# JFOTS

No Author Given

No Institute Given

## 1 Results

**Table 1.** CART – AUC

| Dataset name | SMOTE | polynom-fit-SMOTE | Lee | SMOBD | G-SMOTE | LVQ-SMOTE | Assembled-SMOTE | SMOTE-TomekLinks | JFOTS_pr | JFOTS_rc | JFOTS_prom |
|---|---|---|---|---|---|---|---|---|---|---|---|
| abalone19 | 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 | 0.511 ± 0.022 | 0.573 ± 0.062 | **0.593 ± 0.057** |
| abalone9-18 | 0.665 ± 0.059 | 0.609 ± 0.040 | 0.672 ± 0.051 | **0.685 ± 0.051** | 0.653 ± 0.033 | 0.684 ± 0.082 | 0.649 ± 0.038 | 0.667 ± 0.062 | 0.673 ± 0.039 | 0.569 ± 0.051 | 0.611 ± 0.064 |
| ecoli-0-1-3-7_vs_2-6 | 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 | 0.691 ± 0.117 | 0.608 ± 0.059 | 0.650 ± 0.145 |
| glass-0-1-6_vs_2 | 0.629 ± 0.058 | 0.570 ± 0.054 | **0.663 ± 0.054** | 0.642 ± 0.063 | 0.609 ± 0.057 | 0.588 ± 0.108 | 0.633 ± 0.108 | 0.628 ± 0.055 | 0.552 ± 0.072 | 0.570 ± 0.057 | 0.549 ± 0.041 |
| glass-0-1-6_vs_5 | 0.860 ± 0.133 | 0.858 ± 0.133 | 0.860 ± 0.133 | 0.860 ± 0.133 | 0.794 ± 0.185 | **0.894 ± 0.133** | 0.860 ± 0.133 | 0.860 ± 0.133 | 0.713 ± 0.198 | 0.866 ± 0.175 | 0.806 ± 0.201 |
| glass2 | 0.591 ± 0.121 | 0.563 ± 0.077 | 0.577 ± 0.111 | **0.610 ± 0.101** | 0.599 ± 0.108 | 0.582 ± 0.110 | 0.575 ± 0.094 | 0.606 ± 0.124 | 0.560 ± 0.106 | 0.516 ± 0.071 | 0.533 ± 0.063 |
| glass4 | 0.854 ± 0.086 | 0.835 ± 0.053 | 0.854 ± 0.087 | 0.845 ± 0.086 | **0.857 ± 0.082** | 0.808 ± 0.090 | 0.853 ± 0.090 | 0.854 ± 0.086 | 0.761 ± 0.129 | 0.747 ± 0.164 | 0.689 ± 0.102 |
| glass5 | 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 | 0.820 ± 0.130 | 0.857 ± 0.128 | 0.865 ± 0.122 |
| 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 | 0.887 ± 0.062 | 0.887 ± 0.151 | 0.909 ± 0.076 |
| yeast-0-5-6-7-9_vs_4 | 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 | 0.667 ± 0.047 | 0.511 ± 0.063 | 0.642 ± 0.080 |
| yeast-1-2-8-9_vs_7 | 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 | 0.561 ± 0.053 | 0.509 ± 0.004 | 0.550 ± 0.049 |
| yeast-1-4-5-8_vs_7 | 0.532 ± 0.049 | **0.554 ± 0.026** | 0.535 ± 0.064 | 0.523 ± 0.045 | 0.537 ± 0.053 | 0.518 ± 0.041 | 0.551 ± 0.029 | 0.526 ± 0.048 | 0.514 ± 0.035 | 0.508 ± 0.005 | 0.502 ± 0.039 |
| yeast-1_vs_7 | 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 | 0.558 ± 0.061 | 0.513 ± 0.034 | 0.568 ± 0.046 |
| yeast-2_vs_4 | 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 ± 0.087 | 0.661 ± 0.173 | 0.801 ± 0.068 |
| yeast-2_vs_8 | 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 | 0.760 ± 0.045 | 0.549 ± 0.062 | 0.745 ± 0.062 |
| yeast4 | 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 | 0.619 ± 0.060 | 0.498 ± 0.008 | 0.582 ± 0.057 |
| yeast5 | 0.862 ± 0.073 | 0.846 ± 0.068 | 0.846 ± 0.064 | 0.859 ± 0.068 | 0.855 ± 0.065 | **0.878 ± 0.049** | 0.868 ± 0.057 | 0.864 ± 0.076 | 0.805 ± 0.081 | 0.526 ± 0.049 | 0.799 ± 0.110 |
| yeast6 | 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 | 0.639 ± 0.043 | 0.522 ± 0.035 | 0.669 ± 0.068 |
| cleveland-0_vs_4 | **0.814 ± 0.055** | 0.731 ± 0.129 | 0.785 ± 0.103 | 0.782 ± 0.083 | 0.750 ± 0.127 | 0.745 ± 0.048 | 0.801 ± 0.063 | **0.814 ± 0.055** | 0.782 ± 0.086 | 0.666 ± 0.109 | 0.703 ± 0.050 |
| ecoli-0-1-4-7_vs_2-3-5-6 | 0.792 ± 0.074 | 0.794 ± 0.048 | 0.822 ± 0.039 | 0.790 ± 0.069 | 0.776 ± 0.066 | 0.822 ± 0.050 | **0.827 ± 0.054** | 0.806 ± 0.077 | 0.688 ± 0.084 | 0.579 ± 0.118 | 0.732 ± 0.077 |
| ecoli-0-1_vs_2-3-5 | 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 | 0.767 ± 0.105 | 0.648 ± 0.124 | 0.777 ± 0.088 |
| ecoli-0-2-6-7_vs_3-5 | 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 | 0.783 ± 0.055 | 0.573 ± 0.121 | 0.788 ± 0.074 |
| ecoli-0-6-7_vs_3-5 | 0.795 ± 0.069 | 0.794 ± 0.048 | 0.810 ± 0.052 | 0.813 ± 0.063 | 0.832 ± 0.070 | **0.834 ± 0.060** | 0.790 ± 0.056 | 0.796 ± 0.069 | 0.776 ± 0.054 | 0.586 ± 0.120 | 0.797 ± 0.052 |
| ecoli-0-6-7_vs_5 | 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 | 0.837 ± 0.087 | 0.591 ± 0.123 | 0.818 ± 0.079 |
| glass-0-1-4-6_vs_2 | 0.595 ± 0.051 | 0.560 ± 0.082 | 0.610 ± 0.072 | 0.591 ± 0.062 | 0.613 ± 0.070 | **0.638 ± 0.077** | 0.558 ± 0.066 | 0.576 ± 0.062 | 0.556 ± 0.058 | 0.551 ± 0.078 | 0.566 ± 0.081 |
| glass-0-1-5_vs_2 | 0.689 ± 0.067 | 0.597 ± 0.068 | 0.677 ± 0.082 | **0.713 ± 0.110** | 0.631 ± 0.069 | 0.605 ± 0.090 | 0.649 ± 0.079 | 0.678 ± 0.062 | 0.607 ± 0.068 | 0.548 ± 0.080 | 0.565 ± 0.100 |
| yeast-0-2-5-6_vs_3-7-8-9 | 0.713 ± 0.037 | 0.712 ± 0.051 | **0.735 ± 0.038** | 0.714 ± 0.027 | 0.717 ± 0.033 | 0.728 ± 0.046 | 0.709 ± 0.037 | 0.700 ± 0.034 | 0.633 ± 0.064 | 0.548 ± 0.086 | 0.625 ± 0.097 |
| yeast-0-3-5-9_vs_7-8 | 0.598 ± 0.035 | **0.638 ± 0.041** | 0.621 ± 0.044 | 0.623 ± 0.050 | 0.614 ± 0.049 | 0.629 ± 0.050 | 0.615 ± 0.028 | 0.630 ± 0.031 | 0.539 ± 0.038 | 0.519 ± 0.026 | 0.540 ± 0.041 |
| abalone-17_vs_7-8-9-10 | 0.644 ± 0.041 | 0.642 ± 0.033 | 0.643 ± 0.042 | 0.660 ± 0.045 | 0.645 ± 0.045 | **0.667 ± 0.024** | 0.646 ± 0.039 | 0.642 ± 0.036 | 0.619 ± 0.044 | 0.556 ± 0.035 | 0.595 ± 0.052 |
| abalone-19_vs_10-11-12-13 | 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 | 0.514 ± 0.036 | 0.495 ± 0.027 | 0.526 ± 0.041 |
| abalone-20_vs_8-9-10 | 0.696 ± 0.050 | 0.584 ± 0.065 | 0.674 ± 0.065 | 0.682 ± 0.050 | 0.630 ± 0.071 | **0.789 ± 0.061** | 0.681 ± 0.059 | 0.696 ± 0.050 | 0.590 ± 0.050 | 0.591 ± 0.065 | 0.576 ± 0.054 |
| abalone-21_vs_8 | 0.726 ± 0.121 | 0.655 ± 0.074 | 0.699 ± 0.092 | 0.691 ± 0.116 | 0.736 ± 0.075 | **0.790 ± 0.070** | 0.692 ± 0.105 | 0.734 ± 0.126 | 0.660 ± 0.129 | 0.602 ± 0.108 | 0.675 ± 0.074 |
| flare-F | 0.558 ± 0.035 | 0.581 ± 0.030 | 0.570 ± 0.045 | 0.578 ± 0.038 | 0.588 ± 0.025 | 0.580 ± 0.034 | 0.576 ± 0.048 | 0.577 ± 0.035 | 0.611 ± 0.060 | 0.576 ± 0.068 | **0.673 ± 0.097** |
