0.790 ± 0.020	0.798 ± 0.015	0.792 ± 0.023	0.791 ± 0.019	0.793 ± 0.025	0.695 ± 0.047	**0.804 ± 0.018**
$vehicle3$	0.789 ± 0.022	0.734 ± 0.017	0.790 ± 0.018	**0.797 ± 0.026**	0.788 ± 0.016	0.789 ± 0.023	0.789 ± 0.018	0.790 ± 0.021	0.650 ± 0.021	0.789 ± 0.027
$yeast1$	0.711 ± 0.013	0.695 ± 0.013	0.712 ± 0.015	0.707 ± 0.020	0.709 ± 0.015	**0.713 ± 0.011**	0.709 ± 0.014	0.712 ± 0.013	0.656 ± 0.038	0.507 ± 0.002
$yeast3$	0.893 ± 0.022	0.884 ± 0.027	0.894 ± 0.020	0.893 ± 0.026	0.888 ± 0.020	**0.896 ± 0.020**	0.895 ± 0.023	0.893 ± 0.022	0.867 ± 0.019	0.504 ± 0.003

Table 3. KNN – BAC

Dataset name	SMOTE	polynom-fit-SMOTE	Lee	SMOBD	G-SMOTE	LVQ-SMOTE	Assembled-SMOTE	SMOTE-TomekLinks	JFOTS-pr	JFOTS-rc
$abalone19$	0.568 ± 0.069	0.519 ± 0.028	0.568 ± 0.069	0.567 ± 0.069	0.549 ± 0.043	0.554 ± 0.047	0.565 ± 0.062	**0.568 ± 0.069**	0.520 ± 0.030	0.497 ± 0.011
$abalone9-18$	0.719 ± 0.033	0.704 ± 0.044	0.704 ± 0.034	0.709 ± 0.040	0.701 ± 0.046	0.692 ± 0.033	0.714 ± 0.041	**0.720 ± 0.033**	0.645 ± 0.066	0.572 ± 0.063
$ecoli-0-1-3-7\_vs2-6$	0.834 ± 0.075	**0.835 ± 0.076**	0.834 ± 0.074	0.833 ± 0.074	0.834 ± 0.076	0.833 ± 0.076	0.834 ± 0.075	0.834 ± 0.075	0.800 ± 0.108	0.800 ± 0.106
$glass-0-1-6\_vs2$	0.718 ± 0.086	0.682 ± 0.045	0.713 ± 0.081	0.714 ± 0.084	0.701 ± 0.056	0.657 ± 0.063	**0.725 ± 0.082**	0.717 ± 0.085	0.638 ± 0.040	0.606 ± 0.086
$glass-0-1-6\_vs5$	0.914 ± 0.097	**0.915 ± 0.098**	0.914 ± 0.097	0.914 ± 0.098	0.894 ± 0.133	0.881 ± 0.120	0.914 ± 0.097	0.914 ± 0.097	0.878 ± 0.118	0.842 ± 0.192
$glass2$	0.630 ± 0.134	0.633 ± 0.137	0.637 ± 0.151	**0.644 ± 0.141**	0.623 ± 0.130	0.627 ± 0.112	0.635 ± 0.145	0.628 ± 0.133	0.640 ± 0.098	0.583 ± 0.096
$glass4$	0.901 ± 0.057	**0.903 ± 0.068**	0.876 ± 0.056	0.885 ± 0.056	0.879 ± 0.083	0.863 ± 0.038	0.892 ± 0.048	0.901 ± 0.057	0.818 ± 0.061	0.752 ± 0.141
$glass5$	0.931 ± 0.110	**0.933 ± 0.110**	0.921 ± 0.116	0.931 ± 0.110	0.913 ± 0.114	0.862 ± 0.108	0.931 ± 0.110	0.931 ± 0.110	0.821 ± 0.114	0.867 ± 0.136
$page-blocks-1-3\_vs4$	**0.983 ± 0.023**	0.978 ± 0.024	0.982 ± 0.023	**0.983 ± 0.023**	0.952 ± 0.096	0.980 ± 0.016	0.976 ± 0.025	**0.983 ± 0.023**	0.859 ± 0.104	0.835 ± 0.086
$yeast-0-5-6-7-9\_vs4$	0.727 ± 0.045	**0.740 ± 0.038**	0.730 ± 0.040	0.733 ± 0.043	0.729 ± 0.053	0.731 ± 0.045	0.718 ± 0.035	0.725 ± 0.043	0.671 ± 0.068	0.498 ± 0.002
$yeast-1-2-8-9\_vs7$	0.672 ± 0.048	**0.685 ± 0.045**	0.668 ± 0.040	0.663 ± 0.040	0.649 ± 0.065	0.660 ± 0.052	0.667 ± 0.051	0.672 ± 0.048	0.586 ± 0.044	0.500 ± 0.000
$yeast-1-4-5-8\_vs7$	0.611 ± 0.040	0.595 ± 0.062	**0.614 ± 0.044**	0.594 ± 0.052	0.572 ± 0.052	0.577 ± 0.042	0.605 ± 0.039	0.611 ± 0.038	0.536 ± 0.036	0.500 ± 0.000
$yeast-1\_vs7$	0.723 ± 0.036	0.723 ± 0.042	0.726 ± 0.035	**0.732 ± 0.042**	0.702 ± 0.055	0.690 ± 0.033	0.701 ± 0.051	0.722 ± 0.035	0.608 ± 0.035	0.499 ± 0.002
$yeast-2\_vs4$	0.873 ± 0.030	0.863 ± 0.035	0.869 ± 0.033	0.871 ± 0.030	0.873 ± 0.029	0.861 ± 0.034	**0.875 ± 0.027**	0.874 ± 0.030	0.842 ± 0.048	0.603 ± 0.158
$yeast-2\_vs8$	0.802 ± 0.051	**0.810 ± 0.046**	0.794 ± 0.045	0.801 ± 0.053	0.803 ± 0.044	0.806 ± 0.057	0.798 ± 0.051	0.801 ± 0.050	0.772 ± 0.051	0.534 ± 0.105
$yeast4$	0.729 ± 0.025	0.733 ± 0.034	0.729 ± 0.027	0.729 ± 0.027	0.713 ± 0.033	0.727 ± 0.045	**0.735 ± 0.039**	0.729 ± 0.025	0.662 ± 0.034	0.500 ± 0.000
$yeast5$	0.929 ± 0.036	0.920 ± 0.035	0.925 ± 0.036	0.922 ± 0.035	0.910 ± 0.034	**0.933 ± 0.049**	0.929 ± 0.034	0.929 ± 0.036	0.865 ± 0.054	0.500 ± 0.000
$yeast6$	0.814 ± 0.044	0.816 ± 0.038	0.815 ± 0.044	0.813 ± 0.044	0.812 ± 0.046	**0.829 ± 0.035**	0.809 ± 0.043	0.814 ± 0.044	0.733 ± 0.073	0.500 ± 0.000
$cleveland-0\_vs4$	0.876 ± 0.069	0.868 ± 0.036	0.881 ± 0.029	0.875 ± 0.068	0.875 ± 0.033	0.813 ± 0.069	**0.883 ± 0.024**	0.876 ± 0.069	0.738 ± 0.086	0.719 ± 0.135
$ecoli-0-1-4-7\_vs2-3-5-6$	0.883 ± 0.018	0.878 ± 0.024	0.880 ± 0.018	0.876 ± 0.018	0.883 ± 0.022	0.877 ± 0.028	0.882 ± 0.021	**0.884 ± 0.018**	0.739 ± 0.121	0.568 ± 0.099
$ecoli-0-1\_vs2-3-5$	0.884 ± 0.024	**0.887 ± 0.026**	0.878 ± 0.025	0.880 ± 0.025	0.879 ± 0.024	0.875 ± 0.042	0.886 ± 0.030	0.884 ± 0.024	0.821 ± 0.104	0.689 ± 0.160
$ecoli-0-2-6-7\_vs3-5$	0.839 ± 0.051	0.839 ± 0.051	0.842 ± 0.061	0.840 ± 0.053	**0.844 ± 0.057**	0.840 ± 0.038	0.838 ± 0.049	0.839 ± 0.050	0.810 ± 0.041	0.588 ± 0.122
$ecoli-0-6-7\_vs3-5$	0.851 ± 0.054	0.855 ± 0.053	0.854 ± 0.064	**0.858 ± 0.050**	0.848 ± 0.061	0.841 ± 0.052	0.851 ± 0.052	0.852 ± 0.053	0.813 ± 0.051	0.614 ± 0.143
$ecoli-0-6-7\_vs5$	0.866 ± 0.047	0.865 ± 0.056	0.867 ± 0.045	0.867 ± 0.053	0.870 ± 0.046	**0.870 ± 0.036**	0.865 ± 0.049	0.867 ± 0.048	0.830 ± 0.065	0.589 ± 0.123
$glass-0-1-4-6\_vs2$	**0.674 ± 0.098**	0.665 ± 0.088	0.671 ± 0.103	0.673 ± 0.099	0.645 ± 0.101	0.624 ± 0.058	0.666 ± 0.105	0.669 ± 0.095	0.549 ± 0.071	0.582 ± 0.110
$glass-0-1-5\_vs2$	0.676 ± 0.059	0.674 ± 0.055	**0.684 ± 0.063**	0.669 ± 0.065	0.660 ± 0.079	0.631 ± 0.060	0.683 ± 0.059	0.675 ± 0.060	0.657 ± 0.088	0.622 ± 0.128
$yeast-0-2-5-6\_vs3-7-8-9$	0.772 ± 0.031	0.768 ± 0.025	**0.775 ± 0.028**	0.772 ± 0.026	0.772 ± 0.031	0.764 ± 0.033	0.772 ± 0.031	0.773 ± 0.032	0.684 ± 0.075	0.533 ± 0.058
$yeast-0-3-5-9\_vs7-8$	0.679 ± 0.037	0.675 ± 0.035	0.679 ± 0.037	0.670 ± 0.043	0.678 ± 0.036	**0.681 ± 0.050**	0.669 ± 0.030	0.680 ± 0.038	0.569 ± 0.063	0.502 ± 0.011
$abalone-17\_vs7-8-9-10$	0.749 ± 0.046	0.719 ± 0.034	**0.752 ± 0.045**	0.745 ± 0.046	0.718 ± 0.044	0.739 ± 0.042	0.743 ± 0.044	0.749 ± 0.046	0.606 ± 0.033	0.582 ± 0.077
$abalone-19\_vs10-11-12-13$	0.583 ± 0.037	0.551 ± 0.025	0.587 ± 0.040	**0.589 ± 0.047**	0.558 ± 0.049	0.569 ± 0.045	0.570 ± 0.044	0.582 ± 0.037	0.535 ± 0.032	0.515 ± 0.033
$abalone-20\_vs8-9-10$	0.750 ± 0.055	0.662 ± 0.025	0.758 ± 0.062	**0.761 ± 0.067**	0.667 ± 0.058	0.709 ± 0.052	0.743 ± 0.082	0.746 ± 0.058	0.635 ± 0.056	0.549 ± 0.077
$abalone-21\_vs8$	**0.830 ± 0.084**	0.771 ± 0.079	0.815 ± 0.074	0.815 ± 0.076	0.797 ± 0.077	0.794 ± 0.065	0.822 ± 0.080	0.830 ± 0.084	0.703 ± 0.095	0.667 ± 0.121
$flare-F$	0.693 ± 0.044	0.674 ± 0.035	0.690 ± 0.050	0.693 ± 0.044	0.671 ± 0.041	0.693 ± 0.036	**0.694 ± 0.041**	0.692 ± 0.044	0.552 ± 0.042	0.504 ± 0.009
$kddcup-buffer\_overflow\_vs\_back$	0.957 ± 0.047	0.957 ± 0.047	0.957 ± 0.047	0.957 ± 0.047	0.947 ± 0.050	**0.960 ± 0.042**	0.947 ± 0.043	0.957 ± 0.047	0.957 ± 0.045	0.957 ± 0.045
$kddcup-rootkit-imap\_vs\_back$	**0.973 ± 0.022**	0.964 ± 0.040	**0.973 ± 0.022**	**0.973 ± 0.022**	0.955 ± 0.045	0.945 ± 0.027	0.955 ± 0.050	**0.973 ± 0.022**	0.964 ± 0.040	0.964 ± 0.040
$kr-vs-k-zero\_vs\_eight$	0.940 ± 0.050	0.930 ± 0.053	0.944 ± 0.050	0.944 ± 0.049	0.933 ± 0.048	**0.944 ± 0.060**	0.929 ± 0.060	0.940 ± 0.050	0.757 ± 0.163	0.500 ± 0.000
$poker-8-9\_vs5$	0.609 ± 0.059	0.578 ± 0.036	0.617 ± 0.065	0.608 ± 0.062	0.552 ± 0.036	**0.643 ± 0.048**	0.614 ± 0.061	0.609 ± 0.059	0.546 ± 0.069	0.514 ± 0.036
$poker-8-9\_vs6$	0.949 ± 0.040	0.912 ± 0.033	0.949 ± 0.039	0.949 ± 0.039	0.890 ± 0.048	0.976 ± 0.027	0.937 ± 0.031	0.949 ± 0.040	**0.988 ± 0.038**	0.976 ± 0.048
$poker-8\_vs6$	0.942 ± 0.061	0.851 ± 0.057	0.942 ± 0.061	0.942 ± 0.061	0.899 ± 0.064	**0.978 ± 0.018**	0.932 ± 0.078	0.942 ± 0.061	0.906 ± 0.122	0.931 ± 0.113
$poker-9\_vs7$	0.839 ± 0.152	**0.839 ± 0.152**	0.839 ± 0.152	**0.839 ± 0.152**	0.827 ± 0.144	0.795 ± 0.125	0.828 ± 0.145	0.839 ± 0.152	0.793 ± 0.233	0.806 ± 0.192
$winequality-red-3\_vs5$	0.584 ± 0.061	0.577 ± 0.053	0.584 ± 0.061	0.583 ± 0.061	0.578 ± 0.055	**0.592 ± 0.064**	0.575 ± 0.052	0.584 ± 0.061	0.543 ± 0.069	0.493 ± 0.033
$winequality-red-4$	0.597 ± 0.027	0.583 ± 0.043	0.596 ± 0.029	0.596 ± 0.021	0.584 ± 0.037	0.557 ± 0.024	**0.602 ± 0.024**	0.597 ± 0.026	0.540 ± 0.025	0.521 ± 0.038
$winequality-red-8\_vs6-7$	0.530 ± 0.064	**0.543 ± 0.068**	0.536 ± 0.063	0.537 ± 0.063	0.525 ± 0.044	0.530 ± 0.060	0.534 ± 0.055	0.531 ± 0.064	0.542 ± 0.058	0.534 ± 0.070
$winequality-red-8\_vs6$	**0.635 ± 0.050**	0.630 ± 0.052	0.624 ± 0.055	0.635 ± 0.051	0.604 ± 0.058	0.600 ± 0.052	0.632 ± 0.043	0.635 ± 0.050	0.593 ± 0.064	0.584 ± 0.077
$winequality-white-3-9\_vs5$	**0.618 ± 0.030**	0.613 ± 0.033	0.617 ± 0.035	0.617 ± 0.034	0.574 ± 0.028	0.602 ± 0.053	0.599 ± 0.034	**0.618 ± 0.030**	0.547 ± 0.046	0.518 ± 0.029
$winequality-white-3\_vs7$	0.630 ± 0.086	0.573 ± 0.064	0.633 ± 0.092	0.619 ± 0.094	0.581 ± 0.062	**0.644 ± 0.084**	0.630 ± 0.099	0.630 ± 0.086	0.585 ± 0.074	0.599 ± 0.089
$winequality-white-9\_vs4$	0.878 ± 0.091	**0.882 ± 0.095**	0.878 ± 0.091	0.766 ± 0.164	0.881 ± 0.094	0.774 ± 0.172	0.878 ± 0.091	0.878 ± 0.091	0.726 ± 0.177	0.726 ± 0.177
$zoo-3$	**0.827 ± 0.157**	**0.827 ± 0.157**	**0.827 ± 0.157**	0.717 ± 0.191	**0.827 ± 0.157**	0.692 ± 0.167	**0.827 ± 0.157**	**0.827 ± 0.157**	0.630 ± 0.130	0.630 ± 0.130
$ecoli1$	0.864 ± 0.026	0.863 ± 0.019	0.868 ± 0.030	**0.871 ± 0.024**	0.870 ± 0.026	0.864 ± 0.028	0.863 ± 0.033	0.867 ± 0.023	0.802 ± 0.055	0.563 ± 0.127
$ecoli2$	0.915 ± 0.028	**0.922 ± 0.025**	0.913 ± 0.027	0.914 ± 0.027	0.919 ± 0.029	0.911 ± 0.021	0.914 ± 0.027	0.915 ± 0.028	0.837 ± 0.086	0.584 ± 0.138
$ecoli3$	0.866 ± 0.019	0.857 ± 0.022	**0.868 ± 0.015**	0.859 ± 0.025	0.851 ± 0.035	0.851 ± 0.028	0.861 ± 0.018	0.865 ± 0.015	0.800 ± 0.053	0.575 ± 0.119
$glass0$	0.791 ± 0.035	0.799 ± 0.036	0.786 ± 0.034	0.794 ± 0.028	0.793 ± 0.028	0.787 ± 0.041	0.800 ± 0.030	**0.800 ± 0.034**	0.778 ± 0.047	0.700 ± 0.116
$glass1$	0.738 ± 0.047	**0.749 ± 0.053**	0.745 ± 0.044	0.748 ± 0.037	0.739 ± 0.042	0.740 ± 0.031	0.736 ± 0.030	0.738 ± 0.051	0.698 ± 0.068	0.551 ± 0.081
$haberman$	0.601 ± 0.034	**0.616 ± 0.036**	0.587 ± 0.044	0.588 ± 0.016	0.588 ± 0.039	0.587 ± 0.030	0.584 ± 0.029	0.599 ± 0.030	0.600 ± 0.024	0.535 ± 0.074
$page-blocks0$	0.929 ± 0.010	0.911 ± 0.012	0.928 ± 0.012	0.921 ± 0.012	0.924 ± 0.011	0.887 ± 0.016	**0.931 ± 0.009**	0.930 ± 0.010	0.895 ± 0.018	0.905 ± 0.012
$pima$	0.685 ± 0.021	**0.708 ± 0.018**	0.686 ± 0.013	0.687 ± 0.016	0.683 ± 0.017	0.690 ± 0.021	0.687 ± 0.017	0.693 ± 0.024	0.686 ± 0.020	0.616 ± 0.053
$vehicle1$	0.723 ± 0.026	**0.740 ± 0.017**	0.720 ± 0.024	0.736 ± 0.025	0.726 ± 0.017	0.720 ± 0.022	0.731 ± 0.022	0.724 ± 0.027	0.667 ± 0.022	0.716 ± 0.030
$vehicle3$	0.708 ± 0.018	0.700 ± 0.029	0.712 ± 0.019	**0.718 ± 0.025**	0.709 ± 0.017	0.692 ± 0.023	0.712 ± 0.020	0.706 ± 0.020	0.656 ± 0.019	0.696 ± 0.023
$yeast1$	0.675 ± 0.010	**0.697 ± 0.012**	0.676 ± 0.010	0.676 ± 0.015	0.668 ± 0.012	0.667 ± 0.011	0.674 ± 0.013	0.678 ± 0.010	0.620 ± 0.058	0.500 ± 0.000
$yeast3$	0.873 ± 0.017	**0.874 ± 0.021**	0.874 ± 0.018	0.868 ± 0.022	0.870 ± 0.018	0.868 ± 0.017	0.874 ± 0.017	0.872 ± 0.017	0.847 ± 0.018	0.500 ± 0.000

Table 4. CART – G-mean

Dataset name	SMOTE	polynom-fit-SMOTE	Lee	SMOBD	G-SMOTE	LVQ-SMOTE	Assembled-SMOTE	SMOTE-TomekLinks	JFOTS-pr	JFOTS-rc
*abalone*19	0.365 ± 0.148	0.075 ± 0.114	0.312 ± 0.168	**0.387 ± 0.110**	0.282 ± 0.174	0.332 ± 0.116	0.358 ± 0.122	0.365 ± 0.148	0.084 ± 0.132	0.354 ± 0.206
*abalone*9 − 18	0.605 ± 0.100	0.508 ± 0.072	0.619 ± 0.082	0.639 ± 0.076	0.583 ± 0.057	**0.640 ± 0.133**	0.588 ± 0.059	0.610 ± 0.105	0.583 ± 0.073	0.442 ± 0.144
$ecoli-0-1-3-7_vs2-6$	0.723 ± 0.254	**0.793 ± 0.086**	0.723 ± 0.254	0.723 ± 0.254	**0.793 ± 0.086**	0.736 ± 0.145	0.723 ± 0.254	0.723 ± 0.254	0.594 ± 0.232	0.407 ± 0.274
$glass-0-1-6_vs2$	0.565 ± 0.089	0.461 ± 0.086	**0.614 ± 0.088**	0.573 ± 0.101	0.500 ± 0.084	0.529 ± 0.151	0.552 ± 0.155	0.564 ± 0.085	0.567 ± 0.180	0.466 ± 0.089
$glass-0-1-6_vs5$	0.829 ± 0.185	0.828 ± 0.185	0.829 ± 0.185	0.829 ± 0.185	0.733 ± 0.226	**0.872 ± 0.170**	0.829 ± 0.185	0.829 ± 0.185	0.704 ± 0.209	0.854 ± 0.204
*glass*2	0.431 ± 0.261	0.399 ± 0.218	0.402 ± 0.248	**0.495 ± 0.204**	0.443 ± 0.256	0.472 ± 0.209	0.405 ± 0.235	0.453 ± 0.267	0.422 ± 0.228	0.451 ± 0.106
*glass*4	0.841 ± 0.102	0.823 ± 0.064	0.841 ± 0.103	0.831 ± 0.101	**0.850 ± 0.087**	0.789 ± 0.113	0.840 ± 0.104	0.841 ± 0.102	0.761 ± 0.154	0.740 ± 0.159
*glass*5	0.813 ± 0.206	0.812 ± 0.205	0.813 ± 0.206	0.813 ± 0.206	0.826 ± 0.212	**0.924 ± 0.129**	0.813 ± 0.206	0.813 ± 0.206	0.796 ± 0.201	0.874 ± 0.165
$page-blocks-1-3_vs4$	0.967 ± 0.065	0.945 ± 0.069	0.962 ± 0.077	0.961 ± 0.076	0.969 ± 0.072	0.960 ± 0.056	**0.983 ± 0.034**	0.967 ± 0.065	0.895 ± 0.070	0.874 ± 0.113
$yeast-0-5-6-7-9_vs4$	0.658 ± 0.088	0.631 ± 0.068	0.683 ± 0.066	0.654 ± 0.085	0.631 ± 0.063	**0.694 ± 0.070**	0.649 ± 0.054	0.671 ± 0.056	0.603 ± 0.074	0.091 ± 0.057
$yeast-1-2-8-9_vs7$	0.475 ± 0.059	0.424 ± 0.108	0.485 ± 0.061	0.453 ± 0.100	0.477 ± 0.105	**0.598 ± 0.094**	0.475 ± 0.048	0.503 ± 0.081	0.394 ± 0.111	0.143 ± 0.028
$yeast-1-4-5-8_vs7$	0.357 ± 0.150	0.397 ± 0.066	0.350 ± 0.169	0.336 ± 0.140	0.351 ± 0.153	0.388 ± 0.102	**0.420 ± 0.060**	0.344 ± 0.142	0.196 ± 0.172	0.099 ± 0.027
$yeast-1_vs7$	0.531 ± 0.092	0.536 ± 0.090	0.515 ± 0.103	0.568 ± 0.087	0.500 ± 0.094	**0.631 ± 0.056**	0.544 ± 0.077	0.526 ± 0.084	0.439 ± 0.103	0.099 ± 0.170
$yeast-2_vs4$	0.837 ± 0.053	0.828 ± 0.065	0.858 ± 0.049	0.851 ± 0.079	0.845 ± 0.060	0.857 ± 0.046	**0.859 ± 0.048**	0.831 ± 0.042	0.800 ± 0.060	0.256 ± 0.341
$yeast-2_vs8$	0.689 ± 0.129	0.726 ± 0.093	0.737 ± 0.149	**0.750 ± 0.113**	0.723 ± 0.092	0.727 ± 0.063	0.712 ± 0.090	0.704 ± 0.128	0.715 ± 0.068	0.187 ± 0.191
*yeast*4	0.612 ± 0.076	0.541 ± 0.057	0.631 ± 0.094	0.634 ± 0.076	0.538 ± 0.073	**0.684 ± 0.077**	0.597 ± 0.139	0.614 ± 0.079	0.605 ± 0.088	0.113 ± 0.022
*yeast*5	0.848 ± 0.089	0.829 ± 0.086	0.830 ± 0.077	0.845 ± 0.081	0.838 ± 0.075	**0.873 ± 0.055**	0.858 ± 0.066	0.850 ± 0.091	0.826 ± 0.058	0.142 ± 0.009
*yeast*6	0.683 ± 0.098	0.630 ± 0.070	0.675 ± 0.103	0.707 ± 0.090	0.702 ± 0.068	**0.748 ± 0.063**	0.701 ± 0.087	0.684 ± 0.095	0.603 ± 0.088	0.188 ± 0.138
$cleveland-0_vs4$	**0.800 ± 0.067**	0.648 ± 0.257	0.753 ± 0.151	0.753 ± 0.111	0.688 ± 0.189	0.717 ± 0.060	0.782 ± 0.079	**0.800 ± 0.067**	0.725 ± 0.108	0.701 ± 0.137
$ecoli-0-1-4-7_vs2-3-5-6$	0.772 ± 0.097	0.776 ± 0.059	0.810 ± 0.047	0.771 ± 0.088	0.752 ± 0.077	**0.818 ± 0.053**	0.815 ± 0.063	0.787 ± 0.100	0.652 ± 0.161	0.244 ± 0.269
$ecoli-0-1_vs2-3-5$	0.779 ± 0.077	0.773 ± 0.149	0.759 ± 0.078	0.719 ± 0.058	0.768 ± 0.055	**0.831 ± 0.076**	0.759 ± 0.064	0.781 ± 0.077	0.709 ± 0.154	0.430 ± 0.360
$ecoli-0-2-6-7_vs3-5$	0.782 ± 0.058	0.761 ± 0.080	0.795 ± 0.067	0.807 ± 0.090	0.817 ± 0.064	**0.820 ± 0.070**	0.758 ± 0.079	0.785 ± 0.060	0.744 ± 0.074	0.292 ± 0.293
$ecoli-0-6-7_vs3-5$	0.777 ± 0.084	0.772 ± 0.059	0.795 ± 0.067	0.800 ± 0.075	**0.829 ± 0.074**	0.826 ± 0.068	0.774 ± 0.068	0.779 ± 0.084	0.743 ± 0.081	0.366 ± 0.320
$ecoli-0-6-7_vs5$	0.828 ± 0.077	0.825 ± 0.087	0.816 ± 0.076	0.827 ± 0.080	0.823 ± 0.074	**0.835 ± 0.050**	0.812 ± 0.067	0.827 ± 0.079	0.833 ± 0.106	0.363 ± 0.250
$glass-0-1-4-6_vs2$	0.487 ± 0.109	0.389 ± 0.220	0.512 ± 0.136	0.481 ± 0.121	0.509 ± 0.133	**0.597 ± 0.106**	0.424 ± 0.113	0.428 ± 0.176	0.362 ± 0.211	0.432 ± 0.067
$glass-0-1-5_vs2$	0.649 ± 0.092	0.508 ± 0.112	0.628 ± 0.114	**0.679 ± 0.142**	0.591 ± 0.125	0.534 ± 0.196	0.593 ± 0.112	0.635 ± 0.083	0.486 ± 0.172	0.366 ± 0.165
$yeast-0-2-5-6_vs3-7-8-9$	0.684 ± 0.050	0.673 ± 0.070	**0.712 ± 0.047**	0.685 ± 0.037	0.684 ± 0.042	0.703 ± 0.062	0.680 ± 0.048	0.668 ± 0.049	0.564 ± 0.122	0.493 ± 0.054
$yeast-0-3-5-9_vs7-8$	0.531 ± 0.071	0.568 ± 0.068	0.567 ± 0.069	0.576 ± 0.070	0.556 ± 0.082	**0.587 ± 0.066**	0.561 ± 0.045	0.584 ± 0.050	0.366 ± 0.169	0.153 ± 0.120
$abalone-17_vs7-8-9-10$	0.559 ± 0.073	0.546 ± 0.062	0.557 ± 0.075	0.586 ± 0.075	0.560 ± 0.081	**0.605 ± 0.036**	0.562 ± 0.067	0.557 ± 0.066	0.519 ± 0.116	0.417 ± 0.164
$abalone-19_vs10-11-12-13$	0.382 ± 0.149	0.203 ± 0.139	0.379 ± 0.154	0.382 ± 0.097	0.300 ± 0.185	**0.468 ± 0.114**	0.393 ± 0.092	0.411 ± 0.076	0.200 ± 0.180	0.316 ± 0.183
$abalone-20_vs8-9-10$	0.634 ± 0.081	0.371 ± 0.210	0.593 ± 0.123	0.611 ± 0.088	0.512 ± 0.132	**0.771 ± 0.078**	0.609 ± 0.098	0.634 ± 0.081	0.476 ± 0.171	0.484 ± 0.102
$abalone-21_vs8$	0.633 ± 0.253	0.554 ± 0.125	0.604 ± 0.221	0.585 ± 0.241	0.637 ± 0.109	**0.768 ± 0.087**	0.586 ± 0.234	0.642 ± 0.259	0.626 ± 0.200	0.473 ± 0.204
$flare-F$	0.367 ± 0.098	0.422 ± 0.066	0.394 ± 0.110	0.419 ± 0.093	0.444 ± 0.042	0.425 ± 0.082	0.411 ± 0.105	0.421 ± 0.080	**0.564 ± 0.122**	0.413 ± 0.119
$kddcup-buffer\_overflow\_vs\_back$	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**
$kddcup-rootkit-imap\_vs\_back$	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	0.981 ± 0.038	0.981 ± 0.038
$kr-vs-k-zero\_vs\_eight$	0.959 ± 0.053	0.963 ± 0.055	**0.963 ± 0.055**	0.963 ± 0.055	0.963 ± 0.039	0.949 ± 0.083	0.951 ± 0.063	0.959 ± 0.053	0.731 ± 0.119	0.697 ± 0.043
$poker-8-9_vs5$	0.386 ± 0.143	0.300 ± 0.205	0.386 ± 0.080	0.404 ± 0.078	0.305 ± 0.131	**0.430 ± 0.145**	0.323 ± 0.073	0.386 ± 0.143	0.165 ± 0.210	0.330 ± 0.202
$poker-8-9_vs6$	0.595 ± 0.142	0.787 ± 0.178	0.573 ± 0.155	0.529 ± 0.151	0.456 ± 0.182	0.465 ± 0.260	0.524 ± 0.228	0.595 ± 0.142	**0.999 ± 0.001**	0.999 ± 0.001
$poker-8_vs6$	0.569 ± 0.225	0.537 ± 0.295	0.615 ± 0.179	0.590 ± 0.164	0.667 ± 0.286	0.524 ± 0.289	0.559 ± 0.221	0.569 ± 0.225	**0.924 ± 0.094**	0.924 ± 0.093
$poker-9_vs7$	0.267 ± 0.274	0.246 ± 0.246	0.267 ± 0.274	0.267 ± 0.274	0.314 ± 0.264	0.373 ± 0.324	0.267 ± 0.273	0.267 ± 0.274	**0.467 ± 0.418**	0.449 ± 0.338
$winequality-red-3_vs5$	0.132 ± 0.201	0.151 ± 0.235	0.088 ± 0.176	0.132 ± 0.202	0.177 ± 0.217	**0.325 ± 0.219**	0.150 ± 0.234	0.132 ± 0.201	0.133 ± 0.203	0.218 ± 0.218
$winequality-red-4$	0.391 ± 0.120	0.325 ± 0.083	**0.458 ± 0.069**	0.446 ± 0.078	0.391 ± 0.086	0.446 ± 0.075	0.401 ± 0.044	0.390 ± 0.123	0.316 ± 0.091	0.393 ± 0.111
$winequality-red-8_vs6-7$	0.314 ± 0.168	0.339 ± 0.185	0.327 ± 0.174	0.352 ± 0.188	0.385 ± 0.148	**0.395 ± 0.095**	0.312 ± 0.174	0.314 ± 0.168	0.283 ± 0.193	0.201 ± 0.213
$winequality-red-8_vs6$	0.498 ± 0.107	0.479 ± 0.123	0.491 ± 0.099	0.463 ± 0.187	0.448 ± 0.181	0.514 ± 0.115	**0.538 ± 0.107**	0.498 ± 0.107	0.427 ± 0.092	0.327 ± 0.229
$winequality-white-3-9_vs5$	0.361 ± 0.207	0.293 ± 0.173	0.285 ± 0.201	0.319 ± 0.189	0.198 ± 0.218	**0.557 ± 0.102**	0.312 ± 0.129	0.361 ± 0.207	0.230 ± 0.158	0.168 ± 0.137
$winequality-white-3_vs7$	0.296 ± 0.165	0.317 ± 0.190	0.372 ± 0.208	0.383 ± 0.159	0.429 ± 0.169	**0.690 ± 0.122**	0.221 ± 0.193	0.296 ± 0.165	0.319 ± 0.121	0.347 ± 0.249
$winequality-white-9_vs4$	**0.588 ± 0.329**	0.530 ± 0.275	0.587 ± 0.328	0.588 ± 0.327	0.560 ± 0.305	0.558 ± 0.302	0.587 ± 0.328	**0.588 ± 0.329**	0.263 ± 0.325	0.263 ± 0.325
zoo−3	0.451 ± 0.391	0.394 ± 0.329	0.496 ± 0.344	0.480 ± 0.336	0.424 ± 0.362	**0.656 ± 0.267**	0.467 ± 0.313	0.451 ± 0.391	0.321 ± 0.266	0.321 ± 0.266
*ecoli*1	0.835 ± 0.063	0.811 ± 0.044	0.821 ± 0.056	0.830 ± 0.045	0.832 ± 0.045	0.839 ± 0.037	0.814 ± 0.054	**0.857 ± 0.044**	0.737 ± 0.077	0.204 ± 0.285
*ecoli*2	0.850 ± 0.032	0.831 ± 0.040	0.844 ± 0.036	0.844 ± 0.042	0.842 ± 0.031	**0.863 ± 0.038**	0.846 ± 0.046	0.850 ± 0.032	0.756 ± 0.103	0.275 ± 0.300
*ecoli*3	0.719 ± 0.063	0.719 ± 0.083	0.748 ± 0.084	0.754 ± 0.061	0.747 ± 0.065	**0.828 ± 0.054**	0.758 ± 0.063	0.732 ± 0.067	0.738 ± 0.062	0.262 ± 0.268
*glass*0	0.763 ± 0.035	0.766 ± 0.065	0.765 ± 0.043	0.784 ± 0.035	0.774 ± 0.042	**0.800 ± 0.041**	0.791 ± 0.040	0.772 ± 0.025	0.740 ± 0.058	0.651 ± 0.093
*glass*1	0.716 ± 0.029	**0.727 ± 0.034**	0.723 ± 0.058	0.723 ± 0.060	0.708 ± 0.049	0.714 ± 0.047	0.723 ± 0.062	0.712 ± 0.036	0.657 ± 0.110	0.488 ± 0.104
haberman	0.564 ± 0.045	0.542 ± 0.034	0.546 ± 0.061	0.531 ± 0.060	0.542 ± 0.069	0.559 ± 0.043	0.533 ± 0.074	**0.573 ± 0.056**	0.534 ± 0.047	0.465 ± 0.089
page−*blocks*0	0.915 ± 0.012	0.895 ± 0.011	0.913 ± 0.011	0.912 ± 0.008	0.903 ± 0.010	0.896 ± 0.010	**0.918 ± 0.012**	0.916 ± 0.008	0.904 ± 0.014	0.891 ± 0.016
pima	0.659 ± 0.021	0.666 ± 0.026	0.653 ± 0.022	0.658 ± 0.016	0.655 ± 0.024	**0.674 ± 0.027**	0.651 ± 0.023	0.664 ± 0.026	0.651 ± 0.031	0.581 ± 0.055
*vehicle*1	0.649 ± 0.031	0.651 ± 0.027	0.663 ± 0.042	0.654 ± 0.031	0.650 ± 0.033	**0.675 ± 0.025**	0.660 ± 0.029	0.661 ± 0.021	0.645 ± 0.023	0.645 ± 0.025
*vehicle*3	0.652 ± 0.027	**0.677 ± 0.026**	0.636 ± 0.027	0.665 ± 0.033	0.655 ± 0.019	0.675 ± 0.015	0.659 ± 0.027	0.653 ± 0.015	0.645 ± 0.044	0.667 ± 0.026
*yeast*1	0.633 ± 0.020	0.640 ± 0.018	0.642 ± 0.019	0.639 ± 0.013	0.638 ± 0.017	**0.644 ± 0.021**	0.641 ± 0.022	0.628 ± 0.010	0.587 ± 0.064	0.118 ± 0.016
*yeast*3	0.859 ± 0.032	0.822 ± 0.038	0.858 ± 0.027	0.843 ± 0.017	0.841 ± 0.028	0.855 ± 0.030	0.847 ± 0.035	**0.862 ± 0.033**	0.814 ± 0.035	0.113 ± 0.031