| 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** | **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 | 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 | **0.968 ± 0.042** | 0.954 ± 0.074 | 0.954 ± 0.058 | 0.961 ± 0.050 | 0.822 ± 0.084 | 0.728 ± 0.066 | 0.902 ± 0.092 |
| poker-8-9_vs_5 | 0.572 ± 0.039 | 0.558 ± 0.049 | 0.566 ± 0.032 | 0.572 ± 0.032 | 0.545 ± 0.051 | **0.585 ± 0.070** | 0.543 ± 0.028 | 0.572 ± 0.039 | 0.523 ± 0.032 | 0.512 ± 0.056 | 0.533 ± 0.046 |
| poker-8-9_vs_6 | 0.680 ± 0.087 | 0.824 ± 0.141 | 0.670 ± 0.096 | 0.644 ± 0.084 | 0.750 ± 0.143 | 0.628 ± 0.096 | 0.657 ± 0.105 | 0.680 ± 0.087 | 1.000 ± 0.001 | **1.000 ± 0.001** | 1.000 ± 0.001 |
| poker-8_vs_6 | 0.685 ± 0.101 | 0.685 ± 0.163 | 0.703 ± 0.123 | 0.685 ± 0.095 | 0.691 ± 0.098 | 0.669 ± 0.162 | 0.677 ± 0.100 | 0.685 ± 0.101 | **0.931 ± 0.084** | 0.931 ± 0.084 | 0.868 ± 0.163 |
| poker-9_vs_7 | 0.564 ± 0.082 | 0.548 ± 0.063 | 0.564 ± 0.082 | 0.562 ± 0.084 | 0.586 ± 0.095 | 0.613 ± 0.127 | 0.563 ± 0.081 | 0.564 ± 0.082 | **0.642 ± 0.180** | 0.619 ± 0.127 | 0.515 ± 0.076 |
| winequality-red-3_vs_5 | 0.516 ± 0.043 | 0.529 ± 0.066 | 0.506 ± 0.040 | 0.518 ± 0.045 | 0.528 ± 0.089 | **0.565 ± 0.056** | 0.525 ± 0.064 | 0.516 ± 0.043 | 0.515 ± 0.039 | 0.494 ± 0.009 | 0.506 ± 0.028 |
| winequality-red-4 | 0.552 ± 0.048 | 0.528 ± 0.030 | **0.576 ± 0.029** | 0.572 ± 0.036 | 0.564 ± 0.040 | 0.571 ± 0.036 | 0.548 ± 0.017 | 0.552 ± 0.050 | 0.526 ± 0.023 | 0.522 ± 0.014 | 0.532 ± 0.033 |
| winequality-red-8_vs_6-7 | 0.543 ± 0.041 | 0.557 ± 0.050 | 0.550 ± 0.039 | **0.562 ± 0.051** | 0.556 ± 0.054 | 0.555 ± 0.043 | 0.545 ± 0.048 | 0.543 ± 0.041 | 0.552 ± 0.058 | 0.548 ± 0.048 | 0.533 ± 0.048 |
| winequality-red-8_vs_6 | 0.609 ± 0.052 | 0.608 ± 0.064 | 0.605 ± 0.046 | 0.603 ± 0.067 | 0.579 ± 0.047 | 0.614 ± 0.058 | **0.630 ± 0.056** | 0.609 ± 0.052 | 0.556 ± 0.054 | 0.528 ± 0.052 | 0.543 ± 0.040 |
| winequality-white-3-9_vs_5 | 0.566 ± 0.063 | 0.544 ± 0.047 | 0.540 ± 0.054 | 0.546 ± 0.056 | 0.533 ± 0.061 | **0.643 ± 0.056** | 0.535 ± 0.037 | 0.566 ± 0.063 | 0.521 ± 0.027 | 0.507 ± 0.015 | 0.529 ± 0.035 |
| winequality-white-3_vs_7 | 0.539 ± 0.045 | 0.557 ± 0.060 | 0.576 ± 0.061 | 0.567 ± 0.055 | 0.590 ± 0.046 | **0.737 ± 0.086** | 0.524 ± 0.047 | 0.539 ± 0.045 | 0.573 ± 0.064 | 0.581 ± 0.081 | 0.573 ± 0.059 |
| winequality-white-9_vs_4 | 0.722 ± 0.163 | 0.672 ± 0.100 | 0.721 ± 0.162 | 0.721 ± 0.162 | **0.722 ± 0.162** | 0.692 ± 0.141 | 0.721 ± 0.162 | 0.722 ± 0.163 | 0.656 ± 0.093 | 0.633 ± 0.160 | 0.668 ± 0.157 |
| 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 | 0.770 ± 0.080 | **0.797 ± 0.108** | 0.744 ± 0.116 |
| ecoli1 | 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** | 0.745 ± 0.045 | 0.560 ± 0.114 | 0.817 ± 0.053 |
| ecoli2 | 0.855 ± 0.028 | 0.838 ± 0.035 | 0.850 ± 0.033 | 0.852 ± 0.036 | 0.854 ± 0.029 | **0.866 ± 0.037** | 0.852 ± 0.041 | 0.855 ± 0.028 | 0.816 ± 0.046 | 0.592 ± 0.125 | 0.779 ± 0.066 |
| ecoli3 | 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 | 0.727 ± 0.069 | 0.593 ± 0.120 | 0.748 ± 0.072 |
| glass0 | 0.767 ± 0.036 | 0.770 ± 0.060 | 0.772 ± 0.038 | 0.787 ± 0.033 | 0.781 ± 0.041 | **0.802 ± 0.041** | 0.794 ± 0.040 | 0.774 ± 0.025 | 0.712 ± 0.092 | 0.703 ± 0.068 | 0.780 ± 0.050 |
| glass1 | 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 | 0.683 ± 0.096 | 0.595 ± 0.051 | 0.639 ± 0.070 |
| 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** | 0.572 ± 0.038 | 0.528 ± 0.054 | 0.547 ± 0.032 |
| page-blocks0 | 0.917 ± 0.012 | 0.898 ± 0.010 | 0.915 ± 0.010 | 0.914 ± 0.008 | 0.907 ± 0.009 | 0.900 ± 0.009 | **0.919 ± 0.011** | 0.917 ± 0.008 | 0.891 ± 0.009 | 0.884 ± 0.020 | 0.892 ± 0.025 |
| pima | 0.665 ± 0.020 | 0.673 ± 0.023 | 0.660 ± 0.021 | 0.665 ± 0.015 | 0.663 ± 0.024 | **0.678 ± 0.027** | 0.658 ± 0.021 | 0.670 ± 0.025 | 0.649 ± 0.023 | 0.588 ± 0.049 | 0.632 ± 0.056 |
| vehicle1 | 0.668 ± 0.024 | 0.668 ± 0.021 | 0.680 ± 0.032 | 0.671 ± 0.025 | 0.664 ± 0.028 | **0.685 ± 0.023** | 0.674 ± 0.024 | 0.676 ± 0.014 | 0.644 ± 0.046 | 0.660 ± 0.048 | 0.663 ± 0.021 |
| vehicle3 | 0.666 ± 0.023 | **0.690 ± 0.023** | 0.655 ± 0.023 | 0.677 ± 0.028 | 0.671 ± 0.019 | 0.685 ± 0.014 | 0.674 ± 0.020 | 0.667 ± 0.013 | 0.647 ± 0.025 | 0.665 ± 0.022 | 0.658 ± 0.030 |
| yeast1 | 0.643 ± 0.017 | **0.653 ± 0.017** | 0.653 ± 0.016 | 0.650 ± 0.011 | 0.649 ± 0.012 | 0.653 ± 0.017 | 0.652 ± 0.021 | 0.641 ± 0.009 | 0.607 ± 0.031 | 0.507 ± 0.002 | 0.577 ± 0.042 |
| yeast3 | 0.864 ± 0.029 | 0.832 ± 0.033 | 0.863 ± 0.024 | 0.849 ± 0.015 | 0.845 ± 0.024 | 0.860 ± 0.027 | 0.854 ± 0.031 | **0.867 ± 0.030** | 0.829 ± 0.024 | 0.504 ± 0.003 | 0.854 ± 0.027 |

## Table 2. SVM – AUC

| Dataset name | SMOTE | polynom-fit-SMOTE | Lee | SMOBD | G-SMOTE | LVQ-SMOTE | Assembled-SMOTE | SMOTE-TomekLinks | JFOTS_pr | JFOTS_rc | JFOTS_prom |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 0.606 ± 0.090 | 0.653 ± 0.053 | **0.668 ± 0.043** |
| abalone9-18 | 0.740 ± 0.052 | 0.698 ± 0.036 | 0.745 ± 0.035 | 0.750 ± 0.042 | 0.738 ± 0.055 | **0.782 ± 0.043** | 0.739 ± 0.038 | 0.739 ± 0.051 | 0.671 ± 0.047 | 0.695 ± 0.117 | 0.702 ± 0.099 |
| ecoli-0-1-3-7_vs_2-6 | 0.845 ± 0.075 | **0.847 ± 0.078** | 0.838 ± 0.074 | 0.842 ± 0.076 | 0.845 ± 0.079 | 0.828 ± 0.078 | 0.844 ± 0.075 | 0.845 ± 0.075 | 0.777 ± 0.112 | 0.762 ± 0.124 | 0.774 ± 0.103 |
| glass-0-1-6_vs_2 | 0.740 ± 0.099 | 0.697 ± 0.081 | **0.744 ± 0.090** | 0.740 ± 0.079 | 0.690 ± 0.076 | 0.622 ± 0.083 | 0.743 ± 0.072 | 0.740 ± 0.100 | 0.658 ± 0.115 | 0.653 ± 0.116 | 0.585 ± 0.054 |
| glass-0-1-6_vs_5 | 0.820 ± 0.098 | 0.792 ± 0.117 | 0.820 ± 0.098 | 0.820 ± 0.098 | 0.792 ± 0.116 | 0.843 ± 0.147 | 0.820 ± 0.098 | 0.820 ± 0.098 | 0.758 ± 0.103 | **0.852 ± 0.173** | 0.791 ± 0.153 |
| glass2 | 0.642 ± 0.143 | 0.638 ± 0.134 | 0.648 ± 0.140 | 0.637 ± 0.137 | 0.651 ± 0.137 | **0.677 ± 0.158** | 0.648 ± 0.146 | 0.641 ± 0.143 | 0.650 ± 0.100 | 0.608 ± 0.102 | 0.619 ± 0.133 |
| glass4 | **0.892 ± 0.094** | 0.852 ± 0.116 | 0.883 ± 0.108 | 0.876 ± 0.121 | 0.876 ± 0.103 | 0.870 ± 0.111 | 0.876 ± 0.082 | **0.892 ± 0.094** | 0.826 ± 0.104 | 0.760 ± 0.161 | 0.789 ± 0.090 |
| glass5 | 0.818 ± 0.106 | 0.809 ± 0.103 | 0.828 ± 0.099 | 0.828 ± 0.099 | 0.817 ± 0.106 | **0.854 ± 0.155** | 0.818 ± 0.106 | 0.818 ± 0.106 | 0.802 ± 0.104 | 0.808 ± 0.110 | 0.840 ± 0.129 |
| page-blocks-1-3_vs_4 | 0.904 ± 0.114 | 0.791 ± 0.070 | **0.908 ± 0.112** | 0.907 ± 0.112 | 0.903 ± 0.119 | 0.796 ± 0.048 | 0.888 ± 0.116 | 0.904 ± 0.114 | 0.806 ± 0.073 | 0.907 ± 0.078 | 0.847 ± 0.119 |
| yeast-0-5-6-7-9_vs_4 | 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 | 0.680 ± 0.058 | 0.523 ± 0.116 | 0.676 ± 0.083 |
| yeast-1-2-8-9_vs_7 | 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 | 0.565 ± 0.050 | 0.509 ± 0.004 | 0.587 ± 0.061 |
| yeast-1-4-5-8_vs_7 | 0.571 ± 0.051 | 0.568 ± 0.051 | 0.564 ± 0.047 | 0.561 ± 0.037 | 0.577 ± 0.047 | **0.600 ± 0.034** | 0.557 ± 0.035 | 0.571 ± 0.050 | 0.564 ± 0.073 | 0.508 ± 0.005 | 0.564 ± 0.057 |
| yeast-1_vs_7 | 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 | 0.584 ± 0.044 | 0.510 ± 0.024 | 0.614 ± 0.062 |
| yeast-2_vs_4 | 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 | 0.846 ± 0.049 | 0.698 ± 0.212 | 0.855 ± 0.049 |
| yeast-2_vs_8 | 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 | 0.767 ± 0.061 | 0.536 ± 0.051 | 0.759 ± 0.092 |
| 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 | 0.722 ± 0.080 | 0.498 ± 0.008 | 0.713 ± 0.070 |
| yeast5 | 0.927 ± 0.029 | 0.924 ± 0.030 | 0.927 ± 0.029 | 0.927 ± 0.029 | 0.930 ± 0.028 | **0.941 ± 0.024** | 0.927 ± 0.029 | 0.927 ± 0.029 | 0.931 ± 0.036 | 0.550 ± 0.123 | 0.883 ± 0.128 |
| 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 | 0.762 ± 0.054 | 0.521 ± 0.032 | 0.805 ± 0.062 |
| cleveland-0_vs_4 | 0.719 ± 0.089 | 0.681 ± 0.082 | 0.728 ± 0.101 | 0.736 ± 0.099 | 0.704 ± 0.084 | **0.845 ± 0.052** | 0.719 ± 0.088 | 0.719 ± 0.089 | 0.749 ± 0.037 | 0.673 ± 0.120 | 0.689 ± 0.057 |
| ecoli-0-1-4-7_vs_2-3-5-6 | 0.872 ± 0.032 | 0.851 ± 0.020 | 0.867 ± 0.029 | 0.866 ± 0.019 | 0.870 ± 0.033 | **0.884 ± 0.033** | 0.871 ± 0.037 | 0.872 ± 0.032 | 0.738 ± 0.115 | 0.629 ± 0.166 | 0.790 ± 0.088 |
| ecoli-0-1_vs_2-3-5 | 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 | 0.804 ± 0.097 | 0.731 ± 0.184 | 0.832 ± 0.069 |
| ecoli-0-2-6-7_vs_3-5 | 0.834 ± 0.056 | 0.842 ± 0.061 | 0.838 ± 0.056 | 0.843 ± 0.056 | 0.853 ± 0.063 | **0.871 ± 0.050** | 0.835 ± 0.059 | 0.834 ± 0.056 | 0.827 ± 0.049 | 0.647 ± 0.159 | 0.849 ± 0.052 |
| ecoli-0-6-7_vs_3-5 | 0.846 ± 0.055 | 0.851 ± 0.056 | 0.843 ± 0.056 | 0.857 ± 0.059 | 0.856 ± 0.062 | **0.869 ± 0.060** | 0.846 ± 0.061 | 0.846 ± 0.055 | 0.846 ± 0.052 | 0.689 ± 0.163 | 0.843 ± 0.055 |
| ecoli-0-6-7_vs_5 | 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 | 0.868 ± 0.064 | 0.672 ± 0.143 | 0.861 ± 0.076 |
| glass-0-1-4-6_vs_2 | 0.710 ± 0.101 | 0.669 ± 0.128 | 0.713 ± 0.107 | 0.702 ± 0.131 | 0.665 ± 0.120 | 0.625 ± 0.090 | **0.716 ± 0.127** | 0.709 ± 0.101 | 0.593 ± 0.111 | 0.601 ± 0.102 | 0.680 ± 0.100 |
| glass-0-1-5_vs_2 | 0.696 ± 0.063 | 0.659 ± 0.067 | 0.701 ± 0.062 | **0.711 ± 0.071** | 0.671 ± 0.071 | 0.581 ± 0.049 | 0.685 ± 0.068 | 0.696 ± 0.063 | 0.637 ± 0.060 | 0.600 ± 0.123 | 0.640 ± 0.112 |
| yeast-0-2-5-6_vs_3-7-8-9 | 0.782 ± 0.026 | 0.775 ± 0.041 | 0.778 ± 0.032 | 0.788 ± 0.019 | 0.772 ± 0.038 | **0.791 ± 0.030** | 0.781 ± 0.029 | 0.783 ± 0.026 | 0.695 ± 0.120 | 0.575 ± 0.123 | 0.688 ± 0.136 |
| yeast-0-3-5-9_vs_7-8 | **0.696 ± 0.035** | 0.640 ± 0.032 | 0.687 ± 0.036 | 0.690 ± 0.045 | 0.689 ± 0.041 | 0.660 ± 0.053 | 0.692 ± 0.034 | 0.695 ± 0.036 | 0.599 ± 0.085 | 0.519 ± 0.028 | 0.614 ± 0.069 |
| abalone-17_vs_7-8-9-10 | 0.814 ± 0.021 | 0.742 ± 0.040 | 0.809 ± 0.024 | 0.810 ± 0.034 | 0.806 ± 0.028 | **0.823 ± 0.025** | 0.816 ± 0.024 | 0.813 ± 0.019 | 0.670 ± 0.084 | 0.748 ± 0.068 | 0.692 ± 0.066 |
| abalone-19_vs_10-11-12-13 | 0.633 ± 0.062 | 0.582 ± 0.058 | 0.637 ± 0.061 | 0.636 ± 0.052 | 0.629 ± 0.058 | **0.659 ± 0.075** | 0.629 ± 0.067 | 0.633 ± 0.062 | 0.584 ± 0.085 | 0.579 ± 0.076 | 0.573 ± 0.089 |
| abalone-20_vs_8-9-10 | 0.806 ± 0.048 | 0.775 ± 0.041 | 0.809 ± 0.043 | 0.802 ± 0.047 | 0.797 ± 0.051 | **0.884 ± 0.051** | 0.798 ± 0.055 | 0.806 ± 0.048 | 0.702 ± 0.128 | 0.676 ± 0.095 | 0.721 ± 0.069 |
| abalone-21_vs_8 | 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 | 0.716 ± 0.118 | 0.651 ± 0.110 | 0.706 ± 0.104 |
| flare-F | 0.738 ± 0.040 | 0.689 ± 0.046 | 0.732 ± 0.044 | 0.743 ± 0.049 | 0.725 ± 0.043 | **0.777 ± 0.047** | 0.738 ± 0.045 | 0.738 ± 0.040 | 0.638 ± 0.073 | 0.573 ± 0.069 | 0.694 ± 0.104 |
| 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 | 0.967 ± 0.054 | 0.967 ± 0.054 | 0.967 ± 0.054 |
| 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 | **0.991 ± 0.018** | **0.991 ± 0.018** | **0.991 ± 0.018** |
| 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 | 0.867 ± 0.095 | 0.727 ± 0.064 | 0.814 ± 0.121 |
| poker-8-9_vs_5 | 0.625 ± 0.067 | 0.588 ± 0.066 | 0.617 ± 0.058 | 0.613 ± 0.056 | 0.614 ± 0.073 | **0.677 ± 0.074** | 0.614 ± 0.047 | 0.625 ± 0.067 | 0.614 ± 0.117 | 0.512 ± 0.046 | 0.648 ± 0.123 |
| poker-8-9_vs_6 | 0.757 ± 0.064 | 0.724 ± 0.047 | 0.757 ± 0.064 | 0.744 ± 0.054 | 0.732 ± 0.066 | 0.937 ± 0.055 | 0.749 ± 0.086 | 0.757 ± 0.064 | 0.977 ± 0.062 | **0.978 ± 0.062** | 0.977 ± 0.062 |
| poker-8_vs_6 | 0.783 ± 0.073 | 0.712 ± 0.059 | 0.783 ± 0.073 | 0.789 ± 0.066 | 0.746 ± 0.081 | **0.968 ± 0.051** | 0.789 ± 0.065 | 0.783 ± 0.073 | 0.901 ± 0.124 | 0.933 ± 0.104 | 0.845 ± 0.174 |