Table 5. SVM – G-mean

Dataset name	SMOTE	polynom-fit-SMOTE	Lee	SMOBD	G-SMOTE	LVQ-SMOTE	Assembled-SMOTE	SMOTE-TomekLinks	JFOTS-pr	JFOTS-rc
$abalone19$	0.500 ± 0.124	0.397 ± 0.159	0.501 ± 0.119	0.509 ± 0.129	0.511 ± 0.111	**0.618 ± 0.081**	0.500 ± 0.124	0.500 ± 0.124	0.569 ± 0.152	0.548 ± 0.125
$abalone9-18$	0.721 ± 0.064	0.649 ± 0.055	0.731 ± 0.043	0.736 ± 0.051	0.725 ± 0.061	**0.769 ± 0.051**	0.723 ± 0.046	0.721 ± 0.064	0.602 ± 0.109	0.638 ± 0.113
$ecoli-0-1-3-7\_vs2-6$	0.826 ± 0.097	**0.828 ± 0.099**	0.821 ± 0.095	0.824 ± 0.097	0.824 ± 0.100	0.813 ± 0.098	0.826 ± 0.097	0.826 ± 0.097	0.821 ± 0.140	0.818 ± 0.140
$glass-0-1-6\_vs2$	0.722 ± 0.120	0.660 ± 0.109	0.732 ± 0.102	0.730 ± 0.089	0.655 ± 0.115	0.551 ± 0.150	**0.732 ± 0.084**	0.721 ± 0.121	0.712 ± 0.100	0.609 ± 0.144
$glass-0-1-6\_vs5$	0.791 ± 0.132	0.747 ± 0.164	0.791 ± 0.132	0.791 ± 0.132	0.770 ± 0.174	0.812 ± 0.193	0.791 ± 0.132	0.791 ± 0.132	0.713 ± 0.256	**0.841 ± 0.201**
$glass2$	0.546 ± 0.287	0.528 ± 0.283	0.554 ± 0.287	0.538 ± 0.284	0.543 ± 0.292	**0.593 ± 0.302**	0.552 ± 0.291	0.546 ± 0.286	0.550 ± 0.235	0.552 ± 0.163
$glass4$	**0.880 ± 0.113**	0.827 ± 0.153	0.866 ± 0.136	0.854 ± 0.158	0.869 ± 0.123	0.854 ± 0.136	0.862 ± 0.100	**0.880 ± 0.113**	0.799 ± 0.090	0.772 ± 0.158
$glass5$	0.786 ± 0.143	0.774 ± 0.139	0.800 ± 0.134	0.800 ± 0.134	0.775 ± 0.131	0.826 ± 0.200	0.786 ± 0.143	0.786 ± 0.143	0.751 ± 0.133	**0.848 ± 0.154**
$page-blocks-1-3\_vs\_4$	0.891 ± 0.135	0.759 ± 0.097	**0.896 ± 0.133**	0.895 ± 0.133	0.890 ± 0.144	0.777 ± 0.061	0.873 ± 0.141	0.891 ± 0.135	0.799 ± 0.091	0.853 ± 0.081
$yeast-0-5-6-7-9\_vs4$	0.732 ± 0.057	0.716 ± 0.046	0.749 ± 0.047	0.734 ± 0.060	0.730 ± 0.065	**0.753 ± 0.037**	0.733 ± 0.048	0.729 ± 0.058	0.639 ± 0.098	0.091 ± 0.057
$yeast-1-2-8-9\_vs7$	0.557 ± 0.067	0.510 ± 0.119	0.563 ± 0.075	0.553 ± 0.075	0.567 ± 0.071	**0.624 ± 0.106**	0.553 ± 0.090	0.564 ± 0.056	0.452 ± 0.120	0.143 ± 0.028
$yeast-1-4-5-8\_vs7$	0.510 ± 0.079	0.480 ± 0.091	0.495 ± 0.076	0.498 ± 0.064	0.513 ± 0.095	**0.540 ± 0.073**	0.487 ± 0.065	0.510 ± 0.079	0.428 ± 0.156	0.099 ± 0.027
$yeast-1\_vs7$	0.672 ± 0.048	0.637 ± 0.060	0.675 ± 0.045	**0.675 ± 0.050**	0.627 ± 0.090	0.661 ± 0.077	0.664 ± 0.048	0.671 ± 0.049	0.504 ± 0.109	0.099 ± 0.168
$yeast-2\_vs4$	0.863 ± 0.044	0.855 ± 0.046	0.868 ± 0.044	**0.869 ± 0.051**	0.864 ± 0.052	0.865 ± 0.037	0.862 ± 0.053	0.863 ± 0.044	0.837 ± 0.037	0.282 ± 0.380
$yeast-2\_vs8$	0.705 ± 0.063	0.737 ± 0.069	0.718 ± 0.058	0.727 ± 0.059	0.704 ± 0.062	**0.767 ± 0.086**	0.705 ± 0.101	0.705 ± 0.063	0.718 ± 0.109	0.184 ± 0.184
$yeast4$	0.749 ± 0.040	0.718 ± 0.045	0.754 ± 0.049	0.753 ± 0.038	0.742 ± 0.042	**0.784 ± 0.039**	0.740 ± 0.030	0.749 ± 0.040	0.627 ± 0.044	0.113 ± 0.022
$yeast5$	0.925 ± 0.030	0.922 ± 0.031	0.926 ± 0.030	0.926 ± 0.030	0.926 ± 0.027	**0.940 ± 0.025**	0.926 ± 0.030	0.925 ± 0.030	0.893 ± 0.073	0.142 ± 0.009
$yeast6$	0.832 ± 0.060	0.828 ± 0.057	0.838 ± 0.065	0.830 ± 0.060	0.833 ± 0.060	**0.860 ± 0.035**	0.831 ± 0.063	0.832 ± 0.060	0.717 ± 0.079	0.186 ± 0.134
$cleveland-0\_vs4$	0.652 ± 0.136	0.590 ± 0.134	0.662 ± 0.149	0.674 ± 0.147	0.646 ± 0.169	**0.833 ± 0.062**	0.652 ± 0.136	0.652 ± 0.136	0.678 ± 0.066	0.594 ± 0.159
$ecoli-0-1-4-7\_vs2-3-5-6$	0.865 ± 0.036	0.840 ± 0.023	0.860 ± 0.034	0.859 ± 0.022	0.859 ± 0.034	**0.881 ± 0.035**	0.865 ± 0.041	0.865 ± 0.036	0.697 ± 0.193	0.358 ± 0.360
$ecoli-0-1\_vs2-3-5$	0.844 ± 0.048	0.855 ± 0.051	0.854 ± 0.051	0.852 ± 0.050	0.846 ± 0.048	**0.881 ± 0.055**	0.849 ± 0.051	0.843 ± 0.048	0.754 ± 0.157	0.503 ± 0.416
$ecoli-0-2-6-7\_vs3-5$	0.820 ± 0.064	0.826 ± 0.072	0.825 ± 0.066	0.830 ± 0.065	0.836 ± 0.070	**0.865 ± 0.058**	0.821 ± 0.070	0.820 ± 0.064	0.810 ± 0.064	0.525 ± 0.348
$ecoli-0-6-7\_vs3-5$	0.834 ± 0.065	0.838 ± 0.067	0.830 ± 0.065	0.845 ± 0.070	0.837 ± 0.072	**0.862 ± 0.068**	0.833 ± 0.071	0.834 ± 0.065	0.832 ± 0.060	0.552 ± 0.332
$ecoli-0-6-7\_vs5$	0.852 ± 0.049	0.854 ± 0.049	0.854 ± 0.050	0.850 ± 0.049	0.850 ± 0.048	**0.883 ± 0.050**	0.850 ± 0.049	0.853 ± 0.048	0.851 ± 0.051	0.470 ± 0.323
$glass-0-1-4-6\_vs2$	0.678 ± 0.149	0.582 ± 0.248	**0.680 ± 0.158**	0.657 ± 0.186	0.573 ± 0.233	0.570 ± 0.132	0.678 ± 0.179	0.677 ± 0.149	0.568 ± 0.127	0.590 ± 0.141
$glass-0-1-5\_vs2$	0.675 ± 0.079	0.609 ± 0.103	0.682 ± 0.078	**0.690 ± 0.089**	0.633 ± 0.107	0.494 ± 0.090	0.660 ± 0.088	0.675 ± 0.079	0.642 ± 0.088	0.469 ± 0.296
$yeast-0-2-5-6\_vs3-7-8-9$	0.766 ± 0.034	0.749 ± 0.057	0.764 ± 0.036	0.775 ± 0.026	0.756 ± 0.042	**0.779 ± 0.036**	0.767 ± 0.035	0.768 ± 0.033	0.714 ± 0.063	0.494 ± 0.145
$yeast-0-3-5-9\_vs7-8$	**0.680 ± 0.044**	0.548 ± 0.060	0.672 ± 0.045	0.674 ± 0.057	0.676 ± 0.053	0.610 ± 0.087	0.676 ± 0.042	0.679 ± 0.045	0.604 ± 0.093	0.160 ± 0.139
$abalone-17\_vs7-8-9-10$	0.808 ± 0.023	0.709 ± 0.053	0.802 ± 0.027	0.803 ± 0.038	0.795 ± 0.032	**0.816 ± 0.028**	0.810 ± 0.027	0.806 ± 0.022	0.606 ± 0.119	0.703 ± 0.104
$abalone-19\_vs10-11-12-13$	0.582 ± 0.101	0.445 ± 0.129	0.588 ± 0.098	0.589 ± 0.091	0.575 ± 0.094	**0.617 ± 0.114**	0.574 ± 0.106	0.582 ± 0.101	0.556 ± 0.162	0.550 ± 0.116
$abalone-20\_vs8-9-10$	0.789 ± 0.059	0.747 ± 0.055	0.794 ± 0.050	0.784 ± 0.058	0.781 ± 0.065	**0.880 ± 0.055**	0.778 ± 0.069	0.789 ± 0.059	0.687 ± 0.164	0.721 ± 0.129
$abalone-21\_vs8$	0.757 ± 0.171	0.741 ± 0.173	0.756 ± 0.170	0.765 ± 0.172	0.756 ± 0.177	**0.824 ± 0.085**	0.757 ± 0.171	0.757 ± 0.171	0.713 ± 0.211	0.690 ± 0.160
$flare-F$	0.723 ± 0.050	0.630 ± 0.068	0.717 ± 0.055	0.728 ± 0.060	0.701 ± 0.053	**0.766 ± 0.057**	0.722 ± 0.056	0.723 ± 0.050	0.641 ± 0.114	0.413 ± 0.119
$kddcup-buffer\_overflow\_vs\_back$	0.993 ± 0.014	0.997 ± 0.010	0.993 ± 0.014	0.993 ± 0.014	0.993 ± 0.014	**1.000 ± 0.000**	0.993 ± 0.014	0.993 ± 0.014	0.997 ± 0.010	0.997 ± 0.010
$kddcup-rootkit-imap\_vs\_back$	**0.977 ± 0.023**	**0.977 ± 0.023**	**0.977 ± 0.023**	**0.977 ± 0.023**	**0.977 ± 0.023**	**0.977 ± 0.023**	0.972 ± 0.031	**0.977 ± 0.023**	0.976 ± 0.045	0.976 ± 0.045
$kr-vs-k-zero\_vs\_eight$	0.934 ± 0.055	0.930 ± 0.061	0.934 ± 0.055	0.934 ± 0.055	0.930 ± 0.061	**0.948 ± 0.053**	0.930 ± 0.061	0.934 ± 0.055	0.835 ± 0.083	0.697 ± 0.043
$poker-8-9\_vs5$	0.512 ± 0.141	0.402 ± 0.185	0.499 ± 0.129	0.493 ± 0.126	0.453 ± 0.133	**0.624 ± 0.119**	0.499 ± 0.103	0.512 ± 0.141	0.572 ± 0.118	0.527 ± 0.103
$poker-8-9\_vs6$	0.711 ± 0.092	0.666 ± 0.072	0.711 ± 0.092	0.695 ± 0.080	0.675 ± 0.096	0.934 ± 0.059	0.689 ± 0.154	0.711 ± 0.092	0.977 ± 0.044	**0.985 ± 0.040**
$poker-8\_vs6$	0.746 ± 0.101	0.645 ± 0.091	0.746 ± 0.101	0.755 ± 0.089	0.710 ± 0.116	**0.966 ± 0.056**	0.755 ± 0.089	0.746 ± 0.101	0.846 ± 0.152	0.939 ± 0.133
$poker-9\_vs7$	0.432 ± 0.296	0.412 ± 0.283	0.432 ± 0.296	0.432 ± 0.296	0.448 ± 0.314	0.501 ± 0.341	0.391 ± 0.267	0.432 ± 0.296	**0.613 ± 0.333**	0.554 ± 0.307
$winequality-red-3\_vs5$	0.221 ± 0.221	0.222 ± 0.222	0.221 ± 0.221	0.221 ± 0.221	0.266 ± 0.217	**0.452 ± 0.171**	0.266 ± 0.217	0.221 ± 0.221	0.249 ± 0.266	0.354 ± 0.244
$winequality-red-4$	0.585 ± 0.058	0.528 ± 0.054	0.576 ± 0.057	**0.594 ± 0.057**	0.565 ± 0.061	0.533 ± 0.057	0.589 ± 0.055	0.584 ± 0.058	0.425 ± 0.101	0.581 ± 0.054
$winequality-red-8\_vs6-7$	0.410 ± 0.167	0.333 ± 0.189	0.410 ± 0.167	0.409 ± 0.167	0.245 ± 0.212	0.347 ± 0.197	0.377 ± 0.154	0.410 ± 0.167	0.366 ± 0.211	**0.424 ± 0.183**
$winequality-red-8\_vs6$	0.517 ± 0.061	0.501 ± 0.049	0.517 ± 0.061	0.517 ± 0.061	0.520 ± 0.062	0.547 ± 0.114	0.537 ± 0.056	0.517 ± 0.061	**0.575 ± 0.075**	0.560 ± 0.104
$winequality-white-3-9\_vs5$	0.382 ± 0.160	0.228 ± 0.197	0.368 ± 0.165	0.374 ± 0.154	0.286 ± 0.161	**0.624 ± 0.061**	0.364 ± 0.157	0.382 ± 0.160	0.331 ± 0.175	0.461 ± 0.114
$winequality-white-3\_vs7$	0.246 ± 0.209	0.194 ± 0.199	0.292 ± 0.217	0.292 ± 0.216	0.234 ± 0.202	**0.713 ± 0.105**	0.278 ± 0.194	0.246 ± 0.209	0.395 ± 0.175	0.485 ± 0.246
$winequality-white-9\_vs4$	0.777 ± 0.168	0.777 ± 0.168	0.777 ± 0.168	0.441 ± 0.452	**0.777 ± 0.168**	0.437 ± 0.449	0.777 ± 0.168	0.777 ± 0.168	0.553 ± 0.373	0.553 ± 0.373
$zoo-3$	0.297 ± 0.377	0.297 ± 0.377	0.297 ± 0.377	0.240 ± 0.373	0.297 ± 0.377	0.238 ± 0.372	0.297 ± 0.377	0.297 ± 0.377	**0.359 ± 0.313**	**0.359 ± 0.313**
$ecoli1$	0.884 ± 0.027	0.884 ± 0.020	0.885 ± 0.020	0.883 ± 0.020	0.883 ± 0.024	**0.888 ± 0.015**	0.880 ± 0.022	0.884 ± 0.026	0.874 ± 0.033	0.227 ± 0.328
$ecoli2$	0.940 ± 0.025	0.931 ± 0.037	0.940 ± 0.025	0.939 ± 0.027	0.938 ± 0.026	0.938 ± 0.021	**0.942 ± 0.022**	0.938 ± 0.026	0.857 ± 0.086	0.309 ± 0.346
$ecoli3$	0.888 ± 0.023	0.892 ± 0.026	0.886 ± 0.023	**0.893 ± 0.018**	0.893 ± 0.021	0.893 ± 0.019	0.886 ± 0.021	0.892 ± 0.022	0.854 ± 0.064	0.324 ± 0.356
$glass0$	0.772 ± 0.041	0.787 ± 0.020	0.779 ± 0.040	0.768 ± 0.041	**0.788 ± 0.039**	0.762 ± 0.037	0.786 ± 0.036	0.771 ± 0.037	0.723 ± 0.039	0.674 ± 0.112
$glass1$	**0.694 ± 0.041**	0.677 ± 0.048	0.680 ± 0.047	0.686 ± 0.036	0.691 ± 0.048	0.662 ± 0.044	0.687 ± 0.043	0.694 ± 0.047	0.675 ± 0.074	0.474 ± 0.093
$haberman$	0.584 ± 0.042	**0.606 ± 0.052**	0.596 ± 0.038	0.575 ± 0.055	0.589 ± 0.060	0.597 ± 0.046	0.596 ± 0.043	0.583 ± 0.046	0.573 ± 0.062	0.536 ± 0.105
$page-blocks0$	0.931 ± 0.008	0.897 ± 0.009	0.931 ± 0.007	0.922 ± 0.010	0.931 ± 0.009	0.838 ± 0.019	0.930 ± 0.009	**0.931 ± 0.008**	0.875 ± 0.037	0.888 ± 0.026
$pima$	0.726 ± 0.030	0.715 ± 0.030	0.728 ± 0.024	0.725 ± 0.022	0.728 ± 0.025	0.728 ± 0.017	**0.731 ± 0.028**	0.727 ± 0.032	0.692 ± 0.018	0.639 ± 0.039
$vehicle1$	0.786 ± 0.026	0.741 ± 0.027	0.787 ± 0.026	0.787 ± 0.019	0.795 ± 0.014	0.789 ± 0.024	0.789 ± 0.018	0.789 ± 0.024	0.662 ± 0.070	**0.798 ± 0.017**
$vehicle3$	0.786 ± 0.020	0.728 ± 0.020	0.786 ± 0.016	**0.793 ± 0.024**	0.785 ± 0.015	0.786 ± 0.021	0.786 ± 0.017	0.787 ± 0.019	0.591 ± 0.047	0.782 ± 0.029
$yeast1$	0.710 ± 0.012	0.678 ± 0.016	0.711 ± 0.015	0.706 ± 0.020	0.708 ± 0.015	**0.712 ± 0.011**	0.709 ± 0.013	0.711 ± 0.012	0.622 ± 0.042	0.118 ± 0.016
$yeast3$	0.891 ± 0.024	0.879 ± 0.029	0.892 ± 0.022	0.891 ± 0.028	0.886 ± 0.022	**0.895 ± 0.021**	0.894 ± 0.025	0.891 ± 0.024	0.860 ± 0.022	0.113 ± 0.031