| poker-9_vs_7 | 0.636 ± 0.104 | 0.624 ± 0.097 | 0.636 ± 0.104 | 0.636 ± 0.104 | 0.636 ± 0.130 | 0.680 ± 0.135 | 0.611 ± 0.087 | 0.636 ± 0.104 | **0.685 ± 0.188** | 0.620 ± 0.123 | 0.613 ± 0.144 |
| winequality-red-3_vs_5 | 0.540 ± 0.049 | 0.542 ± 0.050 | 0.539 ± 0.049 | 0.540 ± 0.049 | 0.541 ± 0.049 | **0.608 ± 0.057** | 0.550 ± 0.050 | 0.540 ± 0.049 | 0.540 ± 0.078 | 0.604 ± 0.100 | 0.539 ± 0.054 |
| winequality-red-4 | 0.638 ± 0.034 | 0.611 ± 0.029 | 0.632 ± 0.033 | **0.644 ± 0.035** | 0.625 ± 0.032 | 0.617 ± 0.029 | 0.641 ± 0.034 | 0.637 ± 0.033 | 0.542 ± 0.049 | 0.605 ± 0.072 | 0.532 ± 0.059 |
| winequality-red-8_vs_6-7 | 0.571 ± 0.054 | 0.550 ± 0.055 | **0.572 ± 0.054** | 0.571 ± 0.054 | 0.555 ± 0.062 | 0.541 ± 0.063 | 0.557 ± 0.048 | 0.571 ± 0.054 | 0.552 ± 0.036 | 0.571 ± 0.079 | 0.549 ± 0.053 |
| winequality-red-8_vs_6 | 0.614 ± 0.031 | 0.610 ± 0.024 | 0.615 ± 0.031 | 0.615 ± 0.030 | 0.625 ± 0.030 | 0.627 ± 0.065 | 0.625 ± 0.030 | 0.614 ± 0.031 | **0.642 ± 0.053** | 0.602 ± 0.097 | 0.575 ± 0.062 |
| winequality-white-3-9_vs_5 | 0.565 ± 0.051 | 0.529 ± 0.045 | 0.559 ± 0.057 | 0.560 ± 0.048 | 0.542 ± 0.039 | **0.685 ± 0.039** | 0.557 ± 0.051 | 0.565 ± 0.051 | 0.565 ± 0.067 | 0.561 ± 0.036 | 0.571 ± 0.046 |
| winequality-white-3_vs_7 | 0.533 ± 0.049 | 0.528 ± 0.041 | 0.549 ± 0.066 | 0.547 ± 0.067 | 0.546 ± 0.039 | **0.756 ± 0.077** | 0.539 ± 0.047 | 0.533 ± 0.049 | 0.549 ± 0.051 | 0.644 ± 0.126 | 0.586 ± 0.094 |
| winequality-white-9_vs_4 | 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 | 0.695 ± 0.164 | 0.702 ± 0.137 | 0.734 ± 0.151 |
| 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 | 0.751 ± 0.120 | **0.752 ± 0.126** | 0.726 ± 0.142 |
| 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 | 0.881 ± 0.028 | 0.576 ± 0.146 | **0.889 ± 0.025** |
| 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 | 0.866 ± 0.046 | 0.609 ± 0.148 | 0.871 ± 0.049 |
| ecoli3 | 0.889 ± 0.022 | 0.893 ± 0.024 | 0.887 ± 0.022 | **0.894 ± 0.017** | 0.893 ± 0.021 | 0.893 ± 0.019 | 0.887 ± 0.021 | 0.892 ± 0.021 | 0.839 ± 0.042 | 0.670 ± 0.182 | 0.825 ± 0.067 |
| glass0 | 0.779 ± 0.040 | 0.790 ± 0.020 | 0.785 ± 0.039 | 0.778 ± 0.037 | **0.793 ± 0.037** | 0.771 ± 0.032 | 0.792 ± 0.034 | 0.778 ± 0.036 | 0.771 ± 0.030 | 0.726 ± 0.066 | 0.729 ± 0.052 |
| 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 | 0.667 ± 0.083 | 0.618 ± 0.067 | 0.644 ± 0.053 |
| 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 | 0.594 ± 0.062 | 0.583 ± 0.088 | 0.595 ± 0.058 |
| page-blocks0 | 0.931 ± 0.008 | 0.900 ± 0.008 | 0.931 ± 0.007 | 0.923 ± 0.009 | 0.932 ± 0.008 | 0.848 ± 0.016 | 0.930 ± 0.008 | **0.932 ± 0.008** | 0.888 ± 0.039 | 0.901 ± 0.021 | 0.874 ± 0.027 |
| pima | 0.727 ± 0.030 | 0.722 ± 0.027 | 0.729 ± 0.023 | 0.726 ± 0.022 | 0.731 ± 0.025 | 0.730 ± 0.017 | **0.732 ± 0.028** | 0.728 ± 0.032 | 0.711 ± 0.012 | 0.651 ± 0.053 | 0.693 ± 0.054 |
| vehicle1 | 0.789 ± 0.027 | 0.749 ± 0.023 | 0.790 ± 0.026 | 0.790 ± 0.020 | 0.798 ± 0.016 | 0.792 ± 0.023 | 0.791 ± 0.019 | 0.793 ± 0.025 | 0.682 ± 0.050 | **0.804 ± 0.019** | 0.771 ± 0.041 |
| vehicle3 | 0.789 ± 0.022 | 0.734 ± 0.017 | 0.790 ± 0.018 | **0.797 ± 0.026** | 0.790 ± 0.016 | 0.789 ± 0.023 | 0.789 ± 0.018 | 0.790 ± 0.021 | 0.671 ± 0.031 | 0.792 ± 0.017 | 0.742 ± 0.041 |
| 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 | 0.645 ± 0.046 | 0.507 ± 0.002 | 0.647 ± 0.049 |
| yeast3 | 0.893 ± 0.022 | 0.884 ± 0.027 | 0.894 ± 0.020 | 0.893 ± 0.026 | 0.889 ± 0.020 | **0.896 ± 0.020** | 0.895 ± 0.023 | 0.893 ± 0.022 | 0.870 ± 0.029 | 0.504 ± 0.003 | 0.892 ± 0.018 |

## Table 3. KNN – BAC

| Dataset name | SMOTE | polynom-fit-SMOTE | Lee | SMOBD | G-SMOTE | LVQ-SMOTE | Assembled-SMOTE | SMOTE-TomekLinks | JFOTS_pr | JFOTS_rc | JFOTS_prom |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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** | 0.504 ± 0.013 | 0.504 ± 0.018 | 0.498 ± 0.003 |
| abalone9-18 | 0.719 ± 0.033 | 0.704 ± 0.044 | 0.704 ± 0.034 | 0.709 ± 0.040 | 0.700 ± 0.048 | 0.692 ± 0.033 | 0.714 ± 0.041 | **0.720 ± 0.033** | 0.620 ± 0.032 | 0.574 ± 0.056 | 0.606 ± 0.078 |
| ecoli-0-1-3-7_vs_2-6 | 0.834 ± 0.075 | **0.835 ± 0.076** | 0.834 ± 0.074 | 0.833 ± 0.074 | **0.835 ± 0.076** | 0.833 ± 0.076 | 0.834 ± 0.075 | 0.834 ± 0.075 | 0.699 ± 0.117 | 0.694 ± 0.104 | 0.738 ± 0.117 |
| glass-0-1-6_vs_2 | 0.718 ± 0.086 | 0.682 ± 0.045 | 0.713 ± 0.081 | 0.714 ± 0.084 | 0.700 ± 0.056 | 0.657 ± 0.063 | **0.725 ± 0.082** | 0.717 ± 0.085 | 0.592 ± 0.110 | 0.566 ± 0.091 | 0.543 ± 0.064 |
| glass-0-1-6_vs_5 | 0.914 ± 0.097 | **0.915 ± 0.098** | 0.914 ± 0.097 | 0.914 ± 0.098 | 0.894 ± 0.135 | 0.881 ± 0.120 | 0.914 ± 0.097 | 0.914 ± 0.097 | 0.777 ± 0.117 | 0.763 ± 0.213 | 0.855 ± 0.128 |
| glass2 | 0.630 ± 0.134 | 0.633 ± 0.137 | 0.637 ± 0.151 | **0.644 ± 0.141** | 0.630 ± 0.135 | 0.627 ± 0.112 | 0.635 ± 0.145 | 0.628 ± 0.133 | 0.589 ± 0.128 | 0.564 ± 0.075 | 0.584 ± 0.110 |
| glass4 | 0.901 ± 0.057 | **0.903 ± 0.068** | 0.876 ± 0.056 | 0.885 ± 0.056 | 0.879 ± 0.071 | 0.863 ± 0.038 | 0.892 ± 0.048 | 0.901 ± 0.057 | 0.757 ± 0.075 | 0.748 ± 0.143 | 0.775 ± 0.118 |
| glass5 | 0.931 ± 0.110 | **0.933 ± 0.110** | 0.921 ± 0.116 | 0.931 ± 0.110 | 0.922 ± 0.108 | 0.862 ± 0.108 | 0.931 ± 0.110 | 0.931 ± 0.110 | 0.845 ± 0.079 | 0.820 ± 0.109 | 0.857 ± 0.130 |
| page-blocks-1-3_vs_4 | **0.983 ± 0.023** | 0.978 ± 0.024 | 0.982 ± 0.023 | **0.983 ± 0.023** | 0.949 ± 0.095 | 0.980 ± 0.016 | 0.976 ± 0.025 | **0.983 ± 0.023** | 0.842 ± 0.087 | 0.840 ± 0.127 | 0.915 ± 0.103 |
| yeast-0-5-6-7-9_vs_4 | 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 | 0.641 ± 0.039 | 0.519 ± 0.063 | 0.653 ± 0.083 |
| yeast-1-2-8-9_vs_7 | 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 | 0.577 ± 0.038 | 0.500 ± 0.000 | 0.550 ± 0.045 |