Table 6. KNN – Precision

Dataset name	SMOTE	polynom-fit-SMOTE	Lee	SMOBD	G-SMOTE	LVQ-SMOTE	Assembled-SMOTE	SMOTE-TomekLinks	JFOTS-pr	JFOTS-rc
$abalone19$	0.023 ± 0.017	0.019 ± 0.018	0.023 ± 0.016	0.023 ± 0.017	**0.026 ± 0.018**	0.020 ± 0.011	0.023 ± 0.015	0.023 ± 0.017	0.025 ± 0.030	0.002 ± 0.005
$abalone9-18$	0.244 ± 0.036	0.278 ± 0.044	0.230 ± 0.029	0.233 ± 0.033	0.264 ± 0.040	0.275 ± 0.045	0.243 ± 0.034	0.246 ± 0.038	**0.597 ± 0.184**	0.176 ± 0.130
$ecoli-0-1-3-7\_vs2-6$	0.378 ± 0.110	**0.413 ± 0.150**	0.381 ± 0.119	0.371 ± 0.113	0.386 ± 0.125	0.354 ± 0.099	0.374 ± 0.111	0.378 ± 0.110	0.315 ± 0.136	0.303 ± 0.082
$glass-0-1-6\_vs2$	0.278 ± 0.099	0.240 ± 0.046	0.271 ± 0.085	0.272 ± 0.084	0.277 ± 0.066	0.211 ± 0.052	**0.288 ± 0.094**	0.273 ± 0.093	0.239 ± 0.051	0.194 ± 0.128
$glass-0-1-6\_vs5$	0.689 ± 0.156	**0.712 ± 0.154**	0.686 ± 0.148	0.686 ± 0.191	0.661 ± 0.156	0.505 ± 0.214	0.676 ± 0.152	0.689 ± 0.156	0.575 ± 0.197	0.438 ± 0.241
$glass2$	0.182 ± 0.110	0.180 ± 0.114	0.176 ± 0.109	0.180 ± 0.102	0.172 ± 0.105	0.170 ± 0.080	0.170 ± 0.104	0.176 ± 0.105	**0.205 ± 0.103**	0.154 ± 0.136
$glass4$	0.558 ± 0.133	**0.582 ± 0.119**	0.532 ± 0.120	0.545 ± 0.141	0.548 ± 0.108	0.508 ± 0.135	0.556 ± 0.128	0.558 ± 0.133	0.569 ± 0.133	0.366 ± 0.203
$glass5$	0.637 ± 0.131	0.679 ± 0.149	0.657 ± 0.165	0.637 ± 0.131	**0.689 ± 0.183**	0.408 ± 0.138	0.637 ± 0.131	0.637 ± 0.131	0.582 ± 0.190	0.547 ± 0.221
$page-blocks-1-3\_vs4$	0.778 ± 0.098	0.748 ± 0.095	0.768 ± 0.123	**0.781 ± 0.110**	0.772 ± 0.133	0.729 ± 0.119	0.778 ± 0.113	0.778 ± 0.098	0.740 ± 0.166	0.590 ± 0.203
$yeast-0-5-6-7-9\_vs4$	0.303 ± 0.042	0.315 ± 0.037	0.307 ± 0.037	0.319 ± 0.040	0.316 ± 0.049	0.331 ± 0.053	0.308 ± 0.045	0.300 ± 0.040	**0.472 ± 0.122**	0.000 ± 0.000
$yeast-1-2-8-9\_vs7$	0.096 ± 0.018	0.118 ± 0.023	0.094 ± 0.017	0.093 ± 0.016	0.114 ± 0.036	0.099 ± 0.022	0.094 ± 0.018	0.095 ± 0.017	**0.346 ± 0.235**	0.000 ± 0.000
$yeast-1-4-5-8\_vs7$	0.091 ± 0.016	0.093 ± 0.032	0.092 ± 0.019	0.086 ± 0.025	0.085 ± 0.031	0.080 ± 0.022	0.089 ± 0.017	0.091 ± 0.016	**0.096 ± 0.067**	0.000 ± 0.000
$yeast-1\_vs7$	0.202 ± 0.027	0.216 ± 0.037	0.201 ± 0.020	0.201 ± 0.027	0.213 ± 0.042	0.192 ± 0.024	0.188 ± 0.035	0.200 ± 0.027	**0.363 ± 0.136**	0.000 ± 0.000
$yeast-2\_vs4$	0.668 ± 0.074	0.609 ± 0.085	0.645 ± 0.072	0.645 ± 0.053	0.634 ± 0.070	0.616 ± 0.076	0.647 ± 0.078	0.672 ± 0.073	**0.848 ± 0.053**	0.226 ± 0.347
$yeast-2\_vs8$	0.271 ± 0.084	0.500 ± 0.084	0.261 ± 0.088	0.260 ± 0.075	0.347 ± 0.101	0.309 ± 0.042	0.256 ± 0.075	0.270 ± 0.085	**0.661 ± 0.293**	0.100 ± 0.300
$yeast4$	0.200 ± 0.029	0.215 ± 0.030	0.202 ± 0.033	0.207 ± 0.035	0.217 ± 0.034	0.172 ± 0.020	0.211 ± 0.033	0.200 ± 0.029	**0.430 ± 0.080**	0.000 ± 0.000
$yeast5$	0.504 ± 0.073	0.529 ± 0.071	0.499 ± 0.070	0.496 ± 0.060	0.521 ± 0.069	0.382 ± 0.060	0.493 ± 0.062	0.503 ± 0.074	**0.641 ± 0.145**	0.000 ± 0.000
$yeast6$	0.225 ± 0.035	0.277 ± 0.041	0.228 ± 0.039	0.221 ± 0.038	0.267 ± 0.044	0.150 ± 0.027	0.224 ± 0.040	0.226 ± 0.035	**0.475 ± 0.126**	0.000 ± 0.000
$cleveland-0\_vs4$	0.596 ± 0.150	0.584 ± 0.121	0.589 ± 0.154	0.574 ± 0.121	0.612 ± 0.161	**0.634 ± 0.123**	0.600 ± 0.131	0.596 ± 0.150	0.491 ± 0.152	0.386 ± 0.239
$ecoli-0-1-4-7\_vs2-3-5-6$	0.554 ± 0.092	0.619 ± 0.087	0.551 ± 0.075	0.572 ± 0.082	0.556 ± 0.094	0.532 ± 0.085	0.545 ± 0.103	0.559 ± 0.092	**0.751 ± 0.091**	0.142 ± 0.182
$ecoli-0-1\_vs2-3-5$	0.729 ± 0.155	0.756 ± 0.148	0.701 ± 0.141	0.724 ± 0.150	0.773 ± 0.164	0.669 ± 0.162	0.691 ± 0.134	0.729 ± 0.155	**0.801 ± 0.152**	0.367 ± 0.340
$ecoli-0-2-6-7\_vs3-5$	0.579 ± 0.118	0.612 ± 0.110	0.576 ± 0.136	0.630 ± 0.140	0.590 ± 0.126	0.527 ± 0.104	0.577 ± 0.126	0.575 ± 0.117	**0.822 ± 0.124**	0.172 ± 0.163
$ecoli-0-6-7\_vs3-5$	0.613 ± 0.140	0.645 ± 0.128	0.607 ± 0.156	0.685 ± 0.161	0.618 ± 0.116	0.591 ± 0.126	0.609 ± 0.132	0.619 ± 0.133	**0.808 ± 0.092**	0.287 ± 0.337
$ecoli-0-6-7\_vs5$	0.642 ± 0.203	0.670 ± 0.189	0.642 ± 0.199	0.655 ± 0.204	0.665 ± 0.188	0.575 ± 0.140	0.645 ± 0.210	0.645 ± 0.201	**0.816 ± 0.149**	0.216 ± 0.312
$glass-0-1-4-6\_vs2$	0.237 ± 0.080	**0.241 ± 0.085**	0.231 ± 0.091	0.230 ± 0.085	0.230 ± 0.101	0.203 ± 0.063	0.231 ± 0.091	0.235 ± 0.081	0.117 ± 0.071	0.136 ± 0.130
$glass-0-1-5\_vs2$	0.226 ± 0.048	0.235 ± 0.065	0.227 ± 0.048	0.226 ± 0.059	**0.240 ± 0.080**	0.204 ± 0.049	0.239 ± 0.056	0.225 ± 0.049	0.235 ± 0.085	0.200 ± 0.148
$yeast-0-2-5-6\_vs3-7-8-9$	0.332 ± 0.027	0.368 ± 0.033	0.330 ± 0.023	0.336 ± 0.033	0.354 ± 0.029	0.379 ± 0.058	0.332 ± 0.033	0.334 ± 0.028	**0.534 ± 0.137**	0.187 ± 0.205
$yeast-0-3-5-9\_vs7-8$	0.252 ± 0.043	0.281 ± 0.053	0.250 ± 0.042	0.245 ± 0.046	0.262 ± 0.040	**0.285 ± 0.060**	0.241 ± 0.030	0.252 ± 0.041	0.262 ± 0.191	0.040 ± 0.120
$abalone-17\_vs7-8-9-10$	0.190 ± 0.032	0.281 ± 0.044	0.191 ± 0.030	0.187 ± 0.028	0.232 ± 0.042	0.210 ± 0.032	0.194 ± 0.033	0.190 ± 0.033	**0.325 ± 0.063**	0.156 ± 0.115
$abalone-19\_vs10-11-12-13$	0.047 ± 0.012	**0.056 ± 0.018**	0.049 ± 0.012	0.049 ± 0.014	0.049 ± 0.027	0.047 ± 0.017	0.044 ± 0.014	0.047 ± 0.012	0.056 ± 0.036	0.016 ± 0.015
$abalone-20\_vs8-9-10$	0.164 ± 0.028	0.189 ± 0.051	0.169 ± 0.033	0.171 ± 0.031	0.162 ± 0.049	0.118 ± 0.029	0.167 ± 0.034	0.161 ± 0.028	**0.284 ± 0.154**	0.041 ± 0.052
$abalone-21\_vs8$	0.440 ± 0.119	**0.520 ± 0.162**	0.418 ± 0.108	0.412 ± 0.104	0.477 ± 0.174	0.393 ± 0.120	0.400 ± 0.098	0.437 ± 0.122	0.421 ± 0.200	0.318 ± 0.268
$flare-F$	0.202 ± 0.038	0.209 ± 0.028	0.198 ± 0.040	0.202 ± 0.041	0.208 ± 0.040	0.195 ± 0.031	0.206 ± 0.046	0.197 ± 0.032	**0.369 ± 0.253**	0.150 ± 0.320
$kddcup-buffer\_overflow\_vs\_back$	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	0.994 ± 0.019	0.994 ± 0.019
$kddcup-rootkit-imap\_vs\_back$	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**
$kr-vs-k-zero\_vs\_eight$	0.730 ± 0.153	0.765 ± 0.172	0.723 ± 0.157	0.741 ± 0.152	**0.768 ± 0.144**	0.565 ± 0.090	0.740 ± 0.155	0.730 ± 0.153	0.550 ± 0.324	0.000 ± 0.000
$poker-8-9\_vs5$	0.065 ± 0.026	**0.091 ± 0.037**	0.066 ± 0.029	0.064 ± 0.029	0.062 ± 0.039	0.053 ± 0.018	0.069 ± 0.027	0.065 ± 0.026	0.052 ± 0.064	0.017 ± 0.035
$poker-8-9\_vs6$	0.428 ± 0.060	0.466 ± 0.080	0.426 ± 0.058	0.435 ± 0.064	0.549 ± 0.079	0.360 ± 0.065	0.434 ± 0.092	0.428 ± 0.060	**1.000 ± 0.000**	**1.000 ± 0.000**
$poker-8\_vs6$	0.310 ± 0.074	0.341 ± 0.111	0.308 ± 0.075	0.297 ± 0.072	0.420 ± 0.132	0.267 ± 0.049	0.314 ± 0.085	0.310 ± 0.074	**1.000 ± 0.000**	**1.000 ± 0.000**
$poker-9\_vs7$	0.497 ± 0.228	0.507 ± 0.234	0.495 ± 0.226	0.523 ± 0.267	0.508 ± 0.218	0.652 ± 0.273	0.532 ± 0.241	0.497 ± 0.228	0.597 ± 0.459	**0.698 ± 0.389**
$winequality-red-3\_vs5$	0.081 ± 0.045	0.095 ± 0.058	0.081 ± 0.045	0.080 ± 0.045	0.103 ± 0.061	**0.161 ± 0.098**	0.088 ± 0.050	0.081 ± 0.045	0.063 ± 0.074	0.008 ± 0.023
$winequality-red-4$	0.082 ± 0.015	0.080 ± 0.023	0.081 ± 0.018	0.080 ± 0.012	0.094 ± 0.026	0.085 ± 0.023	0.084 ± 0.015	0.082 ± 0.015	**0.116 ± 0.063**	0.054 ± 0.055
$winequality-red-8\_vs6-7$	0.031 ± 0.024	0.040 ± 0.029	0.033 ± 0.023	0.033 ± 0.024	0.034 ± 0.022	0.040 ± 0.030	0.035 ± 0.020	0.031 ± 0.024	**0.041 ± 0.033**	0.040 ± 0.049
$winequality-red-8\_vs6$	0.090 ± 0.019	**0.108 ± 0.036**	0.087 ± 0.023	0.089 ± 0.019	0.089 ± 0.027	0.094 ± 0.036	0.097 ± 0.037	0.090 ± 0.019	0.099 ± 0.049	0.082 ± 0.054
$winequality-white-3-9\_vs5$	0.068 ± 0.019	0.097 ± 0.030	0.066 ± 0.017	0.066 ± 0.017	0.083 ± 0.026	0.136 ± 0.074	0.060 ± 0.016	0.068 ± 0.019	**0.158 ± 0.284**	0.024 ± 0.019
$winequality-white-3\_vs5$	0.112 ± 0.065	0.100 ± 0.065	0.111 ± 0.066	0.105 ± 0.067	0.234 ± 0.271	**0.414 ± 0.245**	0.114 ± 0.068	0.112 ± 0.065	0.147 ± 0.101	0.110 ± 0.078
$winequality-white-9\_vs4$	0.514 ± 0.337	**0.536 ± 0.319**	0.514 ± 0.337	0.421 ± 0.392	0.529 ± 0.324	0.465 ± 0.373	0.514 ± 0.337	0.514 ± 0.337	0.165 ± 0.129	0.165 ± 0.129
$zoo-3$	**0.460 ± 0.260**	**0.460 ± 0.260**	**0.460 ± 0.260**	0.367 ± 0.354	**0.460 ± 0.260**	0.367 ± 0.354	**0.460 ± 0.260**	**0.460 ± 0.260**	0.253 ± 0.238	0.253 ± 0.238
$ecoli1$	0.700 ± 0.057	**0.713 ± 0.065**	0.694 ± 0.047	0.710 ± 0.041	0.700 ± 0.054	0.700 ± 0.056	0.691 ± 0.046	0.697 ± 0.055	0.646 ± 0.041	0.139 ± 0.280
$ecoli2$	0.692 ± 0.080	**0.751 ± 0.089**	0.687 ± 0.100	0.693 ± 0.088	0.725 ± 0.073	0.669 ± 0.064	0.689 ± 0.090	0.690 ± 0.079	0.637 ± 0.148	0.193 ± 0.309
$ecoli3$	0.475 ± 0.036	0.482 ± 0.036	0.473 ± 0.024	0.478 ± 0.043	0.475 ± 0.040	0.424 ± 0.034	0.476 ± 0.035	0.473 ± 0.037	**0.539 ± 0.072**	0.113 ± 0.180
$glass0$	0.608 ± 0.053	0.611 ± 0.056	0.599 ± 0.038	0.606 ± 0.043	0.608 ± 0.051	0.608 ± 0.055	**0.616 ± 0.050**	0.614 ± 0.054	0.611 ± 0.034	0.508 ± 0.204
$glass1$	0.614 ± 0.061	0.620 ± 0.068	0.633 ± 0.070	**0.634 ± 0.053**	0.626 ± 0.059	0.633 ± 0.042	0.616 ± 0.048	0.616 ± 0.064	0.602 ± 0.070	0.444 ± 0.196
$haberman$	0.366 ± 0.033	0.400 ± 0.035	0.348 ± 0.032	0.355 ± 0.015	0.359 ± 0.040	0.362 ± 0.029	0.348 ± 0.021	0.364 ± 0.035	**0.435 ± 0.065**	0.308 ± 0.120
$page-blocks0$	0.733 ± 0.025	0.804 ± 0.021	0.732 ± 0.026	0.750 ± 0.029	0.738 ± 0.015	**0.855 ± 0.012**	0.728 ± 0.025	0.732 ± 0.024	0.824 ± 0.055	0.757 ± 0.034
$pima$	0.549 ± 0.026	0.586 ± 0.019	0.554 ± 0.013	0.552 ± 0.019	0.549 ± 0.022	0.569 ± 0.027	0.553 ± 0.019	0.556 ± 0.029	**0.601 ± 0.031**	0.491 ± 0.075
$vehicle1$	0.476 ± 0.020	**0.516 ± 0.027**	0.476 ± 0.023	0.490 ± 0.021	0.486 ± 0.018	0.496 ± 0.029	0.487 ± 0.022	0.477 ± 0.021	0.505 ± 0.036	0.493 ± 0.029
$vehicle3$	0.470 ± 0.028	0.474 ± 0.037	0.473 ± 0.026	0.471 ± 0.028	0.472 ± 0.024	0.470 ± 0.029	0.467 ± 0.026	0.468 ± 0.029	**0.534 ± 0.037**	0.476 ± 0.034
$yeast1$	0.473 ± 0.013	**0.541 ± 0.013**	0.474 ± 0.014	0.478 ± 0.015	0.469 ± 0.012	0.486 ± 0.015	0.472 ± 0.013	0.475 ± 0.012	0.490 ± 0.094	0.000 ± 0.000
$yeast3$	0.589 ± 0.026	0.626 ± 0.034	0.587 ± 0.042	0.589 ± 0.036	0.598 ± 0.034	0.583 ± 0.043	0.580 ± 0.035	0.587 ± 0.025	**0.752 ± 0.048**	0.000 ± 0.000

Table 7. CART – Recall

Dataset name	SMOTE	polynom-fit-SMOTE	Lee	SMOBD	G-SMOTE	LVQ-SMOTE	Assembled-SMOTE	SMOTE-TomekLinks	JFOTS-pr	JFOTS-rc
$abalone19$	0.162 ± 0.089	0.019 ± 0.029	0.131 ± 0.081	0.169 ± 0.089	0.112 ± 0.104	0.131 ± 0.099	0.150 ± 0.102	0.162 ± 0.089	0.025 ± 0.041	**0.319 ± 0.311**
$abalone9-18$	0.410 ± 0.123	0.281 ± 0.078	0.429 ± 0.119	0.452 ± 0.098	0.367 ± 0.071	**0.486 ± 0.170**	0.381 ± 0.077	0.419 ± 0.131	0.362 ± 0.086	0.352 ± 0.248
$ecoli-0-1-3-7\_vs2-6$	0.600 ± 0.232	**0.650 ± 0.128**	0.600 ± 0.232	0.600 ± 0.232	**0.650 ± 0.128**	0.575 ± 0.199	0.600 ± 0.232	0.600 ± 0.232	0.417 ± 0.211	0.250 ± 0.183
$glass-0-1-6\_vs2$	0.367 ± 0.114	0.244 ± 0.088	0.435 ± 0.125	0.375 ± 0.137	0.293 ± 0.112	0.369 ± 0.187	0.364 ± 0.211	0.365 ± 0.108	0.382 ± 0.206	**0.450 ± 0.301**
$glass-0-1-6\_vs5$	0.735 ± 0.273	0.735 ± 0.273	0.735 ± 0.273	0.735 ± 0.273	0.605 ± 0.333	**0.805 ± 0.272**	0.735 ± 0.273	0.735 ± 0.273	0.555 ± 0.306	**0.805 ± 0.313**
$glass2$	0.275 ± 0.223	0.233 ± 0.160	0.239 ± 0.199	0.312 ± 0.182	0.285 ± 0.210	0.318 ± 0.230	0.239 ± 0.175	0.300 ± 0.232	0.251 ± 0.158	**0.479 ± 0.285**
$glass4$	0.740 ± 0.165	0.707 ± 0.109	0.740 ± 0.165	0.724 ± 0.164	**0.757 ± 0.148**	0.681 ± 0.187	0.740 ± 0.165	0.740 ± 0.165	0.619 ± 0.222	0.690 ± 0.146
$glass5$	0.720 ± 0.316	0.720 ± 0.316	0.720 ± 0.316	0.720 ± 0.316	0.745 ± 0.327	**0.890 ± 0.221**	0.720 ± 0.316	0.720 ± 0.316	0.690 ± 0.309	0.815 ± 0.266
$page-blocks-1-3\_vs4$	0.943 ± 0.119	0.907 ± 0.124	0.936 ± 0.137	0.936 ± 0.137	0.950 ± 0.128	0.943 ± 0.105	**0.971 ± 0.065**	0.943 ± 0.119	0.814 ± 0.129	0.793 ± 0.176
$yeast-0-5-6-7-9\_vs4$	0.493 ± 0.131	0.436 ± 0.101	0.524 ± 0.107	0.482 ± 0.125	0.442 ± 0.085	0.573 ± 0.119	0.470 ± 0.090	0.509 ± 0.088	0.401 ± 0.107	**0.980 ± 0.020**
$yeast-1-2-8-9\_vs7$	0.247 ± 0.060	0.200 ± 0.089	0.260 ± 0.063	0.233 ± 0.100	0.253 ± 0.107	0.420 ± 0.133	0.247 ± 0.052	0.280 ± 0.088	0.180 ± 0.099	**1.000 ± 0.000**
$yeast-1-4-5-8\_vs7$	0.167 ± 0.095	0.173 ± 0.053	0.167 ± 0.124	0.147 ± 0.083	0.160 ± 0.104	0.193 ± 0.101	0.200 ± 0.060	0.153 ± 0.085	0.073 ± 0.076	**1.000 ± 0.000**
$yeast-1\_vs7$	0.320 ± 0.111	0.320 ± 0.102	0.307 ± 0.120	0.367 ± 0.109	0.287 ± 0.116	0.487 ± 0.099	0.340 ± 0.105	0.313 ± 0.099	0.213 ± 0.093	**0.760 ± 0.398**
$yeast-2\_vs4$	0.741 ± 0.098	0.718 ± 0.114	0.769 ± 0.093	0.762 ± 0.137	0.754 ± 0.112	**0.796 ± 0.091**	0.773 ± 0.093	0.729 ± 0.078	0.668 ± 0.103	0.775 ± 0.310
$yeast-2\_vs8$	0.530 ± 0.185	0.550 ± 0.136	0.600 ± 0.228	0.610 ± 0.181	0.550 ± 0.150	0.580 ± 0.108	0.540 ± 0.128	0.550 ± 0.180	0.520 ± 0.098	**0.940 ± 0.120**
$yeast4$	0.401 ± 0.096	0.306 ± 0.066	0.428 ± 0.123	0.428 ± 0.102	0.307 ± 0.079	0.511 ± 0.110	0.394 ± 0.165	0.405 ± 0.100	0.387 ± 0.100	**0.980 ± 0.020**
$yeast5$	0.736 ± 0.149	0.705 ± 0.137	0.705 ± 0.129	0.732 ± 0.139	0.718 ± 0.131	0.795 ± 0.098	0.750 ± 0.117	0.741 ± 0.155	0.695 ± 0.100	**1.000 ± 0.000**
$yeast6$	0.494 ± 0.143	0.413 ± 0.091	0.483 ± 0.140	0.528 ± 0.133	0.510 ± 0.099	0.608 ± 0.106	0.516 ± 0.122	0.495 ± 0.137	0.381 ± 0.115	**0.978 ± 0.067**
$cleveland-0\_vs4$	**0.681 ± 0.119**	0.517 ± 0.264	0.624 ± 0.209	0.610 ± 0.175	0.536 ± 0.275	0.555 ± 0.096	0.652 ± 0.140	**0.681 ± 0.119**	0.574 ± 0.170	0.629 ± 0.127
$ecoli-0-1-4-7\_vs2-3-5-6$	0.648 ± 0.154	0.634 ± 0.089	0.696 ± 0.090	0.640 ± 0.139	0.600 ± 0.125	**0.750 ± 0.092**	0.702 ± 0.104	0.675 ± 0.169	0.464 ± 0.219	0.143 ± 0.186
$ecoli-0-1\_vs2-3-5$	0.642 ± 0.129	0.642 ± 0.214	0.608 ± 0.129	0.550 ± 0.093	0.625 ± 0.093	**0.758 ± 0.137**	0.617 ± 0.113	0.650 ± 0.128	0.558 ± 0.190	0.333 ± 0.296
$ecoli-0-2-6-7\_vs3-5$	0.655 ± 0.106	0.609 ± 0.135	0.682 ± 0.117	0.700 ± 0.163	0.709 ± 0.121	**0.755 ± 0.122**	0.618 ± 0.127	0.655 ± 0.106	0.582 ± 0.116	0.182 ± 0.244
$ecoli-0-6-7\_vs3-5$	0.655 ± 0.140	0.627 ± 0.103	0.682 ± 0.124	0.691 ± 0.130	0.736 ± 0.143	**0.764 ± 0.136**	0.655 ± 0.121	0.655 ± 0.140	0.582 ± 0.136	0.327 ± 0.315
$ecoli-0-6-7\_vs5$	0.720 ± 0.125	0.710 ± 0.151	0.700 ± 0.118	0.720 ± 0.125	0.700 ± 0.126	**0.760 ± 0.102**	0.690 ± 0.104	0.720 ± 0.125	0.730 ± 0.168	0.670 ± 0.332
$glass-0-1-4-6\_vs2$	0.272 ± 0.108	0.222 ± 0.157	0.310 ± 0.148	0.272 ± 0.131	0.307 ± 0.145	0.447 ± 0.163	0.211 ± 0.112	0.235 ± 0.129	0.192 ± 0.148	**0.494 ± 0.347**
$glass-0-1-5\_vs2$	0.482 ± 0.146	0.303 ± 0.122	0.461 ± 0.180	0.550 ± 0.213	0.408 ± 0.156	0.407 ± 0.188	0.411 ± 0.159	0.457 ± 0.129	0.293 ± 0.123	**0.596 ± 0.295**
$yeast-0-2-5-6\_vs3-7-8-9$	0.522 ± 0.078	0.492 ± 0.104	0.560 ± 0.076	0.518 ± 0.056	0.511 ± 0.066	0.550 ± 0.102	0.514 ± 0.069	0.499 ± 0.075	0.356 ± 0.126	**0.633 ± 0.151**
$yeast-0-3-5-9\_vs7-8$	0.336 ± 0.086	0.356 ± 0.083	0.380 ± 0.095	0.396 ± 0.090	0.360 ± 0.100	0.412 ± 0.088	0.368 ± 0.066	0.400 ± 0.067	0.176 ± 0.118	**0.932 ± 0.204**
$abalone-17\_vs7-8-9-10$	0.334 ± 0.089	0.310 ± 0.069	0.331 ± 0.090	0.366 ± 0.093	0.331 ± 0.097	**0.390 ± 0.046**	0.334 ± 0.082	0.331 ± 0.077	0.290 ± 0.110	0.272 ± 0.224
$abalone-19\_vs10-11-12-13$	0.181 ± 0.090	0.062 ± 0.048	0.181 ± 0.110	0.169 ± 0.084	0.131 ± 0.113	0.262 ± 0.111	0.175 ± 0.083	0.188 ± 0.062	0.075 ± 0.083	**0.312 ± 0.310**
$abalone-20\_vs8-9-10$	0.423 ± 0.105	0.185 ± 0.130	0.377 ± 0.126	0.392 ± 0.100	0.285 ± 0.142	**0.638 ± 0.119**	0.392 ± 0.121	0.423 ± 0.105	0.262 ± 0.110	0.392 ± 0.258
$abalone-21\_vs8$	0.486 ± 0.257	0.329 ± 0.144	0.429 ± 0.192	0.414 ± 0.234	0.429 ± 0.128	**0.629 ± 0.146**	0.414 ± 0.225	0.500 ± 0.265	0.443 ± 0.259	0.314 ± 0.237
$flare-F$	0.149 ± 0.073	0.187 ± 0.062	0.173 ± 0.093	0.192 ± 0.081	0.205 ± 0.039	0.195 ± 0.074	0.187 ± 0.100	0.191 ± 0.075	0.386 ± 0.181	**0.949 ± 0.052**
$kddcup-buffer\_overflow\_vs\_back$	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**
$kddcup-rootkit-imap\_vs\_back$	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	0.964 ± 0.073	0.964 ± 0.073
$kr-vs-k-zero\_vs\_eight$	0.925 ± 0.101	**0.932 ± 0.103**	**0.932 ± 0.103**	**0.932 ± 0.103**	0.931 ± 0.073	0.915 ± 0.148	0.909 ± 0.116	0.925 ± 0.101	0.570 ± 0.186	0.733 ± 0.071
$poker-8-9\_vs5$	0.175 ± 0.078	0.135 ± 0.100	0.160 ± 0.063	0.175 ± 0.067	0.113 ± 0.074	0.215 ± 0.140	0.113 ± 0.056	0.175 ± 0.078	0.072 ± 0.098	**0.219 ± 0.197**
$poker-8-9\_vs6$	0.383 ± 0.172	0.654 ± 0.277	0.358 ± 0.186	0.308 ± 0.161	0.245 ± 0.126	0.294 ± 0.188	0.333 ± 0.208	0.383 ± 0.172	**1.000 ± 0.000**	**1.000 ± 0.000**
$poker-8\_vs6$	0.376 ± 0.197	0.378 ± 0.324	0.414 ± 0.246	0.378 ± 0.189	0.531 ± 0.325	0.363 ± 0.311	0.364 ± 0.193	0.376 ± 0.197	**0.863 ± 0.169**	**0.863 ± 0.169**
$poker-9\_vs7$	0.150 ± 0.166	0.125 ± 0.125	0.150 ± 0.166	0.150 ± 0.166	0.175 ± 0.160	0.250 ± 0.250	0.150 ± 0.166	0.150 ± 0.166	**0.400 ± 0.406**	0.325 ± 0.317
$winequality-red-3\_vs5$	0.060 ± 0.092	0.080 ± 0.133	0.040 ± 0.080	0.060 ± 0.092	0.080 ± 0.098	**0.160 ± 0.120**	0.080 ± 0.133	0.060 ± 0.092	0.060 ± 0.092	0.100 ± 0.100
$winequality-red-4$	0.182 ± 0.101	0.121 ± 0.062	**0.234 ± 0.069**	0.223 ± 0.077	0.170 ± 0.072	0.223 ± 0.079	0.177 ± 0.038	0.182 ± 0.104	0.113 ± 0.064	0.207 ± 0.126
$winequality-red-8\_vs6-7$	0.133 ± 0.083	0.156 ± 0.102	0.144 ± 0.087	0.167 ± 0.102	**0.178 ± 0.089**	**0.178 ± 0.089**	0.133 ± 0.097	0.133 ± 0.083	0.122 ± 0.092	0.089 ± 0.109
$winequality-red-8\_vs6$	0.278 ± 0.114	0.256 ± 0.132	0.267 ± 0.102	0.267 ± 0.142	0.244 ± 0.130	0.300 ± 0.122	**0.322 ± 0.126**	0.278 ± 0.114	0.200 ± 0.083	0.167 ± 0.134
$winequality-white-3-9\_vs5$	0.183 ± 0.129	0.120 ± 0.098	0.128 ± 0.106	0.145 ± 0.113	0.090 ± 0.125	**0.338 ± 0.117**	0.120 ± 0.073	0.183 ± 0.129	0.079 ± 0.061	0.049 ± 0.040
$winequality-white-3\_vs7$	0.120 ± 0.087	0.140 ± 0.120	0.190 ± 0.130	0.180 ± 0.108	0.220 ± 0.117	**0.510 ± 0.176**	0.090 ± 0.094	0.120 ± 0.087	0.120 ± 0.060	0.190 ± 0.158
$winequality-white-9\_vs4$	**0.467 ± 0.332**	0.367 ± 0.208	**0.467 ± 0.332**	**0.467 ± 0.332**	0.417 ± 0.281	0.417 ± 0.281	**0.467 ± 0.332**	**0.467 ± 0.332**	0.183 ± 0.229	0.183 ± 0.229
$zoo-3$	0.383 ± 0.380	0.283 ± 0.248	0.383 ± 0.308	0.367 ± 0.306	0.333 ± 0.325	**0.517 ± 0.293**	0.333 ± 0.236	0.383 ± 0.380	0.317 ± 0.311	0.317 ± 0.311
$ecoli1$	0.775 ± 0.123	0.728 ± 0.088	0.747 ± 0.104	0.754 ± 0.091	0.765 ± 0.097	0.806 ± 0.090	0.733 ± 0.113	0.809 ± 0.084	0.620 ± 0.122	**0.821 ± 0.309**
$ecoli2$	0.773 ± 0.070	0.738 ± 0.078	0.758 ± 0.064	0.758 ± 0.089	0.758 ± 0.060	**0.827 ± 0.085**	0.773 ± 0.102	0.769 ± 0.069	0.627 ± 0.158	0.662 ± 0.391
$ecoli3$	0.561 ± 0.095	0.561 ± 0.132	0.622 ± 0.140	0.617 ± 0.103	0.606 ± 0.100	**0.771 ± 0.103**	0.628 ± 0.106	0.584 ± 0.108	0.589 ± 0.096	0.715 ± 0.335
$glass0$	0.743 ± 0.096	0.726 ± 0.106	0.706 ± 0.096	0.743 ± 0.076	0.749 ± 0.080	**0.774 ± 0.071**	0.751 ± 0.075	0.743 ± 0.048	0.671 ± 0.092	0.611 ± 0.127
$glass1$	0.666 ± 0.047	0.668 ± 0.078	0.687 ± 0.110	0.679 ± 0.073	0.647 ± 0.094	0.674 ± 0.074	0.682 ± 0.091	0.645 ± 0.056	0.571 ± 0.160	**0.853 ± 0.132**
$haberman$	0.445 ± 0.078	0.408 ± 0.059	0.417 ± 0.101	0.390 ± 0.087	0.407 ± 0.106	0.442 ± 0.065	0.397 ± 0.113	**0.449 ± 0.092**	0.361 ± 0.080	0.281 ± 0.097
$page-blocks0$	0.865 ± 0.026	0.820 ± 0.019	0.861 ± 0.022	0.858 ± 0.015	0.838 ± 0.021	0.823 ± 0.018	**0.869 ± 0.024**	0.864 ± 0.017	0.836 ± 0.026	0.815 ± 0.028
$pima$	0.588 ± 0.050	0.584 ± 0.044	0.572 ± 0.045	0.581 ± 0.039	0.585 ± 0.041	**0.611 ± 0.038**	0.565 ± 0.036	0.590 ± 0.039	0.564 ± 0.043	0.472 ± 0.103
$vehicle1$	0.519 ± 0.058	0.519 ± 0.044	0.543 ± 0.085	0.527 ± 0.055	0.525 ± 0.059	**0.579 ± 0.047**	0.543 ± 0.053	0.537 ± 0.044	0.512 ± 0.044	0.506 ± 0.042
$vehicle3$	0.534 ± 0.046	0.558 ± 0.040	0.504 ± 0.044	0.559 ± 0.058	0.537 ± 0.033	**0.576 ± 0.035**	0.537 ± 0.054	0.535 ± 0.028	0.516 ± 0.063	0.548 ± 0.040
$yeast1$	0.531 ± 0.031	0.526 ± 0.029	0.537 ± 0.035	0.537 ± 0.027	0.537 ± 0.040	0.550 ± 0.040	0.538 ± 0.031	0.514 ± 0.019	0.468 ± 0.091	**1.000 ± 0.000**
$yeast3$	0.772 ± 0.056	0.704 ± 0.061	0.773 ± 0.044	0.746 ± 0.028	0.741 ± 0.047	0.778 ± 0.061	0.751 ± 0.060	0.778 ± 0.057	0.689 ± 0.058	**0.994 ± 0.006**