| yeast-1-4-5-8_vs_7 | 0.611 ± 0.040 | 0.595 ± 0.062 | **0.614 ± 0.044** | 0.594 ± 0.052 | 0.571 ± 0.051 | 0.577 ± 0.042 | 0.605 ± 0.039 | 0.611 ± 0.038 | 0.525 ± 0.047 | 0.500 ± 0.000 | 0.539 ± 0.052 |
| yeast-1_vs_7 | 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 | 0.586 ± 0.031 | 0.499 ± 0.002 | 0.586 ± 0.072 |
| yeast-2_vs_4 | 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 | 0.837 ± 0.056 | 0.679 ± 0.182 | 0.836 ± 0.039 |
| yeast-2_vs_8 | 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 | 0.779 ± 0.053 | 0.560 ± 0.121 | 0.753 ± 0.100 |
| 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 | 0.623 ± 0.047 | 0.500 ± 0.000 | 0.604 ± 0.060 |
| 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 | 0.842 ± 0.124 | 0.521 ± 0.064 | 0.837 ± 0.123 |
| 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 | 0.699 ± 0.086 | 0.500 ± 0.000 | 0.722 ± 0.092 |
| cleveland-0_vs_4 | 0.876 ± 0.069 | 0.868 ± 0.036 | 0.881 ± 0.029 | 0.875 ± 0.068 | 0.873 ± 0.033 | 0.813 ± 0.069 | **0.883 ± 0.024** | 0.876 ± 0.069 | 0.755 ± 0.073 | 0.665 ± 0.141 | 0.720 ± 0.094 |
| ecoli-0-1-4-7_vs_2-3-5-6 | 0.883 ± 0.018 | 0.878 ± 0.024 | 0.880 ± 0.018 | 0.876 ± 0.018 | **0.884 ± 0.022** | 0.877 ± 0.028 | 0.882 ± 0.021 | 0.884 ± 0.018 | 0.732 ± 0.113 | 0.594 ± 0.135 | 0.782 ± 0.078 |
| ecoli-0-1_vs_2-3-5 | 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 | 0.829 ± 0.104 | 0.702 ± 0.158 | 0.803 ± 0.062 |
| ecoli-0-2-6-7_vs_3-5 | 0.839 ± 0.051 | 0.839 ± 0.051 | 0.842 ± 0.061 | 0.840 ± 0.053 | **0.843 ± 0.057** | 0.840 ± 0.038 | 0.838 ± 0.049 | 0.839 ± 0.050 | 0.808 ± 0.039 | 0.582 ± 0.122 | 0.817 ± 0.070 |
| ecoli-0-6-7_vs_3-5 | 0.851 ± 0.054 | 0.855 ± 0.053 | 0.854 ± 0.064 | **0.858 ± 0.050** | 0.847 ± 0.061 | 0.841 ± 0.052 | 0.851 ± 0.052 | 0.852 ± 0.053 | 0.818 ± 0.053 | 0.633 ± 0.157 | 0.828 ± 0.051 |
| ecoli-0-6-7_vs_5 | 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 | 0.840 ± 0.078 | 0.570 ± 0.128 | 0.863 ± 0.067 |
| glass-0-1-4-6_vs_2 | **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 | 0.568 ± 0.059 | 0.544 ± 0.111 | 0.613 ± 0.115 |
| glass-0-1-5_vs_2 | 0.676 ± 0.059 | 0.674 ± 0.055 | **0.684 ± 0.063** | 0.669 ± 0.065 | 0.667 ± 0.084 | 0.631 ± 0.060 | 0.683 ± 0.059 | 0.675 ± 0.060 | 0.606 ± 0.088 | 0.552 ± 0.073 | 0.608 ± 0.092 |
| yeast-0-2-5-6_vs_3-7-8-9 | 0.772 ± 0.031 | 0.768 ± 0.025 | **0.775 ± 0.028** | 0.772 ± 0.026 | 0.773 ± 0.030 | 0.764 ± 0.033 | 0.772 ± 0.031 | 0.773 ± 0.032 | 0.658 ± 0.099 | 0.553 ± 0.090 | 0.637 ± 0.097 |
| yeast-0-3-5-9_vs_7-8 | 0.679 ± 0.037 | 0.675 ± 0.035 | 0.679 ± 0.037 | 0.670 ± 0.043 | 0.678 ± 0.037 | **0.681 ± 0.050** | 0.669 ± 0.030 | 0.680 ± 0.038 | 0.544 ± 0.052 | 0.505 ± 0.015 | 0.572 ± 0.065 |
| abalone-17_vs_7-8-9-10 | 0.749 ± 0.046 | 0.719 ± 0.034 | **0.752 ± 0.045** | 0.745 ± 0.046 | 0.713 ± 0.044 | 0.739 ± 0.042 | 0.743 ± 0.044 | 0.749 ± 0.046 | 0.586 ± 0.046 | 0.596 ± 0.049 | 0.527 ± 0.036 |
| abalone-19_vs_10-11-12-13 | 0.583 ± 0.037 | 0.551 ± 0.025 | 0.587 ± 0.040 | **0.589 ± 0.047** | 0.554 ± 0.046 | 0.569 ± 0.045 | 0.570 ± 0.044 | 0.582 ± 0.037 | 0.519 ± 0.021 | 0.501 ± 0.014 | 0.511 ± 0.025 |
| abalone-20_vs_8-9-10 | 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 | 0.571 ± 0.051 | 0.515 ± 0.023 | 0.561 ± 0.062 |
| abalone-21_vs_8 | **0.830 ± 0.084** | 0.771 ± 0.079 | 0.815 ± 0.074 | 0.815 ± 0.076 | 0.797 ± 0.080 | 0.794 ± 0.065 | 0.822 ± 0.080 | 0.830 ± 0.084 | 0.680 ± 0.075 | 0.557 ± 0.094 | 0.672 ± 0.119 |
| flare-F | 0.693 ± 0.044 | 0.674 ± 0.035 | 0.690 ± 0.050 | 0.693 ± 0.044 | 0.671 ± 0.043 | 0.693 ± 0.036 | **0.694 ± 0.041** | 0.692 ± 0.044 | 0.550 ± 0.055 | 0.504 ± 0.009 | 0.545 ± 0.037 |
| 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 | **0.970 ± 0.031** | **0.970 ± 0.031** | **0.970 ± 0.031** |
| 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** | 0.959 ± 0.038 | 0.959 ± 0.038 | 0.959 ± 0.038 |
| kr-vs-k-zero_vs_eight | 0.940 ± 0.050 | 0.930 ± 0.053 | 0.944 ± 0.050 | 0.944 ± 0.049 | 0.926 ± 0.061 | **0.944 ± 0.060** | 0.929 ± 0.060 | 0.940 ± 0.050 | 0.793 ± 0.126 | 0.500 ± 0.000 | 0.776 ± 0.129 |
| poker-8-9_vs_5 | 0.609 ± 0.059 | 0.578 ± 0.036 | 0.617 ± 0.065 | 0.608 ± 0.062 | 0.548 ± 0.044 | **0.643 ± 0.048** | 0.614 ± 0.061 | 0.609 ± 0.059 | 0.533 ± 0.039 | 0.500 ± 0.000 | 0.537 ± 0.061 |
| poker-8-9_vs_6 | 0.949 ± 0.040 | 0.912 ± 0.033 | 0.949 ± 0.039 | 0.949 ± 0.039 | 0.904 ± 0.053 | 0.976 ± 0.027 | 0.937 ± 0.031 | 0.949 ± 0.040 | **0.988 ± 0.035** | **0.988 ± 0.035** | **0.988 ± 0.035** |
| poker-8_vs_6 | 0.942 ± 0.061 | 0.851 ± 0.057 | 0.942 ± 0.061 | 0.942 ± 0.061 | 0.875 ± 0.098 | **0.978 ± 0.018** | 0.932 ± 0.078 | 0.942 ± 0.061 | 0.906 ± 0.096 | 0.931 ± 0.084 | 0.864 ± 0.166 |
| poker-9_vs_7 | 0.839 ± 0.152 | **0.839 ± 0.152** | 0.839 ± 0.152 | **0.839 ± 0.152** | 0.816 ± 0.135 | 0.795 ± 0.125 | 0.828 ± 0.145 | 0.839 ± 0.152 | 0.680 ± 0.191 | 0.594 ± 0.145 | 0.591 ± 0.151 |
| winequality-red-3_vs_5 | 0.584 ± 0.061 | 0.577 ± 0.053 | 0.584 ± 0.061 | 0.583 ± 0.061 | 0.578 ± 0.053 | **0.592 ± 0.064** | 0.575 ± 0.052 | 0.584 ± 0.061 | 0.522 ± 0.048 | 0.521 ± 0.044 | 0.521 ± 0.046 |
| winequality-red-4 | 0.597 ± 0.027 | 0.583 ± 0.043 | 0.596 ± 0.029 | 0.596 ± 0.021 | 0.588 ± 0.036 | 0.557 ± 0.024 | **0.602 ± 0.024** | 0.597 ± 0.026 | 0.521 ± 0.029 | 0.516 ± 0.029 | 0.517 ± 0.027 |
| winequality-red-8_vs_6-7 | 0.530 ± 0.064 | **0.543 ± 0.068** | 0.536 ± 0.063 | 0.537 ± 0.063 | 0.536 ± 0.055 | 0.530 ± 0.060 | 0.534 ± 0.055 | 0.531 ± 0.064 | 0.529 ± 0.037 | 0.539 ± 0.042 | 0.537 ± 0.042 |
| winequality-red-8_vs_6 | **0.635 ± 0.050** | 0.630 ± 0.052 | 0.624 ± 0.055 | 0.635 ± 0.051 | 0.595 ± 0.050 | 0.600 ± 0.052 | 0.632 ± 0.043 | 0.635 ± 0.050 | 0.569 ± 0.042 | 0.519 ± 0.036 | 0.543 ± 0.052 |
| winequality-white-3-9_vs_5 | **0.618 ± 0.030** | 0.613 ± 0.033 | 0.617 ± 0.035 | 0.617 ± 0.034 | 0.573 ± 0.029 | 0.602 ± 0.053 | 0.599 ± 0.034 | **0.618 ± 0.030** | 0.531 ± 0.048 | 0.520 ± 0.032 | 0.536 ± 0.037 |
| winequality-white-3_vs_7 | 0.630 ± 0.086 | 0.573 ± 0.064 | 0.633 ± 0.092 | 0.619 ± 0.094 | 0.577 ± 0.058 | **0.644 ± 0.084** | 0.630 ± 0.099 | 0.630 ± 0.086 | 0.541 ± 0.045 | 0.637 ± 0.084 | 0.620 ± 0.084 |
| winequality-white-9_vs_4 | 0.878 ± 0.091 | **0.882 ± 0.095** | 0.878 ± 0.091 | 0.766 ± 0.164 | 0.879 ± 0.092 | 0.774 ± 0.172 | 0.878 ± 0.091 | 0.878 ± 0.091 | 0.638 ± 0.145 | 0.639 ± 0.148 | 0.701 ± 0.125 |
| 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** | 0.772 ± 0.147 | 0.748 ± 0.132 | 0.722 ± 0.146 |
| 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 | 0.804 ± 0.049 | 0.560 ± 0.119 | 0.839 ± 0.034 |
| 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 | 0.863 ± 0.066 | 0.592 ± 0.146 | 0.836 ± 0.089 |
| ecoli3 | 0.866 ± 0.019 | 0.857 ± 0.022 | **0.868 ± 0.015** | 0.859 ± 0.025 | 0.854 ± 0.035 | 0.851 ± 0.028 | 0.861 ± 0.018 | 0.865 ± 0.015 | 0.765 ± 0.074 | 0.604 ± 0.116 | 0.758 ± 0.073 |
| glass0 | 0.791 ± 0.035 | 0.799 ± 0.036 | 0.786 ± 0.034 | 0.794 ± 0.028 | 0.797 ± 0.027 | 0.787 ± 0.041 | 0.800 ± 0.030 | **0.800 ± 0.034** | 0.760 ± 0.067 | 0.728 ± 0.104 | 0.780 ± 0.043 |
| 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 | 0.688 ± 0.101 | 0.577 ± 0.106 | 0.664 ± 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 | 0.582 ± 0.047 | 0.533 ± 0.080 | 0.563 ± 0.064 |
| 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 | 0.897 ± 0.014 | 0.901 ± 0.019 | 0.897 ± 0.020 |
| pima | 0.685 ± 0.021 | **0.708 ± 0.018** | 0.686 ± 0.013 | 0.687 ± 0.016 | 0.682 ± 0.017 | 0.690 ± 0.021 | 0.687 ± 0.017 | 0.693 ± 0.024 | 0.678 ± 0.022 | 0.601 ± 0.053 | 0.645 ± 0.054 |
| vehicle1 | 0.723 ± 0.026 | **0.740 ± 0.017** | 0.720 ± 0.024 | 0.736 ± 0.025 | 0.725 ± 0.019 | 0.720 ± 0.022 | 0.731 ± 0.022 | 0.724 ± 0.027 | 0.652 ± 0.030 | 0.721 ± 0.025 | 0.708 ± 0.021 |
| vehicle3 | 0.708 ± 0.018 | 0.700 ± 0.029 | 0.712 ± 0.019 | **0.718 ± 0.025** | 0.710 ± 0.017 | 0.692 ± 0.023 | 0.712 ± 0.020 | 0.706 ± 0.020 | 0.643 ± 0.024 | 0.682 ± 0.031 | 0.671 ± 0.030 |
| yeast1 | 0.675 ± 0.010 | **0.697 ± 0.012** | 0.676 ± 0.010 | 0.676 ± 0.015 | 0.669 ± 0.012 | 0.667 ± 0.011 | 0.674 ± 0.013 | 0.678 ± 0.010 | 0.596 ± 0.072 | 0.500 ± 0.000 | 0.573 ± 0.072 |
| 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 | 0.850 ± 0.022 | 0.500 ± 0.000 | 0.732 ± 0.121 |

## 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 | JFOTS_prom |
|---|---|---|---|---|---|---|---|---|---|---|---|
| abalone19 | 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 | 0.110 ± 0.138 | 0.380 ± 0.272 | **0.479 ± 0.244** |
| abalone9-18 | 0.605 ± 0.100 | 0.508 ± 0.072 | 0.619 ± 0.082 | 0.639 ± 0.076 | 0.584 ± 0.056 | **0.640 ± 0.133** | 0.588 ± 0.059 | 0.610 ± 0.105 | 0.602 ± 0.067 | 0.447 ± 0.087 | 0.512 ± 0.087 |
| ecoli-0-1-3-7_vs_2-6 | 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 | 0.579 ± 0.240 | 0.427 ± 0.216 | 0.429 ± 0.360 |
| glass-0-1-6_vs_2 | 0.565 ± 0.089 | 0.461 ± 0.086 | **0.614 ± 0.088** | 0.573 ± 0.101 | 0.522 ± 0.101 | 0.529 ± 0.151 | 0.552 ± 0.155 | 0.564 ± 0.085 | 0.385 ± 0.181 | 0.420 ± 0.158 | 0.397 ± 0.153 |
| glass-0-1-6_vs_5 | 0.829 ± 0.185 | 0.828 ± 0.185 | 0.829 ± 0.185 | 0.829 ± 0.185 | 0.706 ± 0.315 | **0.872 ± 0.170** | 0.829 ± 0.185 | 0.829 ± 0.185 | 0.508 ± 0.424 | 0.824 ± 0.239 | 0.688 ± 0.382 |
| glass2 | 0.431 ± 0.261 | 0.399 ± 0.218 | 0.402 ± 0.248 | **0.495 ± 0.204** | 0.430 ± 0.259 | 0.472 ± 0.209 | 0.405 ± 0.235 | 0.453 ± 0.267 | 0.341 ± 0.259 | 0.360 ± 0.139 | 0.325 ± 0.229 |
| glass4 | 0.841 ± 0.102 | 0.823 ± 0.064 | 0.841 ± 0.103 | 0.831 ± 0.101 | **0.847 ± 0.097** | 0.789 ± 0.113 | 0.840 ± 0.104 | 0.841 ± 0.102 | 0.688 ± 0.256 | 0.710 ± 0.198 | 0.585 ± 0.232 |
| glass5 | 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 | 0.786 ± 0.163 | 0.830 ± 0.164 | 0.842 ± 0.158 |
| page-blocks-1-3_vs_4 | 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 | 0.879 ± 0.070 | 0.862 ± 0.193 | 0.901 ± 0.087 |
| yeast-0-5-6-7-9_vs_4 | 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 | 0.610 ± 0.078 | 0.154 ± 0.175 | 0.575 ± 0.109 |
| yeast-1-2-8-9_vs_7 | 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 | 0.376 ± 0.159 | 0.132 ± 0.026 | 0.345 ± 0.144 |
| yeast-1-4-5-8_vs_7 | 0.357 ± 0.150 | 0.397 ± 0.066 | 0.350 ± 0.169 | 0.336 ± 0.140 | 0.326 ± 0.185 | 0.388 ± 0.102 | **0.420 ± 0.060** | 0.344 ± 0.142 | 0.213 ± 0.156 | 0.122 ± 0.040 | 0.246 ± 0.172 |
| yeast-1_vs_7 | 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 | 0.413 ± 0.166 | 0.101 ± 0.175 | 0.462 ± 0.077 |
| yeast-2_vs_4 | 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 | 0.802 ± 0.096 | 0.425 ± 0.396 | 0.779 ± 0.082 |
| yeast-2_vs_8 | 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 | 0.723 ± 0.064 | 0.288 ± 0.245 | 0.712 ± 0.079 |
| yeast4 | 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 | 0.515 ± 0.097 | 0.118 ± 0.023 | 0.454 ± 0.104 |
| yeast5 | 0.848 ± 0.089 | 0.829 ± 0.086 | 0.830 ± 0.077 | 0.845 ± 0.081 | 0.841 ± 0.076 | **0.873 ± 0.055** | 0.858 ± 0.066 | 0.850 ± 0.091 | 0.777 ± 0.110 | 0.182 ± 0.139 | 0.745 ± 0.211 |
| yeast6 | 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 | 0.534 ± 0.079 | 0.188 ± 0.140 | 0.579 ± 0.118 |
| cleveland-0_vs_4 | **0.800 ± 0.067** | 0.648 ± 0.257 | 0.753 ± 0.151 | 0.753 ± 0.111 | 0.676 ± 0.253 | 0.717 ± 0.060 | 0.782 ± 0.079 | **0.800 ± 0.067** | 0.756 ± 0.112 | 0.625 ± 0.136 | 0.663 ± 0.074 |
| ecoli-0-1-4-7_vs_2-3-5-6 | 0.772 ± 0.097 | 0.776 ± 0.059 | 0.810 ± 0.047 | 0.771 ± 0.088 | 0.751 ± 0.082 | **0.818 ± 0.053** | 0.815 ± 0.063 | 0.787 ± 0.100 | 0.608 ± 0.135 | 0.294 ± 0.318 | 0.684 ± 0.112 |
| ecoli-0-1_vs_2-3-5 | 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 | 0.716 ± 0.170 | 0.462 ± 0.324 | 0.744 ± 0.112 |