Table 8. SVM – Recall

Dataset name	SMOTE	polynom-fit-SMOTE	Lee	SMOBD	G-SMOTE	LVQ-SMOTE	Assembled-SMOTE	SMOTE-TomekLinks	JFOTS-pr	JFOTS-rc
$abalone19$	0.300 ± 0.131	0.194 ± 0.099	0.300 ± 0.121	0.312 ± 0.137	0.306 ± 0.132	0.456 ± 0.119	0.300 ± 0.131	0.300 ± 0.131	0.475 ± 0.211	**0.637 ± 0.276**
$abalone9-18$	0.590 ± 0.107	0.448 ± 0.077	0.610 ± 0.073	0.614 ± 0.081	0.595 ± 0.100	0.648 ± 0.083	0.595 ± 0.071	0.590 ± 0.107	0.395 ± 0.154	**0.681 ± 0.088**
$ecoli-0-1-3-7_vs2-6$	0.700 ± 0.155	0.700 ± 0.155	0.700 ± 0.155	0.700 ± 0.155	0.700 ± 0.155	0.725 ± 0.179	0.700 ± 0.155	0.700 ± 0.155	**0.742 ± 0.248**	**0.742 ± 0.248**
$glass-0-1-6_vs2$	0.629 ± 0.196	0.504 ± 0.167	0.654 ± 0.175	0.643 ± 0.138	0.511 ± 0.184	0.394 ± 0.208	0.643 ± 0.129	0.629 ± 0.196	0.635 ± 0.163	**0.815 ± 0.203**
$glass-0-1-6_vs5$	0.650 ± 0.201	0.590 ± 0.234	0.650 ± 0.201	0.650 ± 0.201	0.630 ± 0.249	0.720 ± 0.290	0.650 ± 0.201	0.650 ± 0.201	0.590 ± 0.258	**0.805 ± 0.313**
$glass2$	0.458 ± 0.275	0.415 ± 0.259	0.471 ± 0.274	0.449 ± 0.273	0.461 ± 0.294	0.539 ± 0.297	0.471 ± 0.285	0.458 ± 0.275	0.482 ± 0.281	**0.764 ± 0.264**
$glass4$	**0.802 ± 0.195**	0.721 ± 0.238	0.786 ± 0.225	0.771 ± 0.250	0.786 ± 0.212	0.798 ± 0.233	0.769 ± 0.171	**0.802 ± 0.195**	0.660 ± 0.140	0.752 ± 0.101
$glass5$	0.645 ± 0.217	0.625 ± 0.211	0.665 ± 0.203	0.665 ± 0.203	0.625 ± 0.191	0.755 ± 0.298	0.645 ± 0.217	0.645 ± 0.217	0.600 ± 0.210	**0.795 ± 0.258**
$page-blocks-1-3_vs4$	0.836 ± 0.228	0.593 ± 0.143	0.843 ± 0.223	0.843 ± 0.223	0.836 ± 0.237	0.636 ± 0.098	0.807 ± 0.233	0.836 ± 0.228	0.750 ± 0.215	**0.879 ± 0.150**
$yeast-0-5-6-7-9_vs4$	0.604 ± 0.098	0.556 ± 0.066	0.635 ± 0.087	0.600 ± 0.097	0.600 ± 0.101	0.639 ± 0.065	0.604 ± 0.082	0.600 ± 0.099	0.440 ± 0.135	**0.980 ± 0.020**
$yeast-1-2-8-9_vs7$	0.380 ± 0.090	0.320 ± 0.129	0.393 ± 0.101	0.373 ± 0.100	0.380 ± 0.090	0.447 ± 0.149	0.380 ± 0.112	0.387 ± 0.078	0.293 ± 0.205	**1.000 ± 0.000**
$yeast-1-4-5-8_vs7$	0.327 ± 0.101	0.280 ± 0.107	0.307 ± 0.100	0.313 ± 0.090	0.327 ± 0.117	0.353 ± 0.090	0.300 ± 0.095	0.327 ± 0.101	0.293 ± 0.177	**1.000 ± 0.000**
$yeast-1_vs7$	0.540 ± 0.076	0.467 ± 0.089	0.547 ± 0.065	0.547 ± 0.078	0.467 ± 0.140	0.520 ± 0.115	0.533 ± 0.079	0.540 ± 0.076	0.320 ± 0.157	**0.973 ± 0.080**
$yeast-2_vs4$	0.781 ± 0.088	0.761 ± 0.088	0.792 ± 0.088	0.792 ± 0.098	0.792 ± 0.108	0.788 ± 0.068	0.781 ± 0.101	0.781 ± 0.088	0.718 ± 0.061	**0.918 ± 0.120**
$yeast-2_vs8$	0.550 ± 0.120	0.550 ± 0.102	0.560 ± 0.102	0.570 ± 0.110	0.530 ± 0.100	0.610 ± 0.137	0.560 ± 0.162	0.550 ± 0.120	0.560 ± 0.162	**0.940 ± 0.120**
$yeast4$	0.619 ± 0.071	0.550 ± 0.066	0.628 ± 0.087	0.623 ± 0.066	0.604 ± 0.074	0.689 ± 0.077	0.600 ± 0.054	0.619 ± 0.071	0.420 ± 0.097	**0.980 ± 0.020**
$yeast5$	0.882 ± 0.058	0.873 ± 0.060	0.882 ± 0.058	0.882 ± 0.058	0.882 ± 0.051	0.936 ± 0.051	0.882 ± 0.058	0.882 ± 0.058	0.823 ± 0.136	**1.000 ± 0.000**
$yeast6$	0.727 ± 0.109	0.716 ± 0.101	0.739 ± 0.119	0.727 ± 0.107	0.726 ± 0.107	0.824 ± 0.073	0.727 ± 0.118	0.727 ± 0.109	0.531 ± 0.111	**0.978 ± 0.067**
$cleveland-0_vs4$	0.448 ± 0.177	0.369 ± 0.163	0.464 ± 0.203	0.481 ± 0.199	0.450 ± 0.220	**0.719 ± 0.104**	0.448 ± 0.177	0.448 ± 0.177	0.495 ± 0.104	0.502 ± 0.228
$ecoli-0-1-4-7_vs2-3-5-6$	0.771 ± 0.066	0.717 ± 0.041	0.765 ± 0.066	0.758 ± 0.037	0.765 ± 0.065	**0.826 ± 0.069**	0.779 ± 0.071	0.771 ± 0.066	0.540 ± 0.273	0.788 ± 0.152
$ecoli-0-1_vs2-3-5$	0.733 ± 0.090	0.750 ± 0.091	0.750 ± 0.091	0.750 ± 0.091	0.733 ± 0.090	0.825 ± 0.115	0.750 ± 0.091	0.733 ± 0.090	0.608 ± 0.179	**0.833 ± 0.139**
$ecoli-0-2-6-7_vs3-5$	0.700 ± 0.108	0.700 ± 0.122	0.709 ± 0.114	0.709 ± 0.106	0.727 ± 0.122	**0.809 ± 0.125**	0.700 ± 0.122	0.700 ± 0.108	0.673 ± 0.101	0.764 ± 0.153
$ecoli-0-6-7_vs3-5$	0.718 ± 0.111	0.718 ± 0.111	0.718 ± 0.111	0.736 ± 0.118	0.727 ± 0.129	**0.800 ± 0.134**	0.718 ± 0.125	0.718 ± 0.111	0.709 ± 0.106	0.764 ± 0.153
$ecoli-0-6-7_vs5$	0.750 ± 0.092	0.750 ± 0.092	0.750 ± 0.092	0.750 ± 0.092	0.750 ± 0.092	0.830 ± 0.110	0.750 ± 0.092	0.750 ± 0.092	0.740 ± 0.092	**0.870 ± 0.149**
$glass-0-1-4-6_vs2$	0.568 ± 0.209	0.456 ± 0.262	0.592 ± 0.235	0.553 ± 0.274	0.449 ± 0.234	0.411 ± 0.185	0.589 ± 0.267	0.568 ± 0.209	0.561 ± 0.263	**0.869 ± 0.165**
$glass-0-1-5_vs2$	0.554 ± 0.135	0.433 ± 0.142	0.565 ± 0.130	0.578 ± 0.159	0.464 ± 0.144	0.290 ± 0.098	0.532 ± 0.150	0.554 ± 0.135	0.562 ± 0.205	**0.811 ± 0.155**
$yeast-0-2-5-6_vs3-7-8-9$	0.635 ± 0.064	0.588 ± 0.087	0.635 ± 0.056	0.651 ± 0.057	0.619 ± 0.067	0.657 ± 0.061	0.643 ± 0.063	0.637 ± 0.062	0.592 ± 0.074	**0.729 ± 0.078**
$yeast-0-3-5-9_vs7-8$	0.560 ± 0.082	0.316 ± 0.070	0.556 ± 0.081	0.556 ± 0.095	0.552 ± 0.085	0.428 ± 0.123	0.552 ± 0.071	0.560 ± 0.082	0.512 ± 0.172	**0.976 ± 0.072**
$abalone-17_vs7-8-9-10$	0.717 ± 0.043	0.528 ± 0.079	0.707 ± 0.047	0.707 ± 0.069	0.690 ± 0.056	0.724 ± 0.056	0.721 ± 0.052	0.714 ± 0.041	0.410 ± 0.174	**0.793 ± 0.109**
$abalone-19_vs10-11-12-13$	0.419 ± 0.158	0.231 ± 0.125	0.425 ± 0.155	0.425 ± 0.142	0.394 ± 0.137	0.463 ± 0.163	0.406 ± 0.164	0.419 ± 0.158	0.412 ± 0.233	**0.694 ± 0.141**
$abalone-20_vs8-9-10$	0.654 ± 0.099	0.577 ± 0.086	0.662 ± 0.086	0.646 ± 0.099	0.638 ± 0.109	0.823 ± 0.103	0.638 ± 0.114	0.654 ± 0.099	0.523 ± 0.238	**0.838 ± 0.080**
$abalone-21_vs8$	0.614 ± 0.239	0.586 ± 0.243	0.614 ± 0.239	0.629 ± 0.241	0.614 ± 0.248	**0.700 ± 0.135**	0.614 ± 0.239	0.614 ± 0.239	0.571 ± 0.293	0.571 ± 0.221
$flare-F$	0.604 ± 0.093	0.419 ± 0.095	0.600 ± 0.097	0.609 ± 0.105	0.568 ± 0.089	0.674 ± 0.117	0.600 ± 0.095	0.604 ± 0.093	0.525 ± 0.200	**0.949 ± 0.052**
$kddcup-buffer\_overflow\_vs\_back$	0.987 ± 0.027	0.993 ± 0.020	0.987 ± 0.027	0.987 ± 0.027	0.987 ± 0.027	**1.000 ± 0.000**	0.987 ± 0.027	0.987 ± 0.027	0.993 ± 0.020	0.993 ± 0.020
$kddcup-rootkit-imap\_vs\_back$	**0.955 ± 0.045**	**0.955 ± 0.045**	**0.955 ± 0.045**	**0.955 ± 0.045**	**0.955 ± 0.045**	**0.955 ± 0.045**	0.945 ± 0.060	**0.955 ± 0.045**	**0.955 ± 0.084**	**0.955 ± 0.084**
$kr-vs-k-zero\_vs\_eight$	0.880 ± 0.102	0.872 ± 0.113	0.880 ± 0.102	0.880 ± 0.102	0.872 ± 0.113	**0.918 ± 0.099**	0.872 ± 0.113	0.880 ± 0.102	0.752 ± 0.146	0.733 ± 0.071
$poker-8-9_vs5$	0.297 ± 0.142	0.201 ± 0.135	0.280 ± 0.126	0.272 ± 0.121	0.231 ± 0.132	0.452 ± 0.167	0.273 ± 0.105	0.297 ± 0.142	0.397 ± 0.160	**0.480 ± 0.180**
$poker-8-9_vs6$	0.514 ± 0.127	0.449 ± 0.095	0.514 ± 0.127	0.489 ± 0.107	0.465 ± 0.126	0.888 ± 0.112	0.499 ± 0.172	0.514 ± 0.127	0.960 ± 0.084	**0.975 ± 0.075**
$poker-8_vs6$	0.567 ± 0.146	0.425 ± 0.118	0.567 ± 0.146	0.578 ± 0.131	0.518 ± 0.162	**0.944 ± 0.102**	0.578 ± 0.131	0.567 ± 0.146	0.740 ± 0.245	0.900 ± 0.213
$poker-9_vs7$	0.275 ± 0.208	0.250 ± 0.194	0.275 ± 0.208	0.275 ± 0.208	0.300 ± 0.245	0.375 ± 0.280	0.225 ± 0.175	0.275 ± 0.208	**0.500 ± 0.296**	0.425 ± 0.275
$winequality-red-3_vs5$	0.100 ± 0.100	0.100 ± 0.100	0.100 ± 0.100	0.100 ± 0.100	0.120 ± 0.098	**0.240 ± 0.120**	0.120 ± 0.098	0.100 ± 0.100	0.140 ± 0.180	**0.240 ± 0.196**
$winequality-red-4$	0.393 ± 0.088	0.309 ± 0.063	0.382 ± 0.084	0.404 ± 0.084	0.359 ± 0.076	0.313 ± 0.062	0.397 ± 0.084	0.393 ± 0.088	0.250 ± 0.150	**0.652 ± 0.151**
$winequality-red-8_vs6-7$	0.211 ± 0.116	0.156 ± 0.113	0.211 ± 0.116	0.211 ± 0.116	0.111 ± 0.111	0.178 ± 0.133	0.178 ± 0.102	0.211 ± 0.116	0.211 ± 0.161	**0.311 ± 0.178**
$winequality-red-8_vs6$	0.289 ± 0.074	0.267 ± 0.054	0.289 ± 0.074	0.289 ± 0.074	0.289 ± 0.074	0.344 ± 0.136	0.311 ± 0.067	0.289 ± 0.074	0.378 ± 0.102	**0.444 ± 0.217**
$winequality-white-3-9_vs5$	0.181 ± 0.109	0.095 ± 0.093	0.174 ± 0.123	0.174 ± 0.102	0.112 ± 0.081	**0.410 ± 0.087**	0.166 ± 0.106	0.181 ± 0.109	0.167 ± 0.113	0.372 ± 0.212
$winequality-white-3_vs7$	0.110 ± 0.104	0.080 ± 0.087	0.140 ± 0.143	0.140 ± 0.143	0.100 ± 0.100	**0.530 ± 0.155**	0.120 ± 0.098	0.110 ± 0.104	0.210 ± 0.145	0.370 ± 0.290
$winequality-white-9_vs4$	**0.633 ± 0.267**	**0.633 ± 0.267**	**0.633 ± 0.267**	0.400 ± 0.436	**0.633 ± 0.267**	0.400 ± 0.436	**0.633 ± 0.267**	**0.633 ± 0.267**	0.483 ± 0.361	0.483 ± 0.361
$zoo-3$	0.233 ± 0.327	0.233 ± 0.327	0.233 ± 0.327	0.200 ± 0.332	0.233 ± 0.327	0.200 ± 0.332	0.233 ± 0.327	0.233 ± 0.327	**0.383 ± 0.380**	**0.383 ± 0.380**
$ecoli1$	0.896 ± 0.050	0.839 ± 0.035	0.891 ± 0.047	0.883 ± 0.040	0.883 ± 0.040	0.925 ± 0.027	0.886 ± 0.047	0.896 ± 0.050	0.904 ± 0.073	**0.967 ± 0.062**
$ecoli2$	0.915 ± 0.054	0.892 ± 0.073	0.915 ± 0.054	0.912 ± 0.057	0.912 ± 0.057	0.923 ± 0.042	0.919 ± 0.047	0.912 ± 0.057	0.838 ± 0.080	**0.935 ± 0.106**
$ecoli3$	0.880 ± 0.054	0.869 ± 0.056	0.880 ± 0.054	0.880 ± 0.047	0.891 ± 0.054	0.920 ± 0.038	0.874 ± 0.050	0.886 ± 0.051	0.816 ± 0.122	**0.954 ± 0.035**
$glass0$	0.860 ± 0.064	0.811 ± 0.063	0.863 ± 0.065	0.877 ± 0.070	0.869 ± 0.062	0.869 ± 0.055	0.874 ± 0.056	0.866 ± 0.063	0.894 ± 0.066	**0.951 ± 0.057**
$glass1$	0.758 ± 0.078	0.771 ± 0.098	0.745 ± 0.081	0.745 ± 0.105	0.763 ± 0.096	0.674 ± 0.159	0.750 ± 0.102	0.753 ± 0.078	0.711 ± 0.159	**0.945 ± 0.034**
$haberman$	0.475 ± 0.121	0.440 ± 0.081	0.479 ± 0.097	0.484 ± 0.122	0.492 ± 0.129	0.458 ± 0.104	0.494 ± 0.097	0.470 ± 0.122	0.408 ± 0.097	**0.562 ± 0.139**
$page-blocks0$	0.916 ± 0.019	0.824 ± 0.018	0.914 ± 0.017	0.891 ± 0.023	0.914 ± 0.020	0.719 ± 0.033	0.915 ± 0.020	0.916 ± 0.019	0.830 ± 0.088	**0.963 ± 0.015**
$pima$	0.708 ± 0.047	0.635 ± 0.057	0.705 ± 0.049	0.694 ± 0.037	0.709 ± 0.037	0.688 ± 0.024	0.711 ± 0.051	0.712 ± 0.044	0.565 ± 0.030	**0.844 ± 0.038**
$vehicle1$	0.825 ± 0.086	0.653 ± 0.058	0.827 ± 0.077	0.822 ± 0.078	0.836 ± 0.058	0.830 ± 0.080	0.821 ± 0.067	0.831 ± 0.084	0.515 ± 0.139	**0.897 ± 0.038**
$vehicle3$	0.845 ± 0.056	0.648 ± 0.053	0.850 ± 0.053	0.866 ± 0.056	0.839 ± 0.050	0.844 ± 0.052	0.845 ± 0.040	0.847 ± 0.055	0.390 ± 0.075	**0.881 ± 0.066**
$yeast1$	0.716 ± 0.033	0.544 ± 0.029	0.708 ± 0.024	0.724 ± 0.043	0.705 ± 0.039	0.668 ± 0.016	0.715 ± 0.038	0.717 ± 0.033	0.536 ± 0.134	**1.000 ± 0.000**
$yeast3$	0.843 ± 0.050	0.802 ± 0.053	0.845 ± 0.045	0.842 ± 0.059	0.833 ± 0.047	0.853 ± 0.041	0.849 ± 0.052	0.843 ± 0.050	0.761 ± 0.046	**0.994 ± 0.006**

Table 9. KNN – AUC

Dataset name	SMOTE	polynom-fit-SMOTE	Lee	SMOBD	G-SMOTE	LVQ-SMOTE	Assembled-SMOTE	SMOTE-TomekLinks	JFOTS-pr	JFOTS-rc
$abalone19$	0.568 ± 0.069	0.519 ± 0.028	0.568 ± 0.069	0.567 ± 0.069	0.549 ± 0.043	0.554 ± 0.047	0.565 ± 0.062	**0.568 ± 0.069**	0.520 ± 0.030	0.497 ± 0.011
$abalone9-18$	0.719 ± 0.033	0.704 ± 0.044	0.704 ± 0.034	0.709 ± 0.040	0.701 ± 0.046	0.692 ± 0.033	0.714 ± 0.041	**0.720 ± 0.033**	0.645 ± 0.066	0.572 ± 0.063
$ecoli-0-1-3-7\_vs2-6$	0.834 ± 0.075	**0.835 ± 0.076**	0.834 ± 0.074	0.833 ± 0.074	0.834 ± 0.076	0.833 ± 0.076	0.834 ± 0.075	0.834 ± 0.075	0.800 ± 0.108	0.800 ± 0.106
$glass-0-1-6\_vs2$	0.718 ± 0.086	0.682 ± 0.045	0.713 ± 0.081	0.714 ± 0.084	0.701 ± 0.056	0.657 ± 0.063	**0.725 ± 0.082**	0.717 ± 0.085	0.638 ± 0.040	0.606 ± 0.086
$glass-0-1-6\_vs5$	0.914 ± 0.097	**0.915 ± 0.098**	0.914 ± 0.097	0.914 ± 0.098	0.894 ± 0.133	0.881 ± 0.120	0.914 ± 0.097	0.914 ± 0.097	0.878 ± 0.118	0.842 ± 0.192
$glass2$	0.630 ± 0.134	0.633 ± 0.137	0.637 ± 0.151	**0.644 ± 0.141**	0.623 ± 0.130	0.627 ± 0.112	0.635 ± 0.145	0.628 ± 0.133	0.640 ± 0.098	0.583 ± 0.096
$glass4$	0.901 ± 0.057	**0.903 ± 0.068**	0.876 ± 0.056	0.885 ± 0.056	0.879 ± 0.083	0.863 ± 0.038	0.892 ± 0.048	0.901 ± 0.057	0.818 ± 0.061	0.752 ± 0.141
$glass5$	0.931 ± 0.110	**0.933 ± 0.110**	0.921 ± 0.116	0.931 ± 0.110	0.913 ± 0.114	0.862 ± 0.108	0.931 ± 0.110	0.931 ± 0.110	0.821 ± 0.114	0.867 ± 0.136
$page-blocks-1-3\_vs4$	**0.983 ± 0.023**	0.978 ± 0.024	0.982 ± 0.023	**0.983 ± 0.023**	0.952 ± 0.096	0.980 ± 0.016	0.976 ± 0.025	**0.983 ± 0.023**	0.859 ± 0.104	0.835 ± 0.086
$yeast-0-5-6-7-9\_vs4$	0.727 ± 0.045	**0.740 ± 0.038**	0.730 ± 0.040	0.733 ± 0.043	0.729 ± 0.053	0.731 ± 0.045	0.718 ± 0.035	0.725 ± 0.043	0.671 ± 0.068	0.498 ± 0.002
$yeast-1-2-8-9\_vs7$	0.672 ± 0.048	**0.685 ± 0.045**	0.668 ± 0.040	0.663 ± 0.040	0.649 ± 0.065	0.660 ± 0.052	0.667 ± 0.051	0.672 ± 0.048	0.586 ± 0.044	0.500 ± 0.000
$yeast-1-4-5-8\_vs7$	0.611 ± 0.040	0.595 ± 0.062	**0.614 ± 0.044**	0.594 ± 0.052	0.572 ± 0.052	0.577 ± 0.042	0.605 ± 0.039	0.611 ± 0.038	0.536 ± 0.036	0.500 ± 0.000
$yeast-1\_vs7$	0.723 ± 0.036	0.723 ± 0.042	0.726 ± 0.035	**0.732 ± 0.042**	0.702 ± 0.055	0.690 ± 0.033	0.701 ± 0.051	0.722 ± 0.035	0.608 ± 0.035	0.499 ± 0.002
$yeast-2\_vs4$	0.873 ± 0.030	0.863 ± 0.035	0.869 ± 0.033	0.871 ± 0.030	0.873 ± 0.029	0.861 ± 0.034	**0.875 ± 0.027**	0.874 ± 0.030	0.842 ± 0.048	0.603 ± 0.158
$yeast-2\_vs8$	0.802 ± 0.051	**0.810 ± 0.046**	0.794 ± 0.045	0.801 ± 0.053	0.803 ± 0.044	0.806 ± 0.057	0.798 ± 0.051	0.801 ± 0.050	0.772 ± 0.051	0.534 ± 0.105
$yeast4$	0.729 ± 0.025	0.733 ± 0.034	0.729 ± 0.027	0.729 ± 0.027	0.713 ± 0.033	0.727 ± 0.045	**0.735 ± 0.039**	0.729 ± 0.025	0.662 ± 0.034	0.500 ± 0.000
$yeast5$	0.929 ± 0.036	0.920 ± 0.035	0.925 ± 0.036	0.922 ± 0.035	0.910 ± 0.034	**0.933 ± 0.049**	0.929 ± 0.034	0.929 ± 0.036	0.865 ± 0.054	0.500 ± 0.000
$yeast6$	0.814 ± 0.044	0.816 ± 0.038	0.815 ± 0.044	0.813 ± 0.044	0.812 ± 0.046	**0.829 ± 0.035**	0.809 ± 0.043	0.814 ± 0.044	0.733 ± 0.073	0.500 ± 0.000
$cleveland-0\_vs4$	0.876 ± 0.069	0.868 ± 0.036	0.881 ± 0.029	0.875 ± 0.068	0.875 ± 0.033	0.813 ± 0.069	**0.883 ± 0.024**	0.876 ± 0.069	0.738 ± 0.086	0.719 ± 0.135
$ecoli-0-1-4-7\_vs2-3-5-6$	0.883 ± 0.018	0.878 ± 0.024	0.880 ± 0.018	0.876 ± 0.018	0.883 ± 0.022	0.877 ± 0.028	0.882 ± 0.021	**0.884 ± 0.018**	0.739 ± 0.121	0.568 ± 0.099
$ecoli-0-1\_vs2-3-5$	0.884 ± 0.024	**0.887 ± 0.026**	0.878 ± 0.025	0.880 ± 0.025	0.879 ± 0.024	0.875 ± 0.042	0.886 ± 0.030	0.884 ± 0.024	0.821 ± 0.104	0.689 ± 0.160
$ecoli-0-2-6-7\_vs3-5$	0.839 ± 0.051	0.839 ± 0.051	0.842 ± 0.061	0.840 ± 0.053	**0.844 ± 0.057**	0.840 ± 0.038	0.838 ± 0.049	0.839 ± 0.050	0.810 ± 0.041	0.588 ± 0.122
$ecoli-0-6-7\_vs3-5$	0.851 ± 0.054	0.855 ± 0.053	0.854 ± 0.064	**0.858 ± 0.050**	0.848 ± 0.061	0.841 ± 0.052	0.851 ± 0.052	0.852 ± 0.053	0.813 ± 0.051	0.614 ± 0.143
$ecoli-0-6-7\_vs5$	0.866 ± 0.047	0.865 ± 0.056	0.867 ± 0.045	0.867 ± 0.053	0.870 ± 0.046	**0.870 ± 0.036**	0.865 ± 0.049	0.867 ± 0.048	0.830 ± 0.065	0.589 ± 0.123
$glass-0-1-4-6\_vs2$	**0.674 ± 0.098**	0.665 ± 0.088	0.671 ± 0.103	0.673 ± 0.099	0.645 ± 0.101	0.624 ± 0.058	0.666 ± 0.105	0.669 ± 0.095	0.549 ± 0.071	0.582 ± 0.110
$glass-0-1-5\_vs2$	0.676 ± 0.059	0.674 ± 0.055	**0.684 ± 0.063**	0.669 ± 0.065	0.660 ± 0.079	0.631 ± 0.060	0.683 ± 0.059	0.675 ± 0.060	0.657 ± 0.088	0.622 ± 0.128
$yeast-0-2-5-6\_vs3-7-8-9$	0.772 ± 0.031	0.768 ± 0.025	**0.775 ± 0.028**	0.772 ± 0.026	0.772 ± 0.031	0.764 ± 0.033	0.772 ± 0.031	0.773 ± 0.032	0.684 ± 0.075	0.533 ± 0.058
$yeast-0-3-5-9\_vs7-8$	0.679 ± 0.037	0.675 ± 0.035	0.679 ± 0.037	0.670 ± 0.043	0.678 ± 0.036	**0.681 ± 0.050**	0.669 ± 0.030	0.680 ± 0.038	0.569 ± 0.063	0.502 ± 0.011
$abalone-17\_vs7-8-9-10$	0.749 ± 0.046	0.719 ± 0.034	**0.752 ± 0.045**	0.745 ± 0.046	0.718 ± 0.044	0.739 ± 0.042	0.743 ± 0.044	0.749 ± 0.046	0.606 ± 0.033	0.582 ± 0.077
$abalone-19\_vs10-11-12-13$	0.583 ± 0.037	0.551 ± 0.025	0.587 ± 0.040	**0.589 ± 0.047**	0.558 ± 0.049	0.569 ± 0.045	0.570 ± 0.044	0.582 ± 0.037	0.535 ± 0.032	0.515 ± 0.033
$abalone-20\_vs8-9-10$	0.750 ± 0.055	0.662 ± 0.025	0.758 ± 0.062	**0.761 ± 0.067**	0.667 ± 0.058	0.709 ± 0.052	0.743 ± 0.082	0.746 ± 0.058	0.635 ± 0.056	0.549 ± 0.077
$abalone-21\_vs8$	**0.830 ± 0.084**	0.771 ± 0.079	0.815 ± 0.074	0.815 ± 0.076	0.797 ± 0.077	0.794 ± 0.065	0.822 ± 0.080	0.830 ± 0.084	0.703 ± 0.095	0.667 ± 0.121
$flare-F$	0.693 ± 0.044	0.674 ± 0.035	0.690 ± 0.050	0.693 ± 0.044	0.671 ± 0.041	0.693 ± 0.036	**0.694 ± 0.041**	0.692 ± 0.044	0.552 ± 0.042	0.504 ± 0.009
$kddcup-buffer\_overflow\_vs\_back$	0.957 ± 0.047	0.957 ± 0.047	0.957 ± 0.047	0.957 ± 0.047	0.947 ± 0.050	**0.960 ± 0.042**	0.947 ± 0.043	0.957 ± 0.047	0.957 ± 0.045	0.957 ± 0.045
$kddcup-rootkit-imap\_vs\_back$	**0.973 ± 0.022**	0.964 ± 0.040	**0.973 ± 0.022**	**0.973 ± 0.022**	0.955 ± 0.045	0.945 ± 0.027	0.955 ± 0.050	**0.973 ± 0.022**	0.964 ± 0.040	0.964 ± 0.040
$kr-vs-k-zero\_vs\_eight$	0.940 ± 0.050	0.930 ± 0.053	0.944 ± 0.050	0.944 ± 0.049	0.933 ± 0.048	**0.944 ± 0.060**	0.929 ± 0.060	0.940 ± 0.050	0.757 ± 0.163	0.500 ± 0.000
$poker-8-9\_vs5$	0.609 ± 0.059	0.578 ± 0.036	0.617 ± 0.065	0.608 ± 0.062	0.552 ± 0.036	**0.643 ± 0.048**	0.614 ± 0.061	0.609 ± 0.059	0.546 ± 0.069	0.514 ± 0.036
$poker-8-9\_vs6$	0.949 ± 0.040	0.912 ± 0.033	0.949 ± 0.039	0.949 ± 0.039	0.890 ± 0.048	0.976 ± 0.027	0.937 ± 0.031	0.949 ± 0.040	**0.988 ± 0.038**	0.976 ± 0.048
$poker-8\_vs6$	0.942 ± 0.061	0.851 ± 0.057	0.942 ± 0.061	0.942 ± 0.061	0.899 ± 0.064	**0.978 ± 0.018**	0.932 ± 0.078	0.942 ± 0.061	0.906 ± 0.122	0.931 ± 0.113
$poker-9\_vs7$	0.839 ± 0.152	**0.839 ± 0.152**	0.839 ± 0.152	**0.839 ± 0.152**	0.827 ± 0.144	0.795 ± 0.125	0.828 ± 0.145	0.839 ± 0.152	0.793 ± 0.233	0.806 ± 0.192
$winequality-red-3\_vs5$	0.584 ± 0.061	0.577 ± 0.053	0.584 ± 0.061	0.583 ± 0.061	0.578 ± 0.055	**0.592 ± 0.064**	0.575 ± 0.052	0.584 ± 0.061	0.543 ± 0.069	0.493 ± 0.033
$winequality-red-4$	0.597 ± 0.027	0.583 ± 0.043	0.596 ± 0.029	0.596 ± 0.021	0.584 ± 0.037	0.557 ± 0.024	**0.602 ± 0.024**	0.597 ± 0.026	0.540 ± 0.025	0.521 ± 0.038
$winequality-red-8\_vs6-7$	0.530 ± 0.064	**0.543 ± 0.068**	0.536 ± 0.063	0.537 ± 0.063	0.525 ± 0.044	0.530 ± 0.060	0.534 ± 0.055	0.531 ± 0.064	0.542 ± 0.058	0.534 ± 0.070
$winequality-red-8\_vs6$	**0.635 ± 0.050**	0.630 ± 0.052	0.624 ± 0.055	0.635 ± 0.051	0.604 ± 0.058	0.600 ± 0.052	0.632 ± 0.043	0.635 ± 0.050	0.593 ± 0.064	0.584 ± 0.077
$winequality-white-3-9\_vs5$	**0.618 ± 0.030**	0.613 ± 0.033	0.617 ± 0.035	0.617 ± 0.034	0.574 ± 0.028	0.602 ± 0.053	0.599 ± 0.034	**0.618 ± 0.030**	0.547 ± 0.046	0.518 ± 0.029
$winequality-white-3\_vs7$	0.630 ± 0.086	0.573 ± 0.064	0.633 ± 0.092	0.619 ± 0.094	0.581 ± 0.062	**0.644 ± 0.084**	0.630 ± 0.099	0.630 ± 0.086	0.585 ± 0.074	0.599 ± 0.089
$winequality-white-9\_vs4$	0.878 ± 0.091	**0.882 ± 0.095**	0.878 ± 0.091	0.766 ± 0.164	0.881 ± 0.094	0.774 ± 0.172	0.878 ± 0.091	0.878 ± 0.091	0.726 ± 0.177	0.726 ± 0.177
$zoo-3$	**0.827 ± 0.157**	**0.827 ± 0.157**	**0.827 ± 0.157**	0.717 ± 0.191	**0.827 ± 0.157**	0.692 ± 0.167	**0.827 ± 0.157**	**0.827 ± 0.157**	0.630 ± 0.130	0.630 ± 0.130
$ecoli1$	0.864 ± 0.026	0.863 ± 0.019	0.868 ± 0.030	**0.871 ± 0.024**	0.870 ± 0.026	0.864 ± 0.028	0.863 ± 0.033	0.867 ± 0.023	0.802 ± 0.055	0.563 ± 0.127
$ecoli2$	0.915 ± 0.028	**0.922 ± 0.025**	0.913 ± 0.027	0.914 ± 0.027	0.919 ± 0.029	0.911 ± 0.021	0.914 ± 0.027	0.915 ± 0.028	0.837 ± 0.086	0.584 ± 0.138
$ecoli3$	0.866 ± 0.019	0.857 ± 0.022	**0.868 ± 0.015**	0.859 ± 0.025	0.851 ± 0.035	0.851 ± 0.028	0.861 ± 0.018	0.865 ± 0.015	0.800 ± 0.053	0.575 ± 0.119
$glass0$	0.791 ± 0.035	0.799 ± 0.036	0.786 ± 0.034	0.794 ± 0.028	0.793 ± 0.028	0.787 ± 0.041	0.800 ± 0.030	**0.800 ± 0.034**	0.778 ± 0.047	0.700 ± 0.116
$glass1$	0.738 ± 0.047	**0.749 ± 0.053**	0.745 ± 0.044	0.748 ± 0.037	0.739 ± 0.042	0.740 ± 0.031	0.736 ± 0.030	0.738 ± 0.051	0.698 ± 0.068	0.551 ± 0.081
$haberman$	0.601 ± 0.034	**0.616 ± 0.036**	0.587 ± 0.044	0.588 ± 0.016	0.588 ± 0.039	0.587 ± 0.030	0.584 ± 0.029	0.599 ± 0.030	0.600 ± 0.024	0.535 ± 0.074
$page-blocks0$	0.929 ± 0.010	0.911 ± 0.012	0.928 ± 0.012	0.921 ± 0.012	0.924 ± 0.011	0.887 ± 0.016	**0.931 ± 0.009**	0.930 ± 0.010	0.895 ± 0.018	0.905 ± 0.012
$pima$	0.685 ± 0.021	**0.708 ± 0.018**	0.686 ± 0.013	0.687 ± 0.016	0.683 ± 0.017	0.690 ± 0.021	0.687 ± 0.017	0.693 ± 0.024	0.686 ± 0.020	0.616 ± 0.053
$vehicle1$	0.723 ± 0.026	**0.740 ± 0.017**	0.720 ± 0.024	0.736 ± 0.025	0.726 ± 0.017	0.720 ± 0.022	0.731 ± 0.022	0.724 ± 0.027	0.667 ± 0.022	0.716 ± 0.030
$vehicle3$	0.708 ± 0.018	0.700 ± 0.029	0.712 ± 0.019	**0.718 ± 0.025**	0.709 ± 0.017	0.692 ± 0.023	0.712 ± 0.020	0.706 ± 0.020	0.656 ± 0.019	0.696 ± 0.023
$yeast1$	0.675 ± 0.010	**0.697 ± 0.012**	0.676 ± 0.010	0.676 ± 0.015	0.668 ± 0.012	0.667 ± 0.011	0.674 ± 0.013	0.678 ± 0.010	0.620 ± 0.058	0.500 ± 0.000
$yeast3$	0.873 ± 0.017	**0.874 ± 0.021**	0.874 ± 0.018	0.868 ± 0.022	0.870 ± 0.018	0.868 ± 0.017	0.874 ± 0.017	0.872 ± 0.017	0.847 ± 0.018	0.500 ± 0.000

Table 10. CART – BAC

Dataset name	SMOTE	polynom-fit-SMOTE	Lee	SMOBD	G-SMOTE	LVQ-SMOTE	Assembled-SMOTE	SMOTE-TomekLinks	JFOTS-pr	JFOTS-rc
*abalone*19	0.561 ± 0.042	0.503 ± 0.015	0.546 ± 0.038	**0.565 ± 0.042**	0.545 ± 0.052	0.537 ± 0.051	0.555 ± 0.047	0.561 ± 0.042	0.505 ± 0.019	0.540 ± 0.045
*abalone*9 − 18	0.665 ± 0.059	0.609 ± 0.040	0.672 ± 0.051	**0.685 ± 0.051**	0.652 ± 0.034	0.684 ± 0.082	0.649 ± 0.038	0.667 ± 0.062	0.658 ± 0.041	0.561 ± 0.075
$ecoli-0-1-3-7_{s}vs2-6$	0.790 ± 0.115	**0.815 ± 0.063**	0.790 ± 0.115	0.790 ± 0.115	**0.815 ± 0.063**	0.776 ± 0.100	0.790 ± 0.115	0.790 ± 0.115	0.694 ± 0.110	0.609 ± 0.088
$glass-0-1-6_{s}vs2$	0.629 ± 0.058	0.570 ± 0.054	**0.663 ± 0.054**	0.642 ± 0.063	0.593 ± 0.042	0.588 ± 0.108	0.633 ± 0.108	0.628 ± 0.055	0.653 ± 0.106	0.576 ± 0.043
$glass-0-1-6_{s}vs5$	0.860 ± 0.133	0.858 ± 0.133	0.860 ± 0.133	0.860 ± 0.133	0.790 ± 0.164	**0.894 ± 0.133**	0.860 ± 0.133	0.860 ± 0.133	0.765 ± 0.151	0.883 ± 0.154
*glass*2	0.591 ± 0.121	0.563 ± 0.077	0.577 ± 0.111	**0.610 ± 0.101**	0.603 ± 0.106	0.582 ± 0.110	0.575 ± 0.094	0.606 ± 0.124	0.586 ± 0.076	0.550 ± 0.077
*glass*4	0.854 ± 0.086	0.835 ± 0.053	0.854 ± 0.087	0.845 ± 0.086	**0.861 ± 0.073**	0.808 ± 0.090	0.853 ± 0.090	0.854 ± 0.086	0.797 ± 0.109	0.764 ± 0.140
*glass*5	0.851 ± 0.154	0.849 ± 0.153	0.851 ± 0.154	0.851 ± 0.154	0.862 ± 0.160	**0.935 ± 0.107**	0.851 ± 0.154	0.851 ± 0.154	0.836 ± 0.150	0.895 ± 0.127
$page-blocks-1-3_{s}vs4$	0.969 ± 0.059	0.949 ± 0.060	0.966 ± 0.068	0.964 ± 0.068	0.972 ± 0.063	0.962 ± 0.050	**0.983 ± 0.032**	0.969 ± 0.059	0.902 ± 0.062	0.884 ± 0.100
$yeast-0-5-6-7-9_{s}vs4$	0.696 ± 0.057	0.680 ± 0.048	**0.713 ± 0.047**	0.694 ± 0.056	0.677 ± 0.039	0.712 ± 0.055	0.688 ± 0.037	0.701 ± 0.042	0.662 ± 0.046	0.496 ± 0.008
$yeast-1-2-8-9_{s}vs7$	0.588 ± 0.028	0.578 ± 0.047	0.590 ± 0.030	0.578 ± 0.047	0.599 ± 0.051	**0.647 ± 0.062**	0.586 ± 0.023	0.604 ± 0.044	0.554 ± 0.057	0.511 ± 0.004
$yeast-1-4-5-8_{s}vs7$	0.532 ± 0.049	**0.554 ± 0.026**	0.535 ± 0.064	0.523 ± 0.045	0.540 ± 0.049	0.518 ± 0.041	0.551 ± 0.029	0.526 ± 0.048	0.506 ± 0.033	0.505 ± 0.003
$yeast-1_{s}vs7$	0.613 ± 0.057	0.623 ± 0.049	0.601 ± 0.067	0.635 ± 0.052	0.598 ± 0.055	**0.659 ± 0.038**	0.616 ± 0.048	0.609 ± 0.053	0.584 ± 0.046	0.511 ± 0.029
$yeast-2_{s}vs4$	0.845 ± 0.046	0.840 ± 0.055	0.865 ± 0.043	0.861 ± 0.068	0.854 ± 0.053	0.862 ± 0.041	**0.865 ± 0.042**	0.839 ± 0.037	0.815 ± 0.050	0.583 ± 0.141
$yeast-2_{s}vs8$	0.730 ± 0.089	0.762 ± 0.068	0.775 ± 0.104	**0.778 ± 0.084**	0.760 ± 0.070	0.751 ± 0.045	0.747 ± 0.065	0.741 ± 0.087	0.756 ± 0.049	0.520 ± 0.031
*yeast*4	0.675 ± 0.044	0.637 ± 0.032	0.689 ± 0.061	0.690 ± 0.049	0.633 ± 0.041	**0.719 ± 0.055**	0.674 ± 0.083	0.678 ± 0.046	0.676 ± 0.050	0.497 ± 0.009
*yeast*5	0.862 ± 0.073	0.846 ± 0.068	0.846 ± 0.064	0.859 ± 0.068	0.853 ± 0.064	**0.878 ± 0.049**	0.868 ± 0.057	0.864 ± 0.076	0.841 ± 0.048	0.510 ± 0.001
*yeast*6	0.730 ± 0.066	0.692 ± 0.047	0.725 ± 0.067	0.747 ± 0.062	0.743 ± 0.047	**0.768 ± 0.051**	0.742 ± 0.059	0.731 ± 0.064	0.679 ± 0.058	0.521 ± 0.033
$cleveland-0_{s}vs4$	**0.814 ± 0.055**	0.731 ± 0.129	0.785 ± 0.103	0.782 ± 0.083	0.743 ± 0.137	0.745 ± 0.048	0.801 ± 0.063	**0.814 ± 0.055**	0.756 ± 0.084	0.736 ± 0.097
$ecoli-0-1-4-7_{s}vs2-3-5-6$	0.792 ± 0.074	0.794 ± 0.048	0.822 ± 0.039	0.790 ± 0.069	0.776 ± 0.061	0.822 ± 0.050	**0.827 ± 0.054**	0.806 ± 0.077	0.721 ± 0.104	0.550 ± 0.083
$ecoli-0-1_{s}vs2-3-5$	0.799 ± 0.062	0.806 ± 0.102	0.784 ± 0.059	0.749 ± 0.042	0.788 ± 0.041	**0.841 ± 0.058**	0.781 ± 0.050	0.800 ± 0.062	0.753 ± 0.087	0.649 ± 0.137
$ecoli-0-2-6-7_{s}vs3-5$	0.799 ± 0.045	0.787 ± 0.062	0.809 ± 0.054	0.822 ± 0.075	**0.829 ± 0.057**	0.827 ± 0.063	0.778 ± 0.066	0.802 ± 0.047	0.773 ± 0.057	0.566 ± 0.120
$ecoli-0-6-7_{s}vs3-5$	0.795 ± 0.069	0.794 ± 0.048	0.810 ± 0.052	0.813 ± 0.063	**0.840 ± 0.064**	0.834 ± 0.060	0.790 ± 0.056	0.796 ± 0.069	0.773 ± 0.056	0.594 ± 0.147
$ecoli-0-6-7_{s}vs5$	0.840 ± 0.068	0.840 ± 0.074	0.828 ± 0.068	0.838 ± 0.071	0.837 ± 0.064	0.842 ± 0.044	0.825 ± 0.060	0.839 ± 0.070	**0.850 ± 0.078**	0.574 ± 0.127
$glass-0-1-4-6_{s}vs2$	0.595 ± 0.051	0.560 ± 0.082	0.610 ± 0.072	0.591 ± 0.062	0.606 ± 0.073	**0.638 ± 0.077**	0.558 ± 0.066	0.576 ± 0.062	0.558 ± 0.071	0.557 ± 0.034
$glass-0-1-5_{s}vs2$	0.689 ± 0.067	0.597 ± 0.068	0.677 ± 0.082	**0.713 ± 0.110**	0.651 ± 0.082	0.605 ± 0.090	0.649 ± 0.079	0.678 ± 0.062	0.598 ± 0.070	0.536 ± 0.072
$yeast-0-2-5-6_{s}vs3-7-8-9$	0.713 ± 0.037	0.712 ± 0.051	**0.735 ± 0.038**	0.714 ± 0.027	0.715 ± 0.031	0.728 ± 0.046	0.709 ± 0.037	0.700 ± 0.034	0.646 ± 0.062	0.541 ± 0.061
$yeast-0-3-5-9_{s}vs7-8$	0.598 ± 0.035	**0.638 ± 0.041**	0.621 ± 0.044	0.623 ± 0.050	0.616 ± 0.061	0.629 ± 0.050	0.615 ± 0.028	0.630 ± 0.031	0.550 ± 0.059	0.512 ± 0.016
$abalone-17_{s}vs7-8-9-10$	0.644 ± 0.041	0.642 ± 0.033	0.643 ± 0.042	0.660 ± 0.045	0.649 ± 0.047	**0.667 ± 0.024**	0.646 ± 0.039	0.642 ± 0.036	0.633 ± 0.055	0.569 ± 0.057
$abalone-19_{s}vs10-11-12-13$	0.556 ± 0.041	0.517 ± 0.024	0.556 ± 0.050	0.548 ± 0.035	0.541 ± 0.055	**0.576 ± 0.050**	0.557 ± 0.034	0.560 ± 0.028	0.523 ± 0.039	0.514 ± 0.041
$abalone-20_{s}vs8-9-10$	0.696 ± 0.050	0.584 ± 0.065	0.674 ± 0.065	0.682 ± 0.050	0.633 ± 0.070	**0.789 ± 0.061**	0.681 ± 0.059	0.696 ± 0.050	0.621 ± 0.054	0.589 ± 0.042
$abalone-21_{s}vs8$	0.726 ± 0.121	0.655 ± 0.074	0.699 ± 0.092	0.691 ± 0.116	0.702 ± 0.065	**0.790 ± 0.070**	0.692 ± 0.105	0.734 ± 0.126	0.712 ± 0.125	0.614 ± 0.092
flare − *F*	0.558 ± 0.035	0.581 ± 0.030	0.570 ± 0.045	0.578 ± 0.038	0.587 ± 0.021	0.580 ± 0.034	0.576 ± 0.048	0.577 ± 0.035	**0.636 ± 0.083**	0.575 ± 0.068
$kddcup-buffer\_overflow_{s}vs_{s}ack$	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**
$kddcup-rootkit-imap_{s}vs_{s}ack$	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	0.982 ± 0.036	0.982 ± 0.036
$kr-vs-k-zero_{s}vs_{e}ight$	0.961 ± 0.050	0.965 ± 0.051	**0.965 ± 0.052**	0.965 ± 0.051	0.964 ± 0.038	0.954 ± 0.074	0.954 ± 0.058	0.961 ± 0.050	0.771 ± 0.082	0.702 ± 0.042
$poker-8-9_{s}vs5$	0.572 ± 0.039	0.558 ± 0.049	0.566 ± 0.032	0.572 ± 0.032	0.546 ± 0.035	**0.585 ± 0.070**	0.543 ± 0.028	0.572 ± 0.039	0.531 ± 0.048	0.517 ± 0.054
$poker-8-9_{s}vs6$	0.680 ± 0.087	0.824 ± 0.141	0.670 ± 0.096	0.644 ± 0.084	0.615 ± 0.064	0.628 ± 0.096	0.657 ± 0.105	0.680 ± 0.087	**0.999 ± 0.001**	0.999 ± 0.001
$poker-8_{s}vs6$	0.685 ± 0.101	0.685 ± 0.163	0.703 ± 0.123	0.685 ± 0.095	0.761 ± 0.165	0.669 ± 0.162	0.677 ± 0.100	0.685 ± 0.101	**0.931 ± 0.085**	**0.931 ± 0.084**
$poker-9_{s}vs7$	0.564 ± 0.082	0.548 ± 0.063	0.564 ± 0.082	0.562 ± 0.084	0.571 ± 0.080	0.613 ± 0.127	0.563 ± 0.081	0.564 ± 0.082	**0.686 ± 0.209**	0.647 ± 0.162
$winequality-red-3_{s}vs5$	0.516 ± 0.043	0.529 ± 0.066	0.506 ± 0.040	0.518 ± 0.045	0.530 ± 0.049	**0.565 ± 0.056**	0.525 ± 0.064	0.516 ± 0.043	0.519 ± 0.047	0.528 ± 0.049
$winequality-red-4$	0.552 ± 0.048	0.528 ± 0.030	**0.576 ± 0.029**	0.572 ± 0.036	0.556 ± 0.037	0.571 ± 0.036	0.548 ± 0.017	0.552 ± 0.050	0.537 ± 0.031	0.531 ± 0.031
$winequality-red-8_{s}vs6-7$	0.543 ± 0.041	0.557 ± 0.050	0.550 ± 0.039	0.562 ± 0.051	**0.568 ± 0.043**	0.555 ± 0.043	0.545 ± 0.048	0.543 ± 0.041	0.544 ± 0.043	0.529 ± 0.053
$winequality-red-8_{s}vs6$	0.609 ± 0.052	0.608 ± 0.064	0.605 ± 0.046	0.603 ± 0.067	0.601 ± 0.064	0.614 ± 0.058	**0.630 ± 0.056**	0.609 ± 0.052	0.577 ± 0.044	0.566 ± 0.063
$winequality-white-3-9_{s}vs5$	0.566 ± 0.063	0.544 ± 0.047	0.540 ± 0.054	0.546 ± 0.056	0.529 ± 0.063	**0.643 ± 0.056**	0.535 ± 0.037	0.566 ± 0.063	0.528 ± 0.031	0.509 ± 0.019
$winequality-white-3_{s}vs7$	0.539 ± 0.045	0.557 ± 0.060	0.576 ± 0.061	0.567 ± 0.055	0.593 ± 0.060	**0.737 ± 0.086**	0.524 ± 0.047	0.539 ± 0.045	0.546 ± 0.032	0.578 ± 0.076
$winequality-white-9_{s}vs4$	**0.722 ± 0.163**	0.672 ± 0.100	0.721 ± 0.162	0.721 ± 0.162	0.699 ± 0.138	0.692 ± 0.141	0.721 ± 0.162	**0.722 ± 0.163**	0.573 ± 0.112	0.573 ± 0.112
zoo − 3	0.658 ± 0.189	0.608 ± 0.123	0.665 ± 0.158	0.650 ± 0.156	0.635 ± 0.160	**0.738 ± 0.159**	0.639 ± 0.122	0.658 ± 0.189	0.509 ± 0.127	0.509 ± 0.127
*ecoli*1	0.841 ± 0.056	0.818 ± 0.039	0.827 ± 0.049	0.836 ± 0.039	0.837 ± 0.041	0.842 ± 0.033	0.822 ± 0.048	**0.860 ± 0.041**	0.751 ± 0.067	0.556 ± 0.105
*ecoli*2	0.855 ± 0.028	0.838 ± 0.035	0.850 ± 0.033	0.852 ± 0.036	0.848 ± 0.028	**0.866 ± 0.037**	0.852 ± 0.041	0.855 ± 0.028	0.777 ± 0.083	0.578 ± 0.113
*ecoli*3	0.745 ± 0.049	0.748 ± 0.065	0.768 ± 0.067	0.772 ± 0.049	0.766 ± 0.053	**0.833 ± 0.049**	0.775 ± 0.051	0.755 ± 0.053	0.760 ± 0.050	0.554 ± 0.100
*glass*0	0.767 ± 0.036	0.770 ± 0.060	0.772 ± 0.038	0.787 ± 0.033	0.777 ± 0.042	**0.802 ± 0.041**	0.794 ± 0.040	0.774 ± 0.025	0.746 ± 0.051	0.673 ± 0.069
*glass*1	0.719 ± 0.029	**0.733 ± 0.031**	0.727 ± 0.054	0.726 ± 0.058	0.714 ± 0.045	0.717 ± 0.046	0.726 ± 0.061	0.716 ± 0.033	0.676 ± 0.081	0.591 ± 0.058
haberman	0.584 ± 0.035	0.567 ± 0.025	0.573 ± 0.041	0.563 ± 0.045	0.572 ± 0.052	0.577 ± 0.038	0.565 ± 0.055	**0.596 ± 0.045**	0.584 ± 0.025	0.536 ± 0.058
page − *blocks*0	0.917 ± 0.012	0.898 ± 0.010	0.915 ± 0.010	0.914 ± 0.008	0.906 ± 0.009	0.900 ± 0.009	**0.919 ± 0.011**	0.917 ± 0.008	0.907 ± 0.013	0.895 ± 0.014
pima	0.665 ± 0.020	0.673 ± 0.023	0.660 ± 0.021	0.665 ± 0.015	0.660 ± 0.023	**0.678 ± 0.027**	0.658 ± 0.021	0.670 ± 0.025	0.659 ± 0.030	0.600 ± 0.041
*vehicle*1	0.668 ± 0.024	0.668 ± 0.021	0.680 ± 0.032	0.671 ± 0.025	0.666 ± 0.027	**0.685 ± 0.023**	0.674 ± 0.024	0.676 ± 0.014	0.663 ± 0.019	0.665 ± 0.021
*vehicle*3	0.666 ± 0.023	**0.690 ± 0.023**	0.655 ± 0.023	0.677 ± 0.028	0.669 ± 0.016	0.685 ± 0.014	0.674 ± 0.020	0.667 ± 0.013	0.662 ± 0.038	0.680 ± 0.023
*yeast*1	0.643 ± 0.017	**0.653 ± 0.017**	0.653 ± 0.016	0.650 ± 0.011	0.649 ± 0.013	0.653 ± 0.017	0.652 ± 0.021	0.641 ± 0.009	0.610 ± 0.045	0.507 ± 0.002
*yeast*3	0.864 ± 0.029	0.832 ± 0.033	0.863 ± 0.024	0.849 ± 0.015	0.848 ± 0.025	0.860 ± 0.027	0.854 ± 0.031	**0.867 ± 0.030**	0.826 ± 0.029	0.504 ± 0.003