| ecoli-0-2-6-7_vs_3-5 | 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 | 0.757 ± 0.073 | 0.314 ± 0.300 | 0.763 ± 0.095 |
| ecoli-0-6-7_vs_3-5 | 0.777 ± 0.084 | 0.772 ± 0.059 | 0.795 ± 0.067 | 0.800 ± 0.075 | 0.819 ± 0.081 | **0.826 ± 0.068** | 0.774 ± 0.068 | 0.779 ± 0.084 | 0.750 ± 0.067 | 0.340 ± 0.306 | 0.776 ± 0.063 |
| ecoli-0-6-7_vs_5 | 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 | 0.817 ± 0.113 | 0.408 ± 0.245 | 0.794 ± 0.106 |
| glass-0-1-4-6_vs_2 | 0.487 ± 0.109 | 0.389 ± 0.220 | 0.512 ± 0.136 | 0.481 ± 0.121 | 0.520 ± 0.131 | **0.597 ± 0.106** | 0.424 ± 0.113 | 0.428 ± 0.176 | 0.393 ± 0.161 | 0.369 ± 0.206 | 0.375 ± 0.219 |
| glass-0-1-5_vs_2 | 0.649 ± 0.092 | 0.508 ± 0.112 | 0.628 ± 0.114 | **0.679 ± 0.142** | 0.560 ± 0.113 | 0.534 ± 0.196 | 0.593 ± 0.112 | 0.635 ± 0.083 | 0.512 ± 0.130 | 0.371 ± 0.178 | 0.451 ± 0.193 |
| yeast-0-2-5-6_vs_3-7-8-9 | 0.684 ± 0.050 | 0.673 ± 0.070 | **0.712 ± 0.047** | 0.685 ± 0.037 | 0.686 ± 0.045 | 0.703 ± 0.062 | 0.680 ± 0.048 | 0.668 ± 0.049 | 0.581 ± 0.068 | 0.449 ± 0.157 | 0.573 ± 0.099 |
| yeast-0-3-5-9_vs_7-8 | 0.531 ± 0.071 | 0.568 ± 0.068 | 0.567 ± 0.069 | 0.576 ± 0.070 | 0.551 ± 0.068 | **0.587 ± 0.066** | 0.561 ± 0.045 | 0.584 ± 0.050 | 0.418 ± 0.080 | 0.190 ± 0.161 | 0.417 ± 0.081 |
| abalone-17_vs_7-8-9-10 | 0.559 ± 0.073 | 0.546 ± 0.062 | 0.557 ± 0.075 | 0.586 ± 0.075 | 0.552 ± 0.077 | **0.605 ± 0.036** | 0.562 ± 0.067 | 0.557 ± 0.066 | 0.495 ± 0.091 | 0.392 ± 0.090 | 0.544 ± 0.057 |
| abalone-19_vs_10-11-12-13 | 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 | 0.138 ± 0.174 | 0.228 ± 0.195 | 0.428 ± 0.111 |
| abalone-20_vs_8-9-10 | 0.634 ± 0.081 | 0.371 ± 0.210 | 0.593 ± 0.123 | 0.611 ± 0.088 | 0.504 ± 0.132 | **0.771 ± 0.078** | 0.609 ± 0.098 | 0.634 ± 0.081 | 0.421 ± 0.114 | 0.491 ± 0.144 | 0.416 ± 0.178 |
| abalone-21_vs_8 | 0.633 ± 0.253 | 0.554 ± 0.125 | 0.604 ± 0.221 | 0.585 ± 0.241 | 0.690 ± 0.098 | **0.768 ± 0.087** | 0.586 ± 0.234 | 0.642 ± 0.259 | 0.488 ± 0.296 | 0.474 ± 0.218 | 0.605 ± 0.112 |
| flare-F | 0.367 ± 0.098 | 0.422 ± 0.066 | 0.394 ± 0.110 | 0.419 ± 0.093 | 0.447 ± 0.050 | 0.425 ± 0.082 | 0.411 ± 0.105 | 0.421 ± 0.080 | 0.541 ± 0.106 | 0.416 ± 0.119 | **0.587 ± 0.178** |
| 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** | **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 | 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 | **0.967 ± 0.044** | 0.949 ± 0.083 | 0.951 ± 0.063 | 0.959 ± 0.053 | 0.798 ± 0.101 | 0.722 ± 0.066 | 0.891 ± 0.108 |
| poker-8-9_vs_5 | 0.386 ± 0.143 | 0.300 ± 0.205 | 0.386 ± 0.080 | 0.404 ± 0.078 | 0.266 ± 0.195 | 0.430 ± 0.145 | 0.323 ± 0.073 | 0.386 ± 0.143 | 0.192 ± 0.161 | **0.478 ± 0.096** | 0.241 ± 0.213 |
| poker-8-9_vs_6 | 0.595 ± 0.142 | 0.787 ± 0.178 | 0.573 ± 0.155 | 0.529 ± 0.151 | 0.687 ± 0.188 | 0.465 ± 0.260 | 0.524 ± 0.228 | 0.595 ± 0.142 | 1.000 ± 0.001 | **1.000 ± 0.001** | 1.000 ± 0.001 |
| poker-8_vs_6 | 0.569 ± 0.225 | 0.537 ± 0.295 | 0.615 ± 0.179 | 0.590 ± 0.164 | 0.581 ± 0.222 | 0.524 ± 0.289 | 0.559 ± 0.221 | 0.569 ± 0.225 | **0.924 ± 0.093** | 0.924 ± 0.093 | 0.806 ± 0.296 |
| poker-9_vs_7 | 0.267 ± 0.274 | 0.246 ± 0.246 | 0.267 ± 0.274 | 0.267 ± 0.274 | 0.337 ± 0.285 | 0.373 ± 0.324 | 0.267 ± 0.273 | 0.267 ± 0.274 | 0.377 ± 0.395 | **0.435 ± 0.311** | 0.114 ± 0.235 |
| winequality-red-3_vs_5 | 0.132 ± 0.201 | 0.151 ± 0.235 | 0.088 ± 0.176 | 0.132 ± 0.202 | 0.120 ± 0.250 | **0.325 ± 0.219** | 0.150 ± 0.234 | 0.132 ± 0.201 | 0.089 ± 0.178 | 0.041 ± 0.122 | 0.044 ± 0.133 |
| winequality-red-4 | 0.391 ± 0.120 | 0.325 ± 0.083 | **0.458 ± 0.069** | 0.446 ± 0.078 | 0.409 ± 0.090 | 0.446 ± 0.075 | 0.401 ± 0.044 | 0.390 ± 0.123 | 0.280 ± 0.073 | 0.362 ± 0.130 | 0.393 ± 0.156 |
| winequality-red-8_vs_6-7 | 0.314 ± 0.168 | 0.339 ± 0.185 | 0.327 ± 0.174 | 0.352 ± 0.188 | 0.319 ± 0.216 | **0.395 ± 0.095** | 0.312 ± 0.174 | 0.314 ± 0.168 | 0.263 ± 0.225 | 0.293 ± 0.212 | 0.238 ± 0.208 |
| winequality-red-8_vs_6 | 0.498 ± 0.107 | 0.479 ± 0.123 | 0.491 ± 0.099 | 0.463 ± 0.187 | 0.409 ± 0.156 | 0.514 ± 0.115 | **0.538 ± 0.107** | 0.498 ± 0.107 | 0.279 ± 0.228 | 0.243 ± 0.208 | 0.291 ± 0.155 |
| winequality-white-3-9_vs_5 | 0.361 ± 0.207 | 0.293 ± 0.173 | 0.285 ± 0.201 | 0.319 ± 0.189 | 0.225 ± 0.208 | **0.557 ± 0.102** | 0.312 ± 0.129 | 0.361 ± 0.207 | 0.181 ± 0.152 | 0.212 ± 0.144 | 0.201 ± 0.175 |
| winequality-white-3_vs_7 | 0.296 ± 0.165 | 0.317 ± 0.190 | 0.372 ± 0.208 | 0.383 ± 0.159 | 0.424 ± 0.153 | **0.690 ± 0.122** | 0.221 ± 0.193 | 0.296 ± 0.165 | 0.325 ± 0.229 | 0.387 ± 0.187 | 0.344 ± 0.197 |
| winequality-white-9_vs_4 | 0.588 ± 0.329 | 0.530 ± 0.275 | 0.587 ± 0.328 | 0.588 ± 0.327 | **0.588 ± 0.329** | 0.558 ± 0.302 | 0.587 ± 0.328 | 0.588 ± 0.329 | 0.516 ± 0.263 | 0.411 ± 0.353 | 0.491 ± 0.341 |
| 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 | 0.731 ± 0.106 | **0.763 ± 0.136** | 0.661 ± 0.244 |
| ecoli1 | 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** | 0.731 ± 0.051 | 0.209 ± 0.295 | 0.809 ± 0.060 |
| ecoli2 | 0.850 ± 0.032 | 0.831 ± 0.040 | 0.844 ± 0.036 | 0.844 ± 0.042 | 0.849 ± 0.032 | **0.863 ± 0.038** | 0.846 ± 0.046 | 0.850 ± 0.032 | 0.806 ± 0.053 | 0.310 ± 0.307 | 0.759 ± 0.085 |
| ecoli3 | 0.719 ± 0.063 | 0.719 ± 0.083 | 0.748 ± 0.084 | 0.754 ± 0.061 | 0.746 ± 0.065 | **0.828 ± 0.054** | 0.758 ± 0.063 | 0.732 ± 0.067 | 0.694 ± 0.089 | 0.391 ± 0.274 | 0.717 ± 0.094 |
| glass0 | 0.763 ± 0.035 | 0.766 ± 0.065 | 0.765 ± 0.043 | 0.784 ± 0.035 | 0.777 ± 0.042 | **0.800 ± 0.041** | 0.791 ± 0.040 | 0.772 ± 0.025 | 0.698 ± 0.102 | 0.681 ± 0.096 | 0.775 ± 0.054 |
| glass1 | 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 ± 0.134 | 0.506 ± 0.100 | 0.626 ± 0.077 |