Table 11. SVM – BAC

Dataset name	SMOTE	polynom-fit-SMOTE	Lee	SMOBD	G-SMOTE	LVQ-SMOTE	Assembled-SMOTE	SMOTE-TomekLinks	JFOTS-pr	JFOTS-rc
$abalone19$	0.593 ± 0.063	0.569 ± 0.048	0.593 ± 0.057	0.599 ± 0.065	0.602 ± 0.063	**0.655 ± 0.056**	0.593 ± 0.062	0.593 ± 0.063	0.620 ± 0.082	0.597 ± 0.083
$abalone9-18$	0.740 ± 0.052	0.698 ± 0.036	0.745 ± 0.035	0.750 ± 0.042	0.742 ± 0.051	**0.782 ± 0.043**	0.739 ± 0.038	0.739 ± 0.051	0.678 ± 0.060	0.661 ± 0.091
$ecoli-0-1-3-7_vs2-6$	0.845 ± 0.075	**0.847 ± 0.078**	0.838 ± 0.074	0.842 ± 0.076	0.842 ± 0.079	0.828 ± 0.078	0.844 ± 0.075	0.845 ± 0.075	0.844 ± 0.110	0.840 ± 0.110
$glass-0-1-6_vs2$	0.740 ± 0.099	0.697 ± 0.081	**0.744 ± 0.090**	0.740 ± 0.079	0.693 ± 0.080	0.622 ± 0.083	0.743 ± 0.072	0.740 ± 0.100	0.724 ± 0.090	0.673 ± 0.092
$glass-0-1-6_vs5$	0.820 ± 0.098	0.792 ± 0.117	0.820 ± 0.098	0.820 ± 0.098	0.810 ± 0.123	0.843 ± 0.147	0.820 ± 0.098	0.820 ± 0.098	0.784 ± 0.123	**0.869 ± 0.153**
$glass2$	0.642 ± 0.143	0.638 ± 0.134	0.648 ± 0.140	0.637 ± 0.137	0.647 ± 0.143	**0.677 ± 0.158**	0.648 ± 0.146	0.641 ± 0.143	0.626 ± 0.130	0.631 ± 0.118
$glass4$	**0.892 ± 0.094**	0.852 ± 0.116	0.883 ± 0.108	0.876 ± 0.121	0.884 ± 0.102	0.870 ± 0.111	0.876 ± 0.082	**0.892 ± 0.094**	0.821 ± 0.068	0.788 ± 0.142
$glass5$	0.818 ± 0.106	0.809 ± 0.103	0.828 ± 0.099	0.828 ± 0.099	0.808 ± 0.093	0.854 ± 0.155	0.818 ± 0.106	0.818 ± 0.106	0.788 ± 0.098	**0.870 ± 0.119**
$page-blocks-1-3_vs4$	0.904 ± 0.114	0.791 ± 0.070	**0.908 ± 0.112**	0.907 ± 0.112	0.904 ± 0.119	0.796 ± 0.048	0.888 ± 0.116	0.904 ± 0.114	0.819 ± 0.074	0.862 ± 0.073
$yeast-0-5-6-7-9_vs4$	0.749 ± 0.047	0.741 ± 0.037	0.762 ± 0.040	0.752 ± 0.049	0.747 ± 0.055	**0.765 ± 0.030**	0.749 ± 0.041	0.746 ± 0.047	0.696 ± 0.066	0.496 ± 0.008
$yeast-1-2-8-9_vs7$	0.606 ± 0.041	0.594 ± 0.054	0.608 ± 0.050	0.605 ± 0.049	0.620 ± 0.049	**0.673 ± 0.069**	0.605 ± 0.053	0.610 ± 0.038	0.566 ± 0.052	0.511 ± 0.004
$yeast-1-4-5-8_vs7$	0.571 ± 0.051	0.568 ± 0.051	0.564 ± 0.047	0.561 ± 0.037	0.582 ± 0.055	**0.600 ± 0.034**	0.557 ± 0.035	0.571 ± 0.050	0.543 ± 0.035	0.505 ± 0.003
$yeast-1_vs7$	0.690 ± 0.041	0.671 ± 0.046	0.691 ± 0.039	**0.692 ± 0.043**	0.664 ± 0.066	0.686 ± 0.064	0.683 ± 0.040	0.689 ± 0.041	0.596 ± 0.086	0.512 ± 0.030
$yeast-2_vs4$	0.870 ± 0.039	0.862 ± 0.040	0.873 ± 0.039	**0.875 ± 0.045**	0.871 ± 0.046	0.869 ± 0.034	0.868 ± 0.046	0.870 ± 0.038	0.848 ± 0.033	0.605 ± 0.174
$yeast-2_vs8$	0.736 ± 0.046	0.773 ± 0.051	0.747 ± 0.043	0.756 ± 0.040	0.738 ± 0.047	**0.795 ± 0.064**	0.740 ± 0.063	0.736 ± 0.046	0.756 ± 0.071	0.517 ± 0.025
$yeast4$	0.765 ± 0.034	0.746 ± 0.032	0.769 ± 0.042	0.768 ± 0.032	0.760 ± 0.033	**0.792 ± 0.032**	0.757 ± 0.024	0.764 ± 0.034	0.688 ± 0.023	0.497 ± 0.009
$yeast5$	0.927 ± 0.029	0.924 ± 0.030	0.927 ± 0.029	0.927 ± 0.029	0.928 ± 0.026	**0.941 ± 0.024**	0.927 ± 0.029	0.927 ± 0.029	0.900 ± 0.064	0.510 ± 0.001
$yeast6$	0.843 ± 0.049	0.840 ± 0.046	0.848 ± 0.054	0.840 ± 0.049	0.844 ± 0.049	**0.862 ± 0.034**	0.842 ± 0.053	0.843 ± 0.049	0.756 ± 0.054	0.520 ± 0.031
$cleveland-0_vs4$	0.719 ± 0.089	0.681 ± 0.082	0.728 ± 0.101	0.736 ± 0.099	0.721 ± 0.109	**0.845 ± 0.052**	0.719 ± 0.088	0.719 ± 0.089	0.718 ± 0.048	0.666 ± 0.101
$ecoli-0-1-4-7_vs2-3-5-6$	0.872 ± 0.032	0.851 ± 0.020	0.867 ± 0.029	0.866 ± 0.019	0.866 ± 0.030	**0.884 ± 0.033**	0.871 ± 0.037	0.872 ± 0.032	0.758 ± 0.130	0.595 ± 0.135
$ecoli-0-1_vs2-3-5$	0.854 ± 0.041	0.865 ± 0.044	0.863 ± 0.044	0.861 ± 0.043	0.856 ± 0.041	**0.886 ± 0.047**	0.858 ± 0.045	0.853 ± 0.041	0.793 ± 0.088	0.692 ± 0.199
$ecoli-0-2-6-7_vs3-5$	0.834 ± 0.056	0.842 ± 0.061	0.838 ± 0.056	0.843 ± 0.056	0.848 ± 0.060	**0.871 ± 0.050**	0.835 ± 0.059	0.834 ± 0.056	0.827 ± 0.054	0.667 ± 0.149
$ecoli-0-6-7_vs3-5$	0.846 ± 0.055	0.851 ± 0.056	0.843 ± 0.056	0.857 ± 0.059	0.850 ± 0.061	**0.869 ± 0.060**	0.846 ± 0.061	0.846 ± 0.055	0.845 ± 0.051	0.680 ± 0.159
$ecoli-0-6-7_vs5$	0.861 ± 0.043	0.863 ± 0.043	0.863 ± 0.044	0.859 ± 0.043	0.860 ± 0.042	**0.887 ± 0.047**	0.859 ± 0.044	0.862 ± 0.042	0.861 ± 0.044	0.647 ± 0.163
$glass-0-1-4-6_vs2$	0.710 ± 0.101	0.669 ± 0.128	0.713 ± 0.107	0.702 ± 0.131	0.654 ± 0.115	0.625 ± 0.090	**0.716 ± 0.127**	0.709 ± 0.101	0.609 ± 0.085	0.662 ± 0.083
$glass-0-1-5_vs2$	0.696 ± 0.063	0.659 ± 0.067	0.701 ± 0.062	**0.711 ± 0.071**	0.675 ± 0.079	0.581 ± 0.049	0.685 ± 0.068	0.696 ± 0.063	0.673 ± 0.066	0.616 ± 0.162
$yeast-0-2-5-6_vs3-7-8-9$	0.782 ± 0.026	0.775 ± 0.041	0.778 ± 0.032	0.788 ± 0.019	0.773 ± 0.036	**0.791 ± 0.030**	0.781 ± 0.029	0.783 ± 0.026	0.735 ± 0.062	0.559 ± 0.109
$yeast-0-3-5-9_vs7-8$	**0.696 ± 0.035**	0.640 ± 0.032	0.687 ± 0.036	0.690 ± 0.045	0.693 ± 0.043	0.660 ± 0.053	0.692 ± 0.034	0.695 ± 0.036	0.634 ± 0.069	0.516 ± 0.027
$abalone-17_vs7-8-9-10$	0.814 ± 0.021	0.742 ± 0.040	0.809 ± 0.024	0.810 ± 0.034	0.804 ± 0.028	**0.823 ± 0.025**	0.816 ± 0.024	0.813 ± 0.019	0.677 ± 0.073	0.722 ± 0.090
$abalone-19_vs10-11-12-13$	0.633 ± 0.062	0.582 ± 0.058	0.637 ± 0.061	0.636 ± 0.052	0.633 ± 0.059	**0.659 ± 0.075**	0.629 ± 0.067	0.633 ± 0.062	0.631 ± 0.085	0.594 ± 0.058
$abalone-20_vs8-9-10$	0.806 ± 0.048	0.775 ± 0.041	0.809 ± 0.043	0.802 ± 0.047	0.801 ± 0.052	**0.884 ± 0.051**	0.798 ± 0.055	0.806 ± 0.048	0.743 ± 0.109	0.742 ± 0.103
$abalone-21_vs8$	0.798 ± 0.117	0.788 ± 0.120	0.798 ± 0.116	0.804 ± 0.117	0.799 ± 0.122	**0.839 ± 0.070**	0.798 ± 0.117	0.799 ± 0.117	0.771 ± 0.144	0.728 ± 0.125
$flare-F$	0.738 ± 0.040	0.689 ± 0.046	0.732 ± 0.044	0.743 ± 0.049	0.720 ± 0.042	**0.777 ± 0.047**	0.738 ± 0.045	0.738 ± 0.040	0.681 ± 0.073	0.575 ± 0.068
$kddcup-buffer\_overflow\_vs\_back$	0.993 ± 0.013	0.997 ± 0.010	0.993 ± 0.013	0.993 ± 0.013	0.993 ± 0.013	**1.000 ± 0.000**	0.993 ± 0.013	0.993 ± 0.013	0.997 ± 0.010	0.997 ± 0.010
$kddcup-rootkit-imap\_vs\_back$	**0.977 ± 0.023**	**0.977 ± 0.023**	**0.977 ± 0.023**	**0.977 ± 0.023**	**0.977 ± 0.023**	**0.977 ± 0.023**	0.973 ± 0.030	**0.977 ± 0.023**	0.977 ± 0.042	0.977 ± 0.042
$kr-vs-k-zero\_vs\_eight$	0.937 ± 0.052	0.934 ± 0.057	0.937 ± 0.052	0.937 ± 0.052	0.934 ± 0.057	**0.950 ± 0.050**	0.934 ± 0.057	0.937 ± 0.052	0.845 ± 0.076	0.701 ± 0.041
$poker-8-9_vs5$	0.625 ± 0.067	0.588 ± 0.066	0.617 ± 0.058	0.613 ± 0.056	0.598 ± 0.064	**0.677 ± 0.074**	0.614 ± 0.047	0.625 ± 0.067	0.634 ± 0.079	0.562 ± 0.085
$poker-8-9_vs6$	0.757 ± 0.064	0.724 ± 0.047	0.757 ± 0.064	0.744 ± 0.054	0.732 ± 0.063	0.937 ± 0.055	0.749 ± 0.086	0.757 ± 0.064	0.979 ± 0.041	**0.986 ± 0.037**
$poker-8_vs6$	0.783 ± 0.073	0.712 ± 0.059	0.783 ± 0.073	0.789 ± 0.066	0.759 ± 0.081	**0.968 ± 0.051**	0.789 ± 0.065	0.783 ± 0.073	0.869 ± 0.123	0.950 ± 0.107
$poker-9_vs7$	0.636 ± 0.104	0.624 ± 0.097	0.636 ± 0.104	0.636 ± 0.104	0.648 ± 0.122	0.680 ± 0.135	0.611 ± 0.087	0.636 ± 0.104	**0.729 ± 0.163**	0.686 ± 0.139
$winequality-red-3_vs5$	0.540 ± 0.049	0.542 ± 0.050	0.539 ± 0.049	0.540 ± 0.049	0.551 ± 0.051	**0.608 ± 0.057**	0.550 ± 0.050	0.540 ± 0.049	0.539 ± 0.096	0.526 ± 0.117
$winequality-red-4$	0.638 ± 0.034	0.611 ± 0.029	0.632 ± 0.033	**0.644 ± 0.035**	0.629 ± 0.036	0.617 ± 0.029	0.641 ± 0.034	0.637 ± 0.033	0.548 ± 0.026	0.599 ± 0.051
$winequality-red-8_vs6-7$	0.571 ± 0.054	0.550 ± 0.055	**0.572 ± 0.054**	0.571 ± 0.054	0.531 ± 0.052	0.541 ± 0.063	0.557 ± 0.048	0.571 ± 0.054	0.542 ± 0.067	0.518 ± 0.081
$winequality-red-8_vs6$	0.614 ± 0.031	0.610 ± 0.024	0.615 ± 0.031	0.615 ± 0.030	0.620 ± 0.032	0.627 ± 0.065	0.625 ± 0.030	0.614 ± 0.031	**0.637 ± 0.044**	0.609 ± 0.096
$winequality-white-3-9_vs5$	0.565 ± 0.051	0.529 ± 0.045	0.559 ± 0.057	0.560 ± 0.048	0.541 ± 0.039	**0.685 ± 0.039**	0.557 ± 0.051	0.565 ± 0.051	0.519 ± 0.064	0.528 ± 0.055
$winequality-white-3_vs7$	0.533 ± 0.049	0.528 ± 0.041	0.549 ± 0.066	0.547 ± 0.067	0.535 ± 0.044	**0.756 ± 0.077**	0.539 ± 0.047	0.533 ± 0.049	0.561 ± 0.063	0.607 ± 0.121
$winequality-white-9_vs4$	0.815 ± 0.134	0.815 ± 0.134	0.815 ± 0.134	0.699 ± 0.218	**0.815 ± 0.134**	0.695 ± 0.214	0.815 ± 0.134	0.815 ± 0.134	0.707 ± 0.175	0.707 ± 0.175
$zoo-3$	**0.611 ± 0.162**	**0.611 ± 0.162**	**0.611 ± 0.162**	0.597 ± 0.163	**0.611 ± 0.162**	0.595 ± 0.161	**0.611 ± 0.162**	**0.611 ± 0.162**	0.547 ± 0.174	0.547 ± 0.174
$ecoli1$	0.885 ± 0.027	0.886 ± 0.020	0.886 ± 0.020	0.884 ± 0.020	0.883 ± 0.024	**0.889 ± 0.015**	0.881 ± 0.022	0.884 ± 0.026	0.875 ± 0.033	0.576 ± 0.145
$ecoli2$	0.940 ± 0.024	0.932 ± 0.034	0.941 ± 0.024	0.940 ± 0.026	0.939 ± 0.025	0.938 ± 0.021	**0.942 ± 0.022**	0.939 ± 0.025	0.860 ± 0.082	0.604 ± 0.146
$ecoli3$	0.889 ± 0.022	0.893 ± 0.024	0.887 ± 0.022	**0.894 ± 0.017**	0.894 ± 0.021	0.893 ± 0.019	0.887 ± 0.021	0.892 ± 0.021	0.858 ± 0.056	0.602 ± 0.169
$glass0$	0.779 ± 0.040	0.790 ± 0.020	0.785 ± 0.039	0.778 ± 0.037	**0.793 ± 0.038**	0.771 ± 0.032	0.792 ± 0.034	0.778 ± 0.036	0.742 ± 0.032	0.724 ± 0.065
$glass1$	0.701 ± 0.038	0.689 ± 0.043	0.690 ± 0.038	0.696 ± 0.034	**0.703 ± 0.040**	0.677 ± 0.038	0.698 ± 0.039	0.701 ± 0.044	0.694 ± 0.062	0.598 ± 0.048
$haberman$	0.611 ± 0.026	**0.642 ± 0.035**	0.619 ± 0.026	0.597 ± 0.031	0.611 ± 0.039	0.627 ± 0.027	0.614 ± 0.034	0.611 ± 0.028	0.613 ± 0.039	0.559 ± 0.092
$page-blocks0$	0.931 ± 0.008	0.900 ± 0.008	0.931 ± 0.007	0.923 ± 0.009	0.931 ± 0.008	0.848 ± 0.016	0.930 ± 0.008	**0.932 ± 0.008**	0.879 ± 0.034	0.892 ± 0.025
$pima$	0.727 ± 0.030	0.722 ± 0.027	0.729 ± 0.023	0.726 ± 0.022	0.729 ± 0.025	0.730 ± 0.017	**0.732 ± 0.028**	0.728 ± 0.032	0.706 ± 0.018	0.666 ± 0.030
$vehicle1$	0.789 ± 0.027	0.749 ± 0.023	0.790 ± 0.026	0.790 ± 0.020	0.798 ± 0.015	0.792 ± 0.023	0.791 ± 0.019	0.793 ± 0.025	0.695 ± 0.047	**0.804 ± 0.018**
$vehicle3$	0.789 ± 0.022	0.734 ± 0.017	0.790 ± 0.018	**0.797 ± 0.026**	0.788 ± 0.016	0.789 ± 0.023	0.789 ± 0.018	0.790 ± 0.021	0.650 ± 0.021	0.789 ± 0.027
$yeast1$	0.711 ± 0.013	0.695 ± 0.013	0.712 ± 0.015	0.707 ± 0.020	0.709 ± 0.015	**0.713 ± 0.011**	0.709 ± 0.014	0.712 ± 0.013	0.656 ± 0.038	0.507 ± 0.002
$yeast3$	0.893 ± 0.022	0.884 ± 0.027	0.894 ± 0.020	0.893 ± 0.026	0.888 ± 0.020	**0.896 ± 0.020**	0.895 ± 0.023	0.893 ± 0.022	0.867 ± 0.019	0.504 ± 0.003

Table 12. KNN – G-mean

Dataset name	SMOTE	polynom-fit-SMOTE	Lee	SMOBD	G-SMOTE	LVQ-SMOTE	Assembled-SMOTE	SMOTE-TomekLinks	JFOTS-pr	JFOTS-rc
abalone19	0.392 ± 0.183	0.189 ± 0.159	0.392 ± 0.183	0.392 ± 0.183	0.319 ± 0.174	0.390 ± 0.106	0.388 ± 0.176	**0.392 ± 0.183**	0.187 ± 0.161	0.049 ± 0.097
abalone9 − 18	0.696 ± 0.043	0.666 ± 0.064	0.676 ± 0.047	0.681 ± 0.055	0.663 ± 0.067	0.649 ± 0.054	0.687 ± 0.056	**0.696 ± 0.044**	0.534 ± 0.118	0.331 ± 0.247
ecoli − 0 − 1 − 3 − 7_vs2 − 6	0.817 ± 0.096	**0.818 ± 0.097**	0.817 ± 0.096	0.816 ± 0.096	0.817 ± 0.097	0.816 ± 0.097	0.817 ± 0.096	0.817 ± 0.096	0.771 ± 0.135	0.771 ± 0.133
glass − 0 − 1 − 6_vs2	0.704 ± 0.096	0.663 ± 0.056	0.697 ± 0.092	0.699 ± 0.094	0.679 ± 0.069	0.629 ± 0.089	**0.709 ± 0.095**	0.703 ± 0.095	0.591 ± 0.066	0.456 ± 0.254
glass − 0 − 1 − 6_vs5	0.905 ± 0.110	**0.906 ± 0.111**	0.905 ± 0.110	0.904 ± 0.111	0.872 ± 0.175	0.863 ± 0.158	0.904 ± 0.110	0.905 ± 0.110	0.859 ± 0.157	0.767 ± 0.326
glass2	0.543 ± 0.246	0.523 ± 0.291	0.522 ± 0.300	0.558 ± 0.255	0.505 ± 0.282	0.551 ± 0.222	0.520 ± 0.295	0.541 ± 0.245	**0.562 ± 0.211**	0.382 ± 0.282
glass4	0.897 ± 0.063	**0.898 ± 0.075**	0.870 ± 0.063	0.880 ± 0.062	0.870 ± 0.094	0.858 ± 0.042	0.888 ± 0.054	0.897 ± 0.063	0.801 ± 0.083	0.643 ± 0.328
glass5	0.917 ± 0.145	**0.919 ± 0.146**	0.906 ± 0.151	0.917 ± 0.145	0.897 ± 0.149	0.849 ± 0.125	0.917 ± 0.145	0.917 ± 0.145	0.791 ± 0.151	0.842 ± 0.172
page − blocks − 1 − 3_vs4	**0.983 ± 0.023**	0.978 ± 0.024	0.982 ± 0.023	0.983 ± 0.023	0.944 ± 0.119	0.980 ± 0.016	0.976 ± 0.026	**0.983 ± 0.023**	0.841 ± 0.125	0.821 ± 0.096
yeast − 0 − 5 − 6 − 7 − 9_vs4	0.714 ± 0.053	**0.730 ± 0.045**	0.717 ± 0.050	0.719 ± 0.050	0.713 ± 0.066	0.717 ± 0.054	0.702 ± 0.043	0.711 ± 0.052	0.599 ± 0.108	0.000 ± 0.000
yeast − 1 − 2 − 8 − 9_vs7	0.646 ± 0.063	**0.654 ± 0.060**	0.642 ± 0.054	0.634 ± 0.055	0.586 ± 0.124	0.621 ± 0.079	0.638 ± 0.067	0.646 ± 0.063	0.440 ± 0.097	0.000 ± 0.000
yeast − 1 − 4 − 5 − 8_vs7	0.573 ± 0.058	0.528 ± 0.098	**0.577 ± 0.060**	0.543 ± 0.086	0.483 ± 0.093	0.519 ± 0.063	0.563 ± 0.062	0.573 ± 0.052	0.297 ± 0.169	0.000 ± 0.000
yeast − 1_vs7	0.715 ± 0.040	0.711 ± 0.049	0.717 ± 0.040	**0.726 ± 0.047**	0.682 ± 0.067	0.671 ± 0.040	0.688 ± 0.058	0.713 ± 0.039	0.489 ± 0.082	0.000 ± 0.000
yeast − 2_vs4	0.868 ± 0.034	0.857 ± 0.039	0.864 ± 0.037	0.867 ± 0.034	0.869 ± 0.032	0.856 ± 0.037	**0.870 ± 0.030**	0.869 ± 0.034	0.828 ± 0.057	0.250 ± 0.382
yeast − 2_vs8	0.789 ± 0.064	0.791 ± 0.059	0.782 ± 0.058	0.789 ± 0.065	0.788 ± 0.057	**0.792 ± 0.068**	0.787 ± 0.063	0.789 ± 0.063	0.745 ± 0.061	0.084 ± 0.251
yeast4	0.702 ± 0.035	0.704 ± 0.046	0.702 ± 0.036	0.700 ± 0.038	0.675 ± 0.048	0.701 ± 0.059	**0.708 ± 0.051**	0.702 ± 0.034	0.575 ± 0.058	0.000 ± 0.000
yeast5	0.927 ± 0.040	0.917 ± 0.039	0.922 ± 0.040	0.920 ± 0.038	0.907 ± 0.037	**0.931 ± 0.052**	0.927 ± 0.037	0.927 ± 0.040	0.854 ± 0.064	0.000 ± 0.000
yeast6	0.802 ± 0.054	0.802 ± 0.047	0.802 ± 0.054	0.801 ± 0.054	0.797 ± 0.056	**0.826 ± 0.038**	0.795 ± 0.053	0.802 ± 0.054	0.680 ± 0.108	0.000 ± 0.000
cleveland − 0_vs4	0.869 ± 0.083	0.863 ± 0.039	0.878 ± 0.031	0.868 ± 0.082	0.871 ± 0.037	0.794 ± 0.087	**0.880 ± 0.027**	0.869 ± 0.083	0.698 ± 0.119	0.605 ± 0.313
ecoli − 0 − 1 − 4 − 7_vs2 − 3 − 5 − 6	0.882 ± 0.018	0.874 ± 0.026	0.878 ± 0.020	0.873 ± 0.020	0.881 ± 0.024	0.874 ± 0.030	0.880 ± 0.022	**0.882 ± 0.019**	0.672 ± 0.180	0.273 ± 0.300
ecoli − 0 − 1_vs2 − 3 − 5	0.880 ± 0.028	**0.882 ± 0.030**	0.873 ± 0.029	0.875 ± 0.029	0.874 ± 0.028	0.871 ± 0.045	0.882 ± 0.034	0.880 ± 0.028	0.786 ± 0.173	0.482 ± 0.397
ecoli − 0 − 2 − 6 − 7_vs3 − 5	0.831 ± 0.059	0.829 ± 0.060	0.833 ± 0.068	0.831 ± 0.061	**0.835 ± 0.064**	0.834 ± 0.042	0.830 ± 0.057	0.830 ± 0.058	0.789 ± 0.050	0.359 ± 0.298
ecoli − 0 − 6 − 7_vs3 − 5	0.844 ± 0.061	0.848 ± 0.060	0.847 ± 0.071	**0.850 ± 0.059**	0.839 ± 0.068	0.833 ± 0.057	0.844 ± 0.060	0.845 ± 0.060	0.792 ± 0.065	0.373 ± 0.344
ecoli − 0 − 6 − 7_vs5	0.860 ± 0.051	0.856 ± 0.066	0.860 ± 0.050	0.859 ± 0.063	0.863 ± 0.052	**0.866 ± 0.039**	0.859 ± 0.054	0.860 ± 0.053	0.812 ± 0.078	0.318 ± 0.333
glass − 0 − 1 − 4 − 6_vs2	**0.636 ± 0.142**	0.623 ± 0.134	0.628 ± 0.162	0.628 ± 0.160	0.587 ± 0.156	0.573 ± 0.087	0.617 ± 0.164	0.629 ± 0.139	0.393 ± 0.218	0.361 ± 0.314
glass − 0 − 1 − 5_vs2	0.662 ± 0.070	0.660 ± 0.063	**0.673 ± 0.073**	0.654 ± 0.077	0.630 ± 0.117	0.602 ± 0.078	0.669 ± 0.068	0.661 ± 0.070	0.619 ± 0.135	0.418 ± 0.323
yeast − 0 − 2 − 5 − 6_vs3 − 7 − 8 − 9	0.767 ± 0.036	0.760 ± 0.030	**0.771 ± 0.031**	0.768 ± 0.028	0.766 ± 0.034	0.755 ± 0.036	0.768 ± 0.035	0.768 ± 0.036	0.606 ± 0.146	0.219 ± 0.202
yeast − 0 − 3 − 5 − 9_vs7 − 8	0.662 ± 0.042	0.649 ± 0.043	0.662 ± 0.043	0.652 ± 0.050	0.657 ± 0.047	0.653 ± 0.065	0.650 ± 0.037	**0.664 ± 0.044**	0.420 ± 0.149	0.028 ± 0.084
abalone − 17_vs7 − 8 − 9 − 10	0.722 ± 0.061	0.672 ± 0.048	**0.726 ± 0.060**	0.717 ± 0.060	0.673 ± 0.061	0.706 ± 0.056	0.714 ± 0.059	0.721 ± 0.061	0.465 ± 0.072	0.387 ± 0.215
abalone − 19_vs10 − 11 − 12 − 13	0.492 ± 0.070	0.379 ± 0.064	0.498 ± 0.076	**0.500 ± 0.091**	0.391 ± 0.158	0.454 ± 0.085	0.462 ± 0.085	0.492 ± 0.070	0.300 ± 0.130	0.251 ± 0.218
abalone − 20_vs8 − 9 − 10	0.714 ± 0.080	0.580 ± 0.045	0.724 ± 0.088	**0.728 ± 0.093**	0.584 ± 0.099	0.661 ± 0.085	0.696 ± 0.129	0.708 ± 0.085	0.513 ± 0.128	0.198 ± 0.264
abalone − 21_vs8	**0.810 ± 0.104**	0.732 ± 0.107	0.793 ± 0.092	0.794 ± 0.093	0.769 ± 0.097	0.769 ± 0.082	0.801 ± 0.098	0.810 ± 0.104	0.625 ± 0.159	0.515 ± 0.290
flare − F	0.651 ± 0.061	0.619 ± 0.057	0.647 ± 0.072	0.651 ± 0.063	0.614 ± 0.064	**0.654 ± 0.053**	0.653 ± 0.057	0.651 ± 0.062	0.286 ± 0.168	0.043 ± 0.085
kddcup − buffer_overflow_vs_back	0.954 ± 0.051	0.954 ± 0.051	0.954 ± 0.051	0.954 ± 0.051	0.944 ± 0.054	**0.958 ± 0.044**	0.944 ± 0.046	0.954 ± 0.051	0.954 ± 0.048	0.954 ± 0.048
kddcup − rootkit − imap_vs_back	**0.972 ± 0.023**	0.962 ± 0.043	**0.972 ± 0.023**	**0.972 ± 0.023**	0.952 ± 0.049	0.943 ± 0.029	0.952 ± 0.055	**0.972 ± 0.023**	0.962 ± 0.042	0.962 ± 0.042
kr − vs − k − zero_vs_eight	0.937 ± 0.052	0.926 ± 0.057	0.941 ± 0.052	0.941 ± 0.052	0.930 ± 0.051	**0.941 ± 0.066**	0.924 ± 0.066	0.937 ± 0.052	0.634 ± 0.339	0.000 ± 0.000
poker − 8 − 9_vs5	0.486 ± 0.126	0.406 ± 0.091	0.498 ± 0.136	0.484 ± 0.129	0.328 ± 0.133	**0.577 ± 0.084**	0.492 ± 0.132	0.486 ± 0.126	0.226 ± 0.242	0.086 ± 0.173
poker − 8 − 9_vs6	0.948 ± 0.042	0.908 ± 0.036	0.947 ± 0.041	0.947 ± 0.041	0.883 ± 0.055	0.976 ± 0.027	0.936 ± 0.032	0.948 ± 0.042	**0.987 ± 0.040**	0.974 ± 0.051
poker − 8_vs6	0.940 ± 0.065	0.838 ± 0.067	0.940 ± 0.065	0.939 ± 0.065	0.893 ± 0.070	**0.978 ± 0.018**	0.926 ± 0.087	0.940 ± 0.065	0.889 ± 0.148	0.918 ± 0.138
poker − 9_vs7	0.773 ± 0.290	**0.773 ± 0.291**	0.773 ± 0.290	0.773 ± 0.291	0.760 ± 0.283	0.723 ± 0.265	0.761 ± 0.284	0.773 ± 0.290	0.635 ± 0.441	0.719 ± 0.319
winequality − red − 3_vs5	0.388 ± 0.206	0.371 ± 0.193	0.388 ± 0.206	0.388 ± 0.206	0.372 ± 0.194	**0.392 ± 0.208**	0.371 ± 0.192	0.388 ± 0.206	0.239 ± 0.244	0.044 ± 0.132
winequality − red − 4	0.525 ± 0.046	0.484 ± 0.086	0.523 ± 0.055	0.525 ± 0.039	0.475 ± 0.076	0.410 ± 0.056	**0.535 ± 0.039**	0.525 ± 0.046	0.331 ± 0.088	0.198 ± 0.190
winequality − red − 8_vs6 − 7	0.332 ± 0.195	0.334 ± 0.202	0.345 ± 0.197	0.345 ± 0.197	0.293 ± 0.164	0.302 ± 0.179	**0.356 ± 0.152**	0.332 ± 0.195	0.296 ± 0.213	0.232 ± 0.246
winequality − red − 8_vs6	**0.573 ± 0.083**	0.555 ± 0.083	0.555 ± 0.089	0.573 ± 0.083	0.500 ± 0.116	0.496 ± 0.102	0.567 ± 0.074	0.573 ± 0.083	0.456 ± 0.174	0.403 ± 0.231
winequality − white − 3 − 9_vs5	**0.533 ± 0.061**	0.504 ± 0.069	0.532 ± 0.068	0.532 ± 0.067	0.415 ± 0.069	0.462 ± 0.111	0.496 ± 0.072	**0.533 ± 0.061**	0.295 ± 0.174	0.238 ± 0.164
winequality − white − 3_vs7	0.489 ± 0.249	0.360 ± 0.208	0.494 ± 0.254	0.465 ± 0.255	0.375 ± 0.209	**0.502 ± 0.209**	0.479 ± 0.264	0.489 ± 0.249	0.397 ± 0.214	0.420 ± 0.242
winequality − white − 9_vs4	0.865 ± 0.105	**0.869 ± 0.109**	0.865 ± 0.105	0.646 ± 0.344	0.868 ± 0.108	0.653 ± 0.351	0.865 ± 0.105	0.865 ± 0.105	0.567 ± 0.383	0.567 ± 0.383
zoo − 3	**0.769 ± 0.280**	**0.769 ± 0.280**	**0.769 ± 0.280**	0.545 ± 0.387	**0.769 ± 0.280**	0.516 ± 0.362	**0.769 ± 0.280**	**0.769 ± 0.280**	0.410 ± 0.343	0.410 ± 0.343
ecoli1	0.863 ± 0.027	0.862 ± 0.021	0.867 ± 0.030	**0.870 ± 0.025**	0.869 ± 0.027	0.863 ± 0.030	0.862 ± 0.034	0.866 ± 0.023	0.793 ± 0.068	0.162 ± 0.325
ecoli2	0.914 ± 0.029	**0.921 ± 0.027**	0.911 ± 0.028	0.913 ± 0.028	0.918 ± 0.030	0.911 ± 0.021	0.913 ± 0.027	0.914 ± 0.029	0.830 ± 0.094	0.229 ± 0.354
ecoli3	0.865 ± 0.020	0.856 ± 0.023	**0.867 ± 0.015**	0.858 ± 0.026	0.849 ± 0.036	0.850 ± 0.029	0.860 ± 0.019	0.865 ± 0.016	0.786 ± 0.063	0.220 ± 0.339
glass0	0.787 ± 0.035	0.794 ± 0.037	0.782 ± 0.033	0.789 ± 0.028	0.789 ± 0.028	0.785 ± 0.040	0.796 ± 0.030	**0.796 ± 0.035**	0.775 ± 0.048	0.649 ± 0.237
glass1	0.736 ± 0.049	**0.747 ± 0.053**	0.743 ± 0.045	0.746 ± 0.039	0.737 ± 0.043	0.738 ± 0.033	0.735 ± 0.031	0.736 ± 0.053	0.683 ± 0.096	0.299 ± 0.233
haberman	0.595 ± 0.037	**0.601 ± 0.051**	0.575 ± 0.055	0.580 ± 0.026	0.575 ± 0.050	0.570 ± 0.045	0.574 ± 0.038	0.594 ± 0.031	0.560 ± 0.031	0.468 ± 0.119
page − blocks0	0.929 ± 0.010	0.909 ± 0.013	0.927 ± 0.012	0.920 ± 0.012	0.923 ± 0.011	0.881 ± 0.018	**0.931 ± 0.009**	0.929 ± 0.010	0.890 ± 0.020	0.903 ± 0.013
pima	0.684 ± 0.021	**0.706 ± 0.019**	0.684 ± 0.014	0.687 ± 0.016	0.682 ± 0.017	0.688 ± 0.022	0.686 ± 0.017	0.692 ± 0.024	0.676 ± 0.023	0.606 ± 0.058
vehicle1	0.722 ± 0.026	**0.739 ± 0.018**	0.720 ± 0.024	0.735 ± 0.025	0.726 ± 0.018	0.718 ± 0.023	0.730 ± 0.023	0.723 ± 0.027	0.646 ± 0.030	0.714 ± 0.032
vehicle3	0.707 ± 0.019	0.696 ± 0.030	0.711 ± 0.019	**0.717 ± 0.025**	0.708 ± 0.018	0.688 ± 0.024	0.711 ± 0.021	0.705 ± 0.020	0.619 ± 0.030	0.692 ± 0.026
yeast1	0.674 ± 0.010	**0.690 ± 0.014**	0.675 ± 0.010	0.674 ± 0.016	0.667 ± 0.013	0.661 ± 0.012	0.673 ± 0.014	0.677 ± 0.011	0.530 ± 0.190	0.000 ± 0.000
yeast3	0.871 ± 0.019	0.871 ± 0.023	0.872 ± 0.020	0.865 ± 0.025	0.868 ± 0.020	0.866 ± 0.018	**0.872 ± 0.019**	0.870 ± 0.019	0.838 ± 0.020	0.000 ± 0.000

Table 13. CART – Precision

Dataset name	SMOTE	polynom-fit-SMOTE	Lee	SMOBD	G-SMOTE	LVQ-SMOTE	Assembled-SMOTE	SMOTE-TomekLinks	JFOTS-pr	JFOTS-rc
$abalone19$	0.028 ± 0.014	0.013 ± 0.019	0.023 ± 0.014	0.031 ± 0.013	**0.038 ± 0.035**	0.018 ± 0.015	0.026 ± 0.012	0.028 ± 0.014	0.009 ± 0.015	0.011 ± 0.010
$abalone9-18$	0.236 ± 0.058	0.222 ± 0.067	0.237 ± 0.029	0.256 ± 0.070	0.266 ± 0.041	0.196 ± 0.057	0.224 ± 0.048	0.230 ± 0.057	**0.341 ± 0.078**	0.147 ± 0.117
$ecoli-0-1-3-7\_vs2-6$	0.438 ± 0.237	**0.488 ± 0.186**	0.438 ± 0.237	0.438 ± 0.237	**0.488 ± 0.186**	0.433 ± 0.240	0.438 ± 0.237	0.438 ± 0.237	0.335 ± 0.271	0.149 ± 0.124
$glass-0-1-6\_vs2$	0.253 ± 0.080	0.222 ± 0.146	0.281 ± 0.059	0.284 ± 0.073	0.229 ± 0.084	0.168 ± 0.106	0.262 ± 0.128	0.254 ± 0.087	**0.328 ± 0.180**	0.180 ± 0.070
$glass-0-1-6\_vs5$	**0.759 ± 0.181**	0.704 ± 0.145	**0.759 ± 0.181**	**0.759 ± 0.181**	0.578 ± 0.204	0.747 ± 0.186	**0.759 ± 0.181**	**0.759 ± 0.181**	0.583 ± 0.228	0.534 ± 0.207
$glass2$	0.214 ± 0.174	0.174 ± 0.128	0.214 ± 0.185	0.237 ± 0.164	**0.245 ± 0.220**	0.143 ± 0.081	0.204 ± 0.153	0.228 ± 0.173	0.205 ± 0.141	0.151 ± 0.111
$glass4$	0.610 ± 0.155	0.573 ± 0.117	0.614 ± 0.167	0.604 ± 0.160	0.627 ± 0.182	0.425 ± 0.122	0.612 ± 0.176	0.610 ± 0.155	**0.677 ± 0.208**	0.552 ± 0.321
$glass5$	0.693 ± 0.211	0.620 ± 0.145	0.693 ± 0.211	0.693 ± 0.211	0.660 ± 0.184	**0.734 ± 0.202**	0.693 ± 0.211	0.693 ± 0.211	0.665 ± 0.150	0.710 ± 0.238
$page-blocks-1-3\_vs4$	**0.931 ± 0.030**	0.865 ± 0.080	0.930 ± 0.031	0.906 ± 0.076	0.922 ± 0.046	0.777 ± 0.084	0.928 ± 0.035	**0.931 ± 0.030**	0.846 ± 0.085	0.719 ± 0.267
$yeast-0-5-6-7-9\_vs4$	0.340 ± 0.051	**0.377 ± 0.045**	0.370 ± 0.062	0.354 ± 0.050	0.355 ± 0.072	0.290 ± 0.040	0.353 ± 0.044	0.348 ± 0.079	0.363 ± 0.042	0.096 ± 0.003
$yeast-1-2-8-9\_vs7$	0.101 ± 0.020	**0.133 ± 0.063**	0.101 ± 0.033	0.089 ± 0.030	0.130 ± 0.047	0.097 ± 0.023	0.098 ± 0.017	0.113 ± 0.033	0.106 ± 0.083	0.032 ± 0.000
$yeast-1-4-5-8\_vs7$	0.072 ± 0.044	**0.112 ± 0.041**	0.073 ± 0.053	0.065 ± 0.042	0.079 ± 0.044	0.050 ± 0.019	0.086 ± 0.025	0.070 ± 0.048	0.050 ± 0.066	0.044 ± 0.000
$yeast-1\_vs7$	0.203 ± 0.070	0.234 ± 0.065	0.178 ± 0.082	0.214 ± 0.056	0.186 ± 0.065	0.169 ± 0.021	0.186 ± 0.051	0.198 ± 0.071	**0.270 ± 0.120**	0.055 ± 0.029
$yeast-2\_vs4$	0.621 ± 0.047	0.673 ± 0.044	**0.689 ± 0.044**	0.677 ± 0.069	0.653 ± 0.079	0.559 ± 0.073	0.676 ± 0.055	0.619 ± 0.059	0.670 ± 0.058	0.259 ± 0.269
$yeast-2\_vs8$	0.273 ± 0.116	0.518 ± 0.154	0.377 ± 0.161	0.346 ± 0.088	0.481 ± 0.131	0.259 ± 0.064	0.386 ± 0.144	0.287 ± 0.113	**0.792 ± 0.202**	0.044 ± 0.005
$yeast4$	0.223 ± 0.033	0.258 ± 0.052	0.233 ± 0.056	0.240 ± 0.049	0.216 ± 0.059	0.202 ± 0.040	0.237 ± 0.092	0.226 ± 0.035	**0.280 ± 0.077**	0.034 ± 0.001
$yeast5$	0.649 ± 0.091	0.624 ± 0.086	0.623 ± 0.080	0.618 ± 0.101	0.639 ± 0.056	0.393 ± 0.060	0.646 ± 0.077	**0.655 ± 0.095**	0.643 ± 0.099	0.030 ± 0.000
$yeast6$	0.269 ± 0.050	0.272 ± 0.072	0.281 ± 0.096	0.280 ± 0.061	**0.347 ± 0.061**	0.171 ± 0.029	0.288 ± 0.081	0.273 ± 0.051	0.284 ± 0.082	0.025 ± 0.003
$cleveland-0\_vs4$	**0.558 ± 0.149**	0.419 ± 0.187	0.506 ± 0.173	0.542 ± 0.127	0.456 ± 0.160	0.451 ± 0.154	0.555 ± 0.136	**0.558 ± 0.149**	0.454 ± 0.115	0.454 ± 0.243
$ecoli-0-1-4-7\_vs2-3-5-6$	0.502 ± 0.110	0.583 ± 0.115	0.583 ± 0.100	0.510 ± 0.109	0.540 ± 0.072	0.423 ± 0.111	0.589 ± 0.116	0.539 ± 0.140	**0.674 ± 0.091**	0.119 ± 0.161
$ecoli-0-1\_vs2-3-5$	0.654 ± 0.151	**0.708 ± 0.060**	0.629 ± 0.069	0.579 ± 0.149	0.620 ± 0.134	0.530 ± 0.066	0.614 ± 0.178	0.611 ± 0.143	0.566 ± 0.125	0.337 ± 0.315
$ecoli-0-2-6-7\_vs3-5$	0.581 ± 0.102	**0.691 ± 0.140**	0.566 ± 0.113	0.608 ± 0.128	0.606 ± 0.057	0.470 ± 0.121	0.547 ± 0.134	0.607 ± 0.110	0.666 ± 0.136	0.174 ± 0.221
$ecoli-0-6-7\_vs3-5$	0.563 ± 0.149	**0.746 ± 0.229**	0.608 ± 0.165	0.586 ± 0.161	0.620 ± 0.115	0.510 ± 0.146	0.537 ± 0.145	0.570 ± 0.143	0.716 ± 0.165	0.277 ± 0.279
$ecoli-0-6-7\_vs5$	0.697 ± 0.197	0.744 ± 0.157	0.676 ± 0.216	0.687 ± 0.224	**0.775 ± 0.182**	0.545 ± 0.136	0.688 ± 0.200	0.676 ± 0.205	0.764 ± 0.156	0.268 ± 0.302
$glass-0-1-4-6\_vs2$	0.231 ± 0.080	0.164 ± 0.111	**0.237 ± 0.096**	0.219 ± 0.088	0.235 ± 0.104	0.192 ± 0.055	0.184 ± 0.099	0.201 ± 0.102	0.167 ± 0.127	0.130 ± 0.041
$glass-0-1-5\_vs2$	0.335 ± 0.060	0.249 ± 0.137	**0.392 ± 0.230**	0.340 ± 0.138	0.301 ± 0.109	0.181 ± 0.077	0.300 ± 0.102	0.338 ± 0.098	0.281 ± 0.130	0.180 ± 0.098
$yeast-0-2-5-6\_vs3-7-8-9$	0.377 ± 0.050	**0.444 ± 0.067**	0.409 ± 0.051	0.394 ± 0.055	0.409 ± 0.035	0.395 ± 0.052	0.373 ± 0.056	0.359 ± 0.046	0.409 ± 0.162	0.185 ± 0.168
$yeast-0-3-5-9\_vs7-8$	0.206 ± 0.036	**0.326 ± 0.058**	0.237 ± 0.046	0.226 ± 0.055	0.244 ± 0.078	0.233 ± 0.062	0.230 ± 0.031	0.244 ± 0.044	0.230 ± 0.196	0.105 ± 0.014
$abalone-17\_vs7-8-9-10$	0.162 ± 0.052	0.229 ± 0.038	0.160 ± 0.023	0.172 ± 0.037	0.206 ± 0.051	0.155 ± 0.033	0.176 ± 0.045	0.161 ± 0.053	**0.236 ± 0.078**	0.088 ± 0.070
$abalone-19\_vs10-11-12-13$	0.049 ± 0.022	0.040 ± 0.031	0.047 ± 0.023	0.043 ± 0.015	0.051 ± 0.037	0.045 ± 0.017	**0.055 ± 0.018**	0.053 ± 0.016	0.043 ± 0.044	0.020 ± 0.013
$abalone-20\_vs8-9-10$	0.155 ± 0.024	0.128 ± 0.097	0.161 ± 0.065	0.159 ± 0.042	0.167 ± 0.059	0.131 ± 0.031	0.161 ± 0.045	0.156 ± 0.024	**0.180 ± 0.095**	0.049 ± 0.032
$abalone-21\_vs8$	0.278 ± 0.171	0.354 ± 0.197	0.272 ± 0.166	0.264 ± 0.191	0.374 ± 0.203	0.278 ± 0.121	0.281 ± 0.179	0.285 ± 0.173	**0.425 ± 0.166**	0.240 ± 0.210
$flare-F$	0.155 ± 0.060	**0.247 ± 0.080**	0.175 ± 0.067	0.187 ± 0.051	0.225 ± 0.068	0.215 ± 0.094	0.177 ± 0.058	0.180 ± 0.044	0.197 ± 0.121	0.051 ± 0.018
$kddcup-buffer\_overflow\_vs\_back$	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**
$kddcup-rootkit-imap\_vs\_back$	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**
$kr-vs-k-zero\_vs\_eight$	0.881 ± 0.077	0.888 ± 0.067	**0.911 ± 0.071**	0.899 ± 0.065	0.858 ± 0.135	0.708 ± 0.134	0.901 ± 0.094	0.881 ± 0.077	0.645 ± 0.282	0.045 ± 0.016
$poker-8-9\_vs5$	0.066 ± 0.033	**0.079 ± 0.065**	0.066 ± 0.028	0.068 ± 0.024	0.056 ± 0.032	0.056 ± 0.034	0.049 ± 0.022	0.066 ± 0.033	0.061 ± 0.083	0.031 ± 0.042
$poker-8-9\_vs6$	0.247 ± 0.095	0.643 ± 0.299	0.345 ± 0.312	0.255 ± 0.209	0.251 ± 0.169	0.145 ± 0.125	0.274 ± 0.188	0.247 ± 0.095	**0.938 ± 0.099**	0.934 ± 0.107
$poker-8\_vs6$	0.509 ± 0.330	0.375 ± 0.281	0.451 ± 0.263	0.420 ± 0.268	0.499 ± 0.345	0.315 ± 0.381	0.474 ± 0.347	0.509 ± 0.330	0.951 ± 0.114	**0.967 ± 0.100**
$poker-9\_vs7$	0.166 ± 0.198	0.120 ± 0.126	0.166 ± 0.198	0.166 ± 0.198	0.169 ± 0.187	0.271 ± 0.320	0.148 ± 0.176	0.166 ± 0.198	**0.341 ± 0.402**	0.272 ± 0.317
$winequality-red-3\_vs5$	0.026 ± 0.045	**0.073 ± 0.151**	0.025 ± 0.060	0.042 ± 0.077	0.065 ± 0.092	0.070 ± 0.056	0.034 ± 0.059	0.026 ± 0.045	0.053 ± 0.101	0.053 ± 0.096
$winequality-red-4$	0.072 ± 0.035	0.060 ± 0.028	0.088 ± 0.016	0.090 ± 0.030	**0.093 ± 0.041**	0.086 ± 0.021	0.069 ± 0.012	0.071 ± 0.036	0.090 ± 0.049	0.049 ± 0.021
$winequality-red-8\_vs6-7$	0.060 ± 0.045	0.072 ± 0.045	0.060 ± 0.039	0.079 ± 0.044	**0.083 ± 0.041**	0.055 ± 0.025	0.061 ± 0.041	0.060 ± 0.045	0.065 ± 0.047	0.050 ± 0.063
$winequality-red-8\_vs6$	0.123 ± 0.048	**0.201 ± 0.174**	0.121 ± 0.041	0.116 ± 0.058	0.172 ± 0.159	0.107 ± 0.044	0.140 ± 0.054	0.123 ± 0.048	0.124 ± 0.075	0.105 ± 0.079
$winequality-white-3-9\_vs5$	0.059 ± 0.048	0.055 ± 0.038	0.047 ± 0.042	0.045 ± 0.038	0.048 ± 0.068	**0.101 ± 0.029**	0.041 ± 0.024	0.059 ± 0.048	0.059 ± 0.055	0.029 ± 0.029
$winequality-white-3\_vs5$	0.068 ± 0.047	0.111 ± 0.088	0.088 ± 0.054	0.085 ± 0.052	0.138 ± 0.082	**0.252 ± 0.070**	0.047 ± 0.044	0.068 ± 0.047	0.097 ± 0.056	0.122 ± 0.124
$winequality-white-9\_vs4$	0.377 ± 0.294	0.345 ± 0.283	0.360 ± 0.282	**0.380 ± 0.277**	0.378 ± 0.280	0.363 ± 0.280	0.360 ± 0.282	0.377 ± 0.294	0.167 ± 0.300	0.167 ± 0.300
$zoo-3$	0.196 ± 0.192	0.170 ± 0.169	0.301 ± 0.296	0.274 ± 0.293	0.246 ± 0.300	**0.579 ± 0.380**	0.334 ± 0.365	0.196 ± 0.192	0.104 ± 0.163	0.104 ± 0.163
$ecoli1$	0.715 ± 0.043	0.705 ± 0.047	0.708 ± 0.040	**0.736 ± 0.048**	0.718 ± 0.024	0.666 ± 0.041	0.712 ± 0.038	0.731 ± 0.043	0.608 ± 0.085	0.296 ± 0.203
$ecoli2$	0.706 ± 0.080	0.702 ± 0.097	**0.740 ± 0.129**	0.734 ± 0.082	0.708 ± 0.104	0.624 ± 0.078	0.692 ± 0.099	0.724 ± 0.092	0.609 ± 0.120	0.270 ± 0.271
$ecoli3$	0.474 ± 0.059	0.504 ± 0.083	0.462 ± 0.084	0.503 ± 0.072	0.497 ± 0.076	0.462 ± 0.051	0.486 ± 0.068	0.482 ± 0.062	**0.516 ± 0.102**	0.198 ± 0.178
$glass0$	0.637 ± 0.044	0.656 ± 0.076	0.689 ± 0.072	0.689 ± 0.067	0.664 ± 0.094	0.693 ± 0.069	**0.710 ± 0.111**	0.660 ± 0.066	0.646 ± 0.067	0.563 ± 0.126
$glass1$	0.620 ± 0.044	**0.649 ± 0.047**	0.620 ± 0.053	0.629 ± 0.079	0.619 ± 0.051	0.610 ± 0.061	0.620 ± 0.072	0.625 ± 0.041	0.594 ± 0.092	0.441 ± 0.107
$haberman$	0.366 ± 0.040	0.350 ± 0.027	0.352 ± 0.043	0.345 ± 0.055	0.353 ± 0.059	0.359 ± 0.047	0.344 ± 0.063	0.388 ± 0.055	**0.408 ± 0.051**	0.327 ± 0.105
$page-blocks0$	0.763 ± 0.029	0.798 ± 0.020	0.756 ± 0.028	0.762 ± 0.033	0.787 ± 0.018	0.800 ± 0.016	0.765 ± 0.028	0.771 ± 0.024	**0.812 ± 0.025**	0.785 ± 0.025
$pima$	0.552 ± 0.030	**0.566 ± 0.022**	0.553 ± 0.038	0.556 ± 0.028	0.543 ± 0.032	0.564 ± 0.040	0.550 ± 0.031	0.559 ± 0.034	0.553 ± 0.047	0.484 ± 0.051
$vehicle1$	0.495 ± 0.033	0.498 ± 0.039	**0.505 ± 0.024**	0.496 ± 0.034	0.486 ± 0.033	0.492 ± 0.044	0.491 ± 0.030	0.503 ± 0.025	0.489 ± 0.033	0.498 ± 0.031
$vehicle3$	0.471 ± 0.033	**0.512 ± 0.040**	0.467 ± 0.042	0.477 ± 0.038	0.475 ± 0.027	0.486 ± 0.037	0.490 ± 0.025	0.473 ± 0.028	0.475 ± 0.053	0.495 ± 0.035
$yeast1$	0.470 ± 0.023	**0.495 ± 0.029**	0.487 ± 0.020	0.480 ± 0.018	0.477 ± 0.014	0.479 ± 0.018	0.484 ± 0.033	0.474 ± 0.016	0.436 ± 0.068	0.292 ± 0.001
$yeast3$	0.687 ± 0.048	0.689 ± 0.064	0.670 ± 0.045	0.661 ± 0.042	0.675 ± 0.052	0.629 ± 0.056	0.682 ± 0.048	0.684 ± 0.046	**0.690 ± 0.042**	0.111 ± 0.001

Table 14. SVM – Precision

Dataset name	SMOTE	polynom-fit-SMOTE	Lee	SMOBD	G-SMOTE	LVQ-SMOTE	Assembled-SMOTE	SMOTE-TomekLinks	JFOTS-pr	JFOTS-rc
$abalone19$	0.019 ± 0.008	**0.026 ± 0.013**	0.019 ± 0.008	0.020 ± 0.008	0.022 ± 0.008	0.024 ± 0.006	0.019 ± 0.008	0.019 ± 0.008	0.017 ± 0.009	0.011 ± 0.004
$abalone9-18$	0.247 ± 0.040	0.361 ± 0.062	0.239 ± 0.030	0.254 ± 0.052	0.254 ± 0.054	0.334 ± 0.077	0.240 ± 0.042	0.245 ± 0.039	**0.523 ± 0.193**	0.146 ± 0.090
$ecoli-0-1-3-7_vs2-6$	0.775 ± 0.287	**0.842 ± 0.256**	0.544 ± 0.260	0.648 ± 0.273	0.648 ± 0.306	0.297 ± 0.239	0.725 ± 0.287	0.775 ± 0.287	0.383 ± 0.252	0.284 ± 0.098
$glass-0-1-6_vs2$	0.294 ± 0.091	**0.315 ± 0.098**	0.276 ± 0.073	0.283 ± 0.081	0.292 ± 0.074	0.194 ± 0.057	0.292 ± 0.081	0.293 ± 0.093	0.260 ± 0.084	0.181 ± 0.089
$glass-0-1-6_vs5$	0.837 ± 0.170	**0.845 ± 0.198**	0.837 ± 0.170	0.837 ± 0.170	0.805 ± 0.182	0.592 ± 0.267	0.837 ± 0.170	0.837 ± 0.170	0.636 ± 0.331	0.386 ± 0.134
$glass2$	0.189 ± 0.107	0.210 ± 0.117	0.192 ± 0.106	0.185 ± 0.103	0.189 ± 0.102	**0.218 ± 0.126**	0.192 ± 0.112	0.188 ± 0.106	0.171 ± 0.126	0.147 ± 0.070
$glass4$	0.768 ± 0.106	0.755 ± 0.111	0.749 ± 0.105	0.749 ± 0.105	0.761 ± 0.097	0.485 ± 0.113	**0.770 ± 0.134**	0.768 ± 0.106	0.741 ± 0.153	0.445 ± 0.230
$glass5$	0.788 ± 0.151	**0.823 ± 0.151**	0.803 ± 0.139	0.803 ± 0.139	0.783 ± 0.154	0.454 ± 0.232	0.788 ± 0.151	0.788 ± 0.151	0.630 ± 0.202	0.566 ± 0.297
$page-blocks-1-3_vs4$	0.650 ± 0.107	**0.801 ± 0.131**	0.658 ± 0.109	0.640 ± 0.112	0.646 ± 0.137	0.490 ± 0.089	0.613 ± 0.102	0.650 ± 0.107	0.516 ± 0.318	0.411 ± 0.263
$yeast-0-5-6-7-9_vs4$	0.384 ± 0.063	0.448 ± 0.079	0.390 ± 0.066	0.410 ± 0.082	0.388 ± 0.083	0.391 ± 0.051	0.392 ± 0.073	0.381 ± 0.064	**0.506 ± 0.106**	0.096 ± 0.003
$yeast-1-2-8-9_vs7$	0.072 ± 0.020	0.072 ± 0.023	0.070 ± 0.021	0.074 ± 0.028	0.088 ± 0.032	0.125 ± 0.029	0.071 ± 0.025	0.074 ± 0.020	**0.236 ± 0.297**	0.032 ± 0.000
$yeast-1-4-5-8_vs7$	0.076 ± 0.024	0.080 ± 0.027	0.073 ± 0.021	0.070 ± 0.016	0.083 ± 0.026	**0.095 ± 0.017**	0.068 ± 0.014	0.076 ± 0.023	0.069 ± 0.038	0.044 ± 0.000
$yeast-1_vs7$	0.194 ± 0.039	0.211 ± 0.044	0.193 ± 0.039	0.193 ± 0.038	0.190 ± 0.041	0.205 ± 0.054	0.184 ± 0.032	0.193 ± 0.040	**0.356 ± 0.217**	0.068 ± 0.007
$yeast-2_vs4$	0.685 ± 0.065	0.710 ± 0.067	0.667 ± 0.066	0.683 ± 0.058	0.651 ± 0.089	0.641 ± 0.070	0.670 ± 0.063	0.689 ± 0.068	**0.826 ± 0.137**	0.291 ± 0.297
$yeast-2_vs8$	0.429 ± 0.292	**0.888 ± 0.121**	0.451 ± 0.277	0.493 ± 0.285	0.518 ± 0.321	0.588 ± 0.095	0.355 ± 0.206	0.429 ± 0.292	0.617 ± 0.343	0.044 ± 0.004
$yeast4$	0.201 ± 0.031	0.255 ± 0.033	0.204 ± 0.030	0.208 ± 0.030	0.207 ± 0.028	0.197 ± 0.036	0.205 ± 0.029	0.201 ± 0.031	**0.387 ± 0.131**	0.034 ± 0.001
$yeast5$	0.502 ± 0.067	0.541 ± 0.081	0.502 ± 0.065	0.504 ± 0.072	0.513 ± 0.078	0.347 ± 0.043	0.502 ± 0.064	0.502 ± 0.067	**0.555 ± 0.125**	0.030 ± 0.000
$yeast6$	0.306 ± 0.042	0.336 ± 0.045	0.309 ± 0.044	0.279 ± 0.039	0.321 ± 0.043	0.168 ± 0.014	0.297 ± 0.045	0.306 ± 0.042	**0.464 ± 0.139**	0.025 ± 0.003
$cleveland-0_vs4$	0.797 ± 0.159	0.792 ± 0.195	0.805 ± 0.158	**0.813 ± 0.153**	0.788 ± 0.179	0.665 ± 0.093	0.802 ± 0.158	0.797 ± 0.159	0.481 ± 0.172	0.369 ± 0.229
$ecoli-0-1-4-7_vs2-3-5-6$	0.732 ± 0.067	**0.814 ± 0.037**	0.710 ± 0.057	0.733 ± 0.068	0.702 ± 0.102	0.588 ± 0.080	0.688 ± 0.108	0.732 ± 0.067	0.713 ± 0.140	0.191 ± 0.166
$ecoli-0-1_vs2-3-5$	0.777 ± 0.103	0.808 ± 0.090	0.790 ± 0.102	0.768 ± 0.123	**0.810 ± 0.093**	0.669 ± 0.131	0.739 ± 0.152	0.771 ± 0.105	0.755 ± 0.165	0.388 ± 0.291
$ecoli-0-2-6-7_vs3-5$	0.766 ± 0.189	**0.863 ± 0.167**	0.777 ± 0.212	0.813 ± 0.192	0.803 ± 0.216	0.619 ± 0.127	0.767 ± 0.173	0.766 ± 0.189	0.813 ± 0.154	0.245 ± 0.120
$ecoli-0-6-7_vs3-5$	0.805 ± 0.190	**0.858 ± 0.147**	0.768 ± 0.211	0.825 ± 0.180	0.801 ± 0.184	0.627 ± 0.161	0.800 ± 0.183	0.805 ± 0.190	0.817 ± 0.092	0.373 ± 0.306
$ecoli-0-6-7_vs5$	0.786 ± 0.181	0.808 ± 0.179	0.813 ± 0.175	0.768 ± 0.203	0.772 ± 0.198	0.643 ± 0.152	0.771 ± 0.220	0.792 ± 0.176	**0.831 ± 0.114**	0.300 ± 0.328
$glass-0-1-4-6_vs2$	**0.253 ± 0.082**	0.251 ± 0.122	0.237 ± 0.071	0.243 ± 0.096	0.217 ± 0.102	0.191 ± 0.071	0.243 ± 0.090	0.251 ± 0.083	0.127 ± 0.042	0.141 ± 0.041
$glass-0-1-5_vs2$	0.278 ± 0.062	0.300 ± 0.086	0.278 ± 0.058	0.289 ± 0.055	**0.316 ± 0.103**	0.215 ± 0.090	0.270 ± 0.057	0.279 ± 0.061	0.246 ± 0.066	0.195 ± 0.121
$yeast-0-2-5-6_vs3-7-8-9$	0.503 ± 0.061	**0.636 ± 0.085**	0.489 ± 0.093	0.500 ± 0.067	0.501 ± 0.098	0.502 ± 0.076	0.485 ± 0.088	0.504 ± 0.061	0.449 ± 0.145	0.178 ± 0.155
$yeast-0-3-5-9_vs7-8$	0.272 ± 0.039	**0.518 ± 0.126**	0.256 ± 0.036	0.259 ± 0.040	0.268 ± 0.039	0.319 ± 0.082	0.272 ± 0.047	0.270 ± 0.042	0.251 ± 0.182	0.103 ± 0.008
$abalone-17_vs7-8-9-10$	0.174 ± 0.025	**0.246 ± 0.055**	0.172 ± 0.026	0.177 ± 0.029	0.180 ± 0.030	0.198 ± 0.041	0.174 ± 0.027	0.173 ± 0.025	0.244 ± 0.121	0.085 ± 0.062
$abalone-19_vs10-11-12-13$	0.051 ± 0.010	**0.063 ± 0.028**	0.052 ± 0.009	0.053 ± 0.008	0.059 ± 0.013	0.061 ± 0.018	0.051 ± 0.012	0.051 ± 0.010	0.063 ± 0.027	0.029 ± 0.007
$abalone-20_vs8-9-10$	0.189 ± 0.054	0.234 ± 0.049	0.191 ± 0.056	0.188 ± 0.052	0.205 ± 0.052	0.173 ± 0.027	0.182 ± 0.048	0.189 ± 0.055	**0.266 ± 0.146**	0.050 ± 0.047
$abalone-21_vs8$	0.466 ± 0.088	**0.623 ± 0.171**	0.452 ± 0.101	0.441 ± 0.083	0.460 ± 0.123	0.454 ± 0.112	0.462 ± 0.117	0.472 ± 0.084	0.414 ± 0.169	0.268 ± 0.209
$flare-F$	0.166 ± 0.019	**0.305 ± 0.056**	0.157 ± 0.021	0.173 ± 0.021	0.157 ± 0.020	0.197 ± 0.033	0.169 ± 0.025	0.166 ± 0.019	0.137 ± 0.039	0.051 ± 0.018
$kddcup-buffer\_overflow\_vs\_back$	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	0.988 ± 0.035	0.988 ± 0.035
$kddcup-rootkit-imap\_vs\_back$	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	**1.000 ± 0.000**	0.992 ± 0.025	0.992 ± 0.025
$kr-vs-k-zero\_vs\_eight$	0.785 ± 0.139	0.787 ± 0.141	0.785 ± 0.139	0.781 ± 0.142	**0.812 ± 0.149**	0.507 ± 0.092	0.799 ± 0.143	0.785 ± 0.139	0.262 ± 0.159	0.044 ± 0.014
$poker-8-9_vs5$	0.068 ± 0.025	0.079 ± 0.047	0.065 ± 0.020	0.063 ± 0.021	0.073 ± 0.036	0.060 ± 0.028	0.067 ± 0.015	0.068 ± 0.025	**0.084 ± 0.091**	0.021 ± 0.013
$poker-8-9_vs6$	0.958 ± 0.068	**0.969 ± 0.062**	0.958 ± 0.068	0.940 ± 0.105	0.872 ± 0.147	0.541 ± 0.085	0.887 ± 0.150	0.958 ± 0.068	0.941 ± 0.176	0.941 ± 0.176
$poker-8_vs6$	0.942 ± 0.092	0.910 ± 0.111	0.942 ± 0.092	0.917 ± 0.105	0.913 ± 0.090	0.579 ± 0.135	0.942 ± 0.092	0.942 ± 0.092	0.933 ± 0.200	**1.000 ± 0.000**
$poker-9_vs7$	**0.617 ± 0.435**	**0.617 ± 0.435**	**0.617 ± 0.435**	**0.617 ± 0.435**	0.608 ± 0.444	0.435 ± 0.361	0.567 ± 0.416	**0.617 ± 0.435**	0.613 ± 0.474	0.459 ± 0.450
$winequality-red-3_vs5$	0.068 ± 0.080	0.079 ± 0.088	0.067 ± 0.080	0.067 ± 0.080	0.115 ± 0.111	**0.153 ± 0.107**	0.094 ± 0.094	0.068 ± 0.080	0.052 ± 0.072	0.029 ± 0.025
$winequality-red-4$	0.102 ± 0.010	0.108 ± 0.017	0.100 ± 0.008	0.105 ± 0.010	0.109 ± 0.021	**0.125 ± 0.033**	0.105 ± 0.008	0.102 ± 0.009	0.076 ± 0.042	0.049 ± 0.011
$winequality-red-8_vs6-7$	0.058 ± 0.028	0.055 ± 0.038	**0.060 ± 0.029**	0.058 ± 0.027	0.042 ± 0.041	0.038 ± 0.024	0.055 ± 0.029	0.058 ± 0.028	0.033 ± 0.021	0.024 ± 0.017
$winequality-red-8_vs6$	0.122 ± 0.019	0.144 ± 0.035	0.122 ± 0.019	0.123 ± 0.019	**0.149 ± 0.041**	0.095 ± 0.031	0.132 ± 0.032	0.122 ± 0.019	0.102 ± 0.038	0.069 ± 0.030
$winequality-white-3-9_vs5$	0.054 ± 0.028	0.039 ± 0.037	0.049 ± 0.028	0.053 ± 0.027	0.064 ± 0.043	**0.172 ± 0.066**	0.052 ± 0.029	0.054 ± 0.028	0.068 ± 0.095	0.020 ± 0.008
$winequality-white-3_vs7$	0.051 ± 0.044	0.054 ± 0.056	0.061 ± 0.047	0.058 ± 0.045	0.055 ± 0.048	**0.430 ± 0.151**	0.062 ± 0.046	0.051 ± 0.044	0.055 ± 0.032	0.049 ± 0.027
$winequality-white-9_vs4$	0.900 ± 0.213	0.900 ± 0.213	0.900 ± 0.213	0.433 ± 0.473	**0.917 ± 0.171**	0.308 ± 0.384	0.900 ± 0.213	0.900 ± 0.213	0.190 ± 0.166	0.190 ± 0.166
$zoo-3$	**0.317 ± 0.411**	**0.317 ± 0.411**	**0.317 ± 0.411**	0.217 ± 0.350	**0.317 ± 0.411**	0.150 ± 0.241	**0.317 ± 0.411**	**0.317 ± 0.411**	0.122 ± 0.191	0.122 ± 0.191
$ecoli1$	0.679 ± 0.037	**0.789 ± 0.050**	0.690 ± 0.026	0.695 ± 0.031	0.693 ± 0.045	0.652 ± 0.031	0.681 ± 0.036	0.678 ± 0.035	0.637 ± 0.025	0.320 ± 0.184
$ecoli2$	0.833 ± 0.047	**0.859 ± 0.042**	0.837 ± 0.050	0.845 ± 0.053	0.839 ± 0.050	0.790 ± 0.065	0.834 ± 0.055	0.837 ± 0.055	0.637 ± 0.177	0.286 ± 0.220
$ecoli3$	0.504 ± 0.032	**0.555 ± 0.052**	0.494 ± 0.027	0.531 ± 0.049	0.503 ± 0.032	0.447 ± 0.037	0.506 ± 0.039	0.507 ± 0.031	0.500 ± 0.081	0.178 ± 0.122
$glass0$	0.585 ± 0.058	**0.636 ± 0.050**	0.594 ± 0.057	0.579 ± 0.064	0.607 ± 0.065	0.573 ± 0.069	0.600 ± 0.056	0.582 ± 0.057	0.519 ± 0.043	0.492 ± 0.070
$glass1$	0.550 ± 0.062	0.528 ± 0.056	0.542 ± 0.069	0.548 ± 0.060	0.555 ± 0.074	0.555 ± 0.076	0.555 ± 0.077	0.552 ± 0.068	**0.578 ± 0.103**	0.414 ± 0.041
$haberman$	0.421 ± 0.064	**0.507 ± 0.059**	0.428 ± 0.049	0.382 ± 0.047	0.400 ± 0.048	0.455 ± 0.046	0.409 ± 0.055	0.419 ± 0.055	0.444 ± 0.039	0.341 ± 0.118
$page-blocks0$	0.664 ± 0.017	**0.801 ± 0.026**	0.667 ± 0.019	0.690 ± 0.023	0.668 ± 0.016	0.778 ± 0.044	0.659 ± 0.016	0.664 ± 0.017	0.637 ± 0.165	0.393 ± 0.083
$pima$	0.600 ± 0.040	0.640 ± 0.033	0.606 ± 0.030	0.607 ± 0.031	0.604 ± 0.039	0.620 ± 0.032	0.608 ± 0.035	0.600 ± 0.040	**0.670 ± 0.049**	0.471 ± 0.032
$vehicle1$	0.538 ± 0.022	0.593 ± 0.033	0.538 ± 0.027	0.542 ± 0.028	0.548 ± 0.028	0.541 ± 0.025	0.544 ± 0.025	0.540 ± 0.022	**0.594 ± 0.044**	0.518 ± 0.017
$vehicle3$	0.515 ± 0.016	0.549 ± 0.027	0.513 ± 0.020	0.515 ± 0.020	0.518 ± 0.023	0.515 ± 0.022	0.514 ± 0.020	0.515 ± 0.017	**0.617 ± 0.088**	0.497 ± 0.035
$yeast1$	0.497 ± 0.007	**0.591 ± 0.019**	0.503 ± 0.020	0.487 ± 0.019	0.499 ± 0.017	0.531 ± 0.022	0.496 ± 0.010	0.498 ± 0.006	0.558 ± 0.114	0.292 ± 0.001
$yeast3$	0.649 ± 0.037	0.737 ± 0.032	0.646 ± 0.039	0.657 ± 0.030	0.648 ± 0.027	0.641 ± 0.045	0.645 ± 0.034	0.649 ± 0.038	**0.780 ± 0.058**	0.111 ± 0.001

Table 15. KNN – Recall

Dataset name	SMOTE	polynom-fit-SMOTE	Lee	SMOBD	G-SMOTE	LVQ-SMOTE	Assembled-SMOTE	SMOTE-TomekLinks	JFOTS-pr	JFOTS-rc
$abalone19$	**0.200 ± 0.139**	0.062 ± 0.056	**0.200 ± 0.139**	**0.200 ± 0.139**	0.138 ± 0.087	0.175 ± 0.092	0.194 ± 0.126	**0.200 ± 0.139**	0.062 ± 0.062	0.013 ± 0.025
$abalone9-18$	**0.543 ± 0.068**	0.486 ± 0.090	0.514 ± 0.076	0.524 ± 0.088	0.486 ± 0.102	0.462 ± 0.083	0.529 ± 0.086	**0.543 ± 0.068**	0.305 ± 0.140	0.186 ± 0.166
$ecoli-0-1-3-7_vs2-6$	**0.700 ± 0.155**	**0.700 ± 0.155**	**0.700 ± 0.155**	**0.700 ± 0.155**	**0.700 ± 0.155**	**0.700 ± 0.155**	**0.700 ± 0.155**	**0.700 ± 0.155**	0.642 ± 0.224	0.642 ± 0.224
$glass-0-1-6_vs2$	0.600 ± 0.142	0.531 ± 0.083	0.587 ± 0.145	0.589 ± 0.143	0.544 ± 0.110	0.497 ± 0.142	**0.603 ± 0.145**	0.600 ± 0.142	0.414 ± 0.098	0.314 ± 0.207
$glass-0-1-6_vs5$	**0.850 ± 0.196**	**0.850 ± 0.196**	**0.850 ± 0.196**	**0.850 ± 0.196**	0.810 ± 0.270	0.810 ± 0.246	**0.850 ± 0.196**	**0.850 ± 0.196**	0.790 ± 0.237	0.725 ± 0.386
$glass2$	0.424 ± 0.259	0.426 ± 0.270	0.436 ± 0.310	**0.460 ± 0.292**	0.400 ± 0.272	0.438 ± 0.236	0.435 ± 0.303	0.424 ± 0.259	0.424 ± 0.200	0.265 ± 0.236
$glass4$	**0.850 ± 0.111**	**0.850 ± 0.134**	0.802 ± 0.114	0.819 ± 0.105	0.805 ± 0.169	0.783 ± 0.078	0.833 ± 0.099	**0.850 ± 0.111**	0.674 ± 0.122	0.555 ± 0.299
$glass5$	**0.885 ± 0.226**	**0.885 ± 0.226**	0.865 ± 0.241	**0.885 ± 0.226**	0.845 ± 0.237	0.780 ± 0.212	**0.885 ± 0.226**	**0.885 ± 0.226**	0.670 ± 0.241	0.775 ± 0.287
$page-blocks-1-3_vs4$	**0.986 ± 0.043**	0.979 ± 0.046	**0.986 ± 0.043**	**0.986 ± 0.043**	0.921 ± 0.190	**0.986 ± 0.029**	0.971 ± 0.047	**0.986 ± 0.043**	0.736 ± 0.207	0.707 ± 0.158
$yeast-0-5-6-7-9_vs4$	0.604 ± 0.090	**0.627 ± 0.078**	0.608 ± 0.086	0.604 ± 0.085	0.596 ± 0.108	0.592 ± 0.081	0.576 ± 0.069	0.600 ± 0.090	0.388 ± 0.134	0.000 ± 0.000
$yeast-1-2-8-9_vs7$	**0.500 ± 0.100**	0.493 ± 0.095	0.493 ± 0.085	0.480 ± 0.088	0.400 ± 0.133	0.453 ± 0.111	0.487 ± 0.108	**0.500 ± 0.100**	0.213 ± 0.093	0.000 ± 0.000
$yeast-1-4-5-8_vs7$	0.407 ± 0.081	0.340 ± 0.125	**0.413 ± 0.083**	0.367 ± 0.100	0.280 ± 0.102	0.333 ± 0.079	0.393 ± 0.081	0.407 ± 0.076	0.127 ± 0.096	0.000 ± 0.000
$yeast-1_vs7$	0.620 ± 0.073	0.600 ± 0.079	0.627 ± 0.080	**0.647 ± 0.085**	0.547 ± 0.107	0.540 ± 0.076	0.580 ± 0.099	0.620 ± 0.073	0.260 ± 0.092	0.000 ± 0.000
$yeast-2_vs4$	0.792 ± 0.071	0.784 ± 0.082	0.788 ± 0.077	0.792 ± 0.070	**0.800 ± 0.069**	0.777 ± 0.065	**0.800 ± 0.067**	0.792 ± 0.071	0.698 ± 0.096	0.214 ± 0.329
$yeast-2_vs8$	**0.700 ± 0.134**	0.650 ± 0.102	0.690 ± 0.122	**0.700 ± 0.134**	0.670 ± 0.110	0.680 ± 0.125	**0.700 ± 0.134**	**0.700 ± 0.134**	0.580 ± 0.087	0.070 ± 0.210
$yeast4$	0.537 ± 0.057	0.537 ± 0.075	0.537 ± 0.057	0.533 ± 0.062	0.490 ± 0.072	**0.548 ± 0.098**	0.544 ± 0.082	0.537 ± 0.057	0.340 ± 0.072	0.000 ± 0.000
$yeast5$	0.886 ± 0.077	0.864 ± 0.073	0.877 ± 0.076	0.873 ± 0.073	0.845 ± 0.071	**0.914 ± 0.103**	0.886 ± 0.071	0.886 ± 0.077	0.745 ± 0.115	0.000 ± 0.000
$yeast6$	0.687 ± 0.094	0.675 ± 0.080	0.687 ± 0.094	0.687 ± 0.094	0.670 ± 0.096	**0.766 ± 0.073**	0.675 ± 0.094	0.687 ± 0.094	0.482 ± 0.147	0.000 ± 0.000
$cleveland-0_vs4$	0.802 ± 0.140	0.786 ± 0.070	**0.817 ± 0.052**	0.802 ± 0.140	0.800 ± 0.068	0.662 ± 0.147	**0.817 ± 0.052**	0.802 ± 0.140	0.536 ± 0.185	0.493 ± 0.275
$ecoli-0-1-4-7_vs2-3-5-6$	**0.834 ± 0.034**	0.806 ± 0.056	0.827 ± 0.048	0.813 ± 0.048	0.834 ± 0.049	0.826 ± 0.060	**0.834 ± 0.034**	**0.834 ± 0.034**	0.492 ± 0.247	0.179 ± 0.222
$ecoli-0-1_vs2-3-5$	0.808 ± 0.065	0.808 ± 0.065	0.800 ± 0.067	0.800 ± 0.067	0.792 ± 0.067	0.800 ± 0.076	**0.817 ± 0.073**	0.808 ± 0.065	0.658 ± 0.209	0.417 ± 0.348
$ecoli-0-2-6-7_vs3-5$	0.745 ± 0.114	0.736 ± 0.118	0.755 ± 0.129	0.736 ± 0.118	0.755 ± 0.129	**0.764 ± 0.093**	0.745 ± 0.114	0.745 ± 0.114	0.636 ± 0.081	0.245 ± 0.279
$ecoli-0-6-7_vs3-5$	0.764 ± 0.109	0.764 ± 0.109	**0.773 ± 0.124**	0.764 ± 0.109	0.755 ± 0.129	0.745 ± 0.106	0.764 ± 0.109	0.764 ± 0.109	0.645 ± 0.111	0.273 ± 0.293
$ecoli-0-6-7_vs5$	0.790 ± 0.104	0.780 ± 0.125	0.790 ± 0.104	0.790 ± 0.122	0.790 ± 0.104	**0.810 ± 0.094**	0.790 ± 0.104	0.790 ± 0.104	0.680 ± 0.140	0.230 ± 0.257
$glass-0-1-4-6_vs2$	**0.497 ± 0.184**	0.472 ± 0.166	0.496 ± 0.198	0.496 ± 0.198	0.424 ± 0.191	0.399 ± 0.126	0.474 ± 0.204	0.485 ± 0.179	0.243 ± 0.169	0.268 ± 0.258
$glass-0-1-5_vs2$	0.574 ± 0.135	0.561 ± 0.115	**0.597 ± 0.137**	0.562 ± 0.131	0.501 ± 0.154	0.460 ± 0.120	0.575 ± 0.123	0.574 ± 0.135	0.485 ± 0.172	0.322 ± 0.314
$yeast-0-2-5-6_vs3-7-8-9$	0.699 ± 0.071	0.663 ± 0.057	**0.707 ± 0.057**	0.697 ± 0.052	0.681 ± 0.063	0.649 ± 0.056	0.699 ± 0.061	0.699 ± 0.071	0.405 ± 0.157	0.092 ± 0.126
$yeast-0-3-5-9_vs7-8$	0.536 ± 0.062	0.492 ± 0.059	**0.540 ± 0.070**	0.520 ± 0.076	0.520 ± 0.078	0.504 ± 0.108	0.520 ± 0.067	**0.540 ± 0.068**	0.220 ± 0.138	0.008 ± 0.024
$abalone-17_vs7-8-9-10$	0.559 ± 0.092	0.469 ± 0.069	**0.566 ± 0.094**	0.552 ± 0.094	0.476 ± 0.088	0.531 ± 0.097	0.545 ± 0.088	0.559 ± 0.092	0.224 ± 0.069	0.210 ± 0.175
$abalone-19_vs10-11-12-13$	0.281 ± 0.085	0.156 ± 0.050	0.287 ± 0.094	**0.294 ± 0.105**	0.194 ± 0.103	0.237 ± 0.092	0.250 ± 0.101	0.281 ± 0.085	0.112 ± 0.073	0.138 ± 0.142
$abalone-20_vs8-9-10$	0.538 ± 0.119	0.346 ± 0.052	0.554 ± 0.132	**0.562 ± 0.142**	0.362 ± 0.119	0.469 ± 0.116	0.523 ± 0.175	0.531 ± 0.126	0.285 ± 0.119	0.115 ± 0.180
$abalone-21_vs8$	**0.686 ± 0.178**	0.557 ± 0.162	0.657 ± 0.159	0.657 ± 0.159	0.614 ± 0.157	0.614 ± 0.129	0.671 ± 0.170	**0.686 ± 0.178**	0.429 ± 0.202	0.357 ± 0.241
$flare-F$	0.465 ± 0.092	0.415 ± 0.079	0.460 ± 0.103	0.465 ± 0.091	0.409 ± 0.090	**0.470 ± 0.081**	0.465 ± 0.081	0.465 ± 0.092	0.111 ± 0.083	0.009 ± 0.018
$kddcup-buffer\_overflow\_vs\_back$	0.913 ± 0.095	0.913 ± 0.095	0.913 ± 0.095	0.913 ± 0.095	0.893 ± 0.100	**0.920 ± 0.083**	0.893 ± 0.085	0.913 ± 0.095	0.913 ± 0.090	0.913 ± 0.090
$kddcup-rootkit-imap\_vs\_back$	**0.945 ± 0.045**	0.927 ± 0.079	**0.945 ± 0.045**	**0.945 ± 0.045**	0.909 ± 0.091	0.891 ± 0.055	0.909 ± 0.100	**0.945 ± 0.045**	0.927 ± 0.079	0.927 ± 0.079
$kr-vs-k-zero\_vs\_eight$	0.887 ± 0.098	0.865 ± 0.105	0.895 ± 0.098	0.895 ± 0.098	0.873 ± 0.096	**0.902 ± 0.119**	0.864 ± 0.118	0.887 ± 0.098	0.520 ± 0.329	0.000 ± 0.000
$poker-8-9_vs5$	0.265 ± 0.121	0.177 ± 0.072	0.280 ± 0.135	0.263 ± 0.127	0.128 ± 0.073	**0.373 ± 0.103**	0.272 ± 0.129	0.265 ± 0.121	0.112 ± 0.138	0.038 ± 0.079
$poker-8-9_vs6$	0.920 ± 0.081	0.841 ± 0.068	0.919 ± 0.081	0.919 ± 0.081	0.792 ± 0.098	**0.983 ± 0.050**	0.896 ± 0.063	0.920 ± 0.081	0.975 ± 0.075	0.952 ± 0.096
$poker-8_vs6$	0.910 ± 0.120	0.719 ± 0.112	0.910 ± 0.120	0.910 ± 0.120	0.814 ± 0.125	**0.989 ± 0.033**	0.887 ± 0.157	0.910 ± 0.120	0.812 ± 0.244	0.863 ± 0.225
$poker-9_vs7$	**0.700 ± 0.312**	**0.700 ± 0.312**	**0.700 ± 0.312**	**0.700 ± 0.312**	0.675 ± 0.297	0.600 ± 0.255	0.675 ± 0.297	**0.700 ± 0.312**	0.600 ± 0.450	0.625 ± 0.375
$winequality-red-3_vs5$	**0.200 ± 0.126**	0.180 ± 0.108	**0.200 ± 0.126**	**0.200 ± 0.126**	0.180 ± 0.108	**0.200 ± 0.126**	0.180 ± 0.108	**0.200 ± 0.126**	0.120 ± 0.133	0.020 ± 0.060
$winequality-red-4$	0.317 ± 0.052	0.271 ± 0.093	0.317 ± 0.059	0.317 ± 0.044	0.252 ± 0.075	0.184 ± 0.050	**0.328 ± 0.047**	0.317 ± 0.052	0.124 ± 0.064	0.083 ± 0.110
$winequality-red-8_vs6-7$	0.167 ± 0.134	0.167 ± 0.143	**0.178 ± 0.133**	**0.178 ± 0.133**	0.122 ± 0.092	0.133 ± 0.120	0.167 ± 0.114	0.167 ± 0.134	0.144 ± 0.132	0.122 ± 0.144
$winequality-red-8_vs6$	**0.378 ± 0.113**	0.344 ± 0.105	0.356 ± 0.120	**0.378 ± 0.113**	0.289 ± 0.133	0.278 ± 0.102	0.367 ± 0.100	**0.378 ± 0.113**	0.256 ± 0.122	0.233 ± 0.168
$winequality-white-3-9_vs5$	**0.313 ± 0.068**	0.272 ± 0.075	**0.313 ± 0.076**	**0.313 ± 0.076**	0.184 ± 0.064	0.234 ± 0.115	0.272 ± 0.083	**0.313 ± 0.068**	0.121 ± 0.100	0.089 ± 0.068
$winequality-white-3_vs7$	0.320 ± 0.172	0.180 ± 0.133	**0.330 ± 0.185**	0.300 ± 0.190	0.190 ± 0.130	0.300 ± 0.173	0.320 ± 0.204	0.320 ± 0.172	0.210 ± 0.130	0.250 ± 0.186
$winequality-white-9_vs4$	**0.800 ± 0.208**	**0.800 ± 0.208**	**0.800 ± 0.208**	0.567 ± 0.359	**0.800 ± 0.208**	0.567 ± 0.359	**0.800 ± 0.208**	**0.800 ± 0.208**	0.517 ± 0.391	0.517 ± 0.391
$zoo-3$	**0.700 ± 0.306**	**0.700 ± 0.306**	**0.700 ± 0.306**	0.467 ± 0.393	**0.700 ± 0.306**	0.417 ± 0.352	**0.700 ± 0.306**	**0.700 ± 0.306**	0.300 ± 0.267	0.300 ± 0.267
$ecoli1$	0.837 ± 0.048	0.829 ± 0.056	0.847 ± 0.055	0.845 ± 0.053	**0.850 ± 0.054**	0.837 ± 0.063	0.839 ± 0.067	0.844 ± 0.043	0.721 ± 0.127	0.146 ± 0.292
$ecoli2$	**0.908 ± 0.062**	0.904 ± 0.067	**0.908 ± 0.062**	**0.908 ± 0.062**	0.904 ± 0.065	**0.908 ± 0.049**	**0.908 ± 0.062**	**0.908 ± 0.062**	0.758 ± 0.139	0.188 ± 0.299
$ecoli3$	0.840 ± 0.033	0.817 ± 0.041	**0.846 ± 0.035**	0.823 ± 0.039	0.806 ± 0.067	0.835 ± 0.063	0.828 ± 0.037	0.840 ± 0.023	0.670 ± 0.114	0.185 ± 0.288
$glass0$	0.854 ± 0.052	**0.874 ± 0.053**	0.851 ± 0.061	0.866 ± 0.057	0.863 ± 0.052	0.843 ± 0.052	0.869 ± 0.060	0.871 ± 0.041	0.803 ± 0.104	0.657 ± 0.241
$glass1$	0.732 ± 0.076	**0.758 ± 0.069**	0.729 ± 0.063	0.732 ± 0.067	0.718 ± 0.068	0.708 ± 0.057	0.726 ± 0.054	0.732 ± 0.085	0.629 ± 0.156	0.184 ± 0.260
$haberman$	0.546 ± 0.083	0.502 ± 0.096	0.516 ± 0.127	0.516 ± 0.078	0.486 ± 0.090	0.469 ± 0.090	0.509 ± 0.091	**0.548 ± 0.073**	0.393 ± 0.061	0.313 ± 0.152
$page-blocks0$	0.896 ± 0.023	0.846 ± 0.025	0.893 ± 0.026	0.875 ± 0.027	0.883 ± 0.024	0.789 ± 0.032	**0.901 ± 0.021**	0.897 ± 0.023	0.810 ± 0.041	0.841 ± 0.025
$pima$	0.660 ± 0.035	0.669 ± 0.037	0.654 ± 0.035	0.663 ± 0.030	0.654 ± 0.032	0.640 ± 0.036	0.661 ± 0.034	**0.675 ± 0.040**	0.578 ± 0.044	0.530 ± 0.101
$vehicle1$	0.717 ± 0.054	0.713 ± 0.037	0.711 ± 0.044	**0.736 ± 0.057**	0.713 ± 0.038	0.679 ± 0.052	0.726 ± 0.052	0.721 ± 0.057	0.508 ± 0.060	0.671 ± 0.065
$vehicle3$	0.671 ± 0.035	0.637 ± 0.042	0.679 ± 0.039	**0.700 ± 0.047**	0.669 ± 0.033	0.619 ± 0.048	0.687 ± 0.036	0.668 ± 0.036	0.443 ± 0.052	0.625 ± 0.051
$yeast1$	0.641 ± 0.016	0.600 ± 0.026	0.641 ± 0.018	0.633 ± 0.028	0.625 ± 0.027	0.586 ± 0.024	0.636 ± 0.024	**0.648 ± 0.020**	0.379 ± 0.174	0.000 ± 0.000
$yeast3$	0.817 ± 0.038	0.809 ± 0.043	0.820 ± 0.041	0.805 ± 0.046	0.809 ± 0.040	0.807 ± 0.025	**0.822 ± 0.038**	0.816 ± 0.038	0.724 ± 0.034	0.000 ± 0.000