| 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** | 0.525 ± 0.065 | 0.488 ± 0.051 | 0.481 ± 0.060 |
| page-blocks0 | 0.915 ± 0.012 | 0.895 ± 0.011 | 0.913 ± 0.011 | 0.912 ± 0.008 | 0.905 ± 0.010 | 0.896 ± 0.010 | **0.918 ± 0.012** | 0.916 ± 0.008 | 0.887 ± 0.010 | 0.879 ± 0.023 | 0.887 ± 0.027 |
| pima | 0.659 ± 0.021 | 0.666 ± 0.026 | 0.653 ± 0.022 | 0.658 ± 0.016 | 0.657 ± 0.025 | **0.674 ± 0.027** | 0.651 ± 0.023 | 0.664 ± 0.026 | 0.640 ± 0.025 | 0.571 ± 0.053 | 0.623 ± 0.059 |
| vehicle1 | 0.649 ± 0.031 | 0.651 ± 0.027 | 0.663 ± 0.042 | 0.654 ± 0.031 | 0.647 ± 0.035 | **0.675 ± 0.025** | 0.660 ± 0.029 | 0.661 ± 0.021 | 0.615 ± 0.062 | 0.633 ± 0.064 | 0.640 ± 0.026 |
| vehicle3 | 0.652 ± 0.027 | **0.677 ± 0.026** | 0.636 ± 0.027 | 0.665 ± 0.033 | 0.656 ± 0.022 | 0.675 ± 0.015 | 0.659 ± 0.027 | 0.653 ± 0.015 | 0.623 ± 0.028 | 0.644 ± 0.023 | 0.635 ± 0.042 |
| yeast1 | 0.633 ± 0.020 | 0.640 ± 0.018 | 0.642 ± 0.019 | 0.639 ± 0.013 | 0.639 ± 0.016 | **0.644 ± 0.021** | 0.641 ± 0.022 | 0.628 ± 0.010 | 0.591 ± 0.025 | 0.118 ± 0.016 | 0.564 ± 0.033 |
| yeast3 | 0.859 ± 0.032 | 0.822 ± 0.038 | 0.858 ± 0.027 | 0.843 ± 0.017 | 0.838 ± 0.027 | 0.855 ± 0.030 | 0.847 ± 0.035 | **0.862 ± 0.033** | 0.818 ± 0.029 | 0.113 ± 0.031 | 0.850 ± 0.033 |

## **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 | JFOTS_prom |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 0.467 ± 0.267 | 0.622 ± 0.067 | **0.651 ± 0.053** |
| abalone9-18 | 0.721 ± 0.064 | 0.649 ± 0.055 | 0.731 ± 0.043 | 0.736 ± 0.051 | 0.719 ± 0.066 | **0.769 ± 0.051** | 0.723 ± 0.046 | 0.721 ± 0.064 | 0.589 ± 0.087 | 0.670 ± 0.147 | 0.662 ± 0.140 |
| ecoli-0-1-3-7_vs_2-6 | 0.826 ± 0.097 | **0.828 ± 0.099** | 0.821 ± 0.095 | 0.824 ± 0.097 | 0.827 ± 0.100 | 0.813 ± 0.098 | 0.826 ± 0.097 | 0.826 ± 0.097 | 0.746 ± 0.140 | 0.725 ± 0.155 | 0.749 ± 0.131 |
| glass-0-1-6_vs_2 | 0.722 ± 0.120 | 0.660 ± 0.109 | 0.732 ± 0.102 | 0.730 ± 0.089 | 0.652 ± 0.111 | 0.551 ± 0.150 | **0.732 ± 0.084** | 0.721 ± 0.121 | 0.608 ± 0.169 | 0.566 ± 0.169 | 0.555 ± 0.082 |
| glass-0-1-6_vs_5 | 0.791 ± 0.132 | 0.747 ± 0.164 | 0.791 ± 0.132 | 0.791 ± 0.132 | 0.747 ± 0.164 | **0.812 ± 0.193** | 0.791 ± 0.132 | 0.791 ± 0.132 | 0.690 ± 0.240 | 0.811 ± 0.234 | 0.723 ± 0.280 |
| glass2 | 0.546 ± 0.287 | 0.528 ± 0.283 | 0.554 ± 0.287 | 0.538 ± 0.284 | 0.555 ± 0.287 | **0.593 ± 0.302** | 0.552 ± 0.291 | 0.546 ± 0.286 | 0.558 ± 0.226 | 0.526 ± 0.137 | 0.588 ± 0.147 |
| glass4 | **0.880 ± 0.113** | 0.827 ± 0.153 | 0.866 ± 0.136 | 0.854 ± 0.158 | 0.859 ± 0.131 | 0.854 ± 0.136 | 0.862 ± 0.100 | **0.880 ± 0.113** | 0.799 ± 0.134 | 0.725 ± 0.198 | 0.759 ± 0.139 |
| glass5 | 0.786 ± 0.143 | 0.774 ± 0.139 | 0.800 ± 0.134 | 0.800 ± 0.134 | 0.785 ± 0.143 | **0.826 ± 0.200** | 0.786 ± 0.143 | 0.786 ± 0.143 | 0.767 ± 0.140 | 0.775 ± 0.145 | 0.815 ± 0.162 |
| page-blocks-1-3_vs_4 | 0.891 ± 0.135 | 0.759 ± 0.097 | 0.896 ± 0.133 | 0.895 ± 0.133 | 0.889 ± 0.144 | 0.777 ± 0.061 | 0.873 ± 0.141 | 0.891 ± 0.135 | 0.785 ± 0.091 | **0.898 ± 0.090** | 0.822 ± 0.153 |
| yeast-0-5-6-7-9_vs_4 | 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 | 0.615 ± 0.099 | 0.192 ± 0.227 | 0.635 ± 0.100 |
| yeast-1-2-8-9_vs_7 | 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 | 0.422 ± 0.103 | 0.132 ± 0.026 | 0.480 ± 0.125 |
| yeast-1-4-5-8_vs_7 | 0.510 ± 0.079 | 0.480 ± 0.091 | 0.495 ± 0.076 | 0.498 ± 0.064 | 0.507 ± 0.087 | **0.540 ± 0.073** | 0.487 ± 0.065 | 0.510 ± 0.079 | 0.387 ± 0.232 | 0.122 ± 0.040 | 0.504 ± 0.116 |
| yeast-1_vs_7 | 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 | 0.457 ± 0.110 | 0.098 ± 0.166 | 0.576 ± 0.095 |
| yeast-2_vs_4 | 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 | 0.835 ± 0.055 | 0.468 ± 0.439 | 0.847 ± 0.056 |
| yeast-2_vs_8 | 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 | 0.732 ± 0.085 | 0.270 ± 0.225 | 0.719 ± 0.127 |
| 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 | 0.668 ± 0.129 | 0.118 ± 0.023 | 0.688 ± 0.085 |
| yeast5 | 0.925 ± 0.030 | 0.922 ± 0.031 | 0.926 ± 0.030 | 0.926 ± 0.030 | 0.928 ± 0.029 | **0.940 ± 0.025** | 0.926 ± 0.030 | 0.925 ± 0.030 | 0.930 ± 0.040 | 0.214 ± 0.235 | 0.844 ± 0.235 |
| 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 | 0.725 ± 0.082 | 0.187 ± 0.136 | 0.788 ± 0.076 |
| cleveland-0_vs_4 | 0.652 ± 0.136 | 0.590 ± 0.134 | 0.662 ± 0.149 | 0.674 ± 0.147 | 0.629 ± 0.131 | **0.833 ± 0.062** | 0.652 ± 0.136 | 0.652 ± 0.136 | 0.720 ± 0.047 | 0.627 ± 0.160 | 0.643 ± 0.104 |
| ecoli-0-1-4-7_vs_2-3-5-6 | 0.865 ± 0.036 | 0.840 ± 0.023 | 0.860 ± 0.034 | 0.859 ± 0.022 | 0.863 ± 0.038 | **0.881 ± 0.035** | 0.865 ± 0.041 | 0.865 ± 0.036 | 0.672 ± 0.174 | 0.392 ± 0.393 | 0.758 ± 0.130 |
| ecoli-0-1_vs_2-3-5 | 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 | 0.768 ± 0.166 | 0.589 ± 0.389 | 0.826 ± 0.071 |
| ecoli-0-2-6-7_vs_3-5 | 0.820 ± 0.064 | 0.826 ± 0.072 | 0.825 ± 0.066 | 0.830 ± 0.065 | 0.841 ± 0.073 | **0.865 ± 0.058** | 0.821 ± 0.070 | 0.820 ± 0.064 | 0.813 ± 0.058 | 0.519 ± 0.321 | 0.841 ± 0.058 |
| ecoli-0-6-7_vs_3-5 | 0.834 ± 0.065 | 0.838 ± 0.067 | 0.830 ± 0.065 | 0.845 ± 0.070 | 0.844 ± 0.072 | **0.862 ± 0.068** | 0.833 ± 0.071 | 0.834 ± 0.065 | 0.835 ± 0.060 | 0.541 ± 0.359 | 0.832 ± 0.063 |
| ecoli-0-6-7_vs_5 | 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 | 0.857 ± 0.076 | 0.529 ± 0.306 | 0.849 ± 0.093 |
| glass-0-1-4-6_vs_2 | 0.678 ± 0.149 | 0.582 ± 0.248 | **0.680 ± 0.158** | 0.657 ± 0.186 | 0.588 ± 0.240 | 0.570 ± 0.132 | 0.678 ± 0.179 | 0.677 ± 0.149 | 0.531 ± 0.159 | 0.521 ± 0.161 | 0.653 ± 0.142 |
| glass-0-1-5_vs_2 | 0.675 ± 0.079 | 0.609 ± 0.103 | 0.682 ± 0.078 | **0.690 ± 0.089** | 0.627 ± 0.098 | 0.494 ± 0.090 | 0.660 ± 0.088 | 0.675 ± 0.079 | 0.612 ± 0.077 | 0.437 ± 0.263 | 0.618 ± 0.128 |
| yeast-0-2-5-6_vs_3-7-8-9 | 0.766 ± 0.034 | 0.749 ± 0.057 | 0.764 ± 0.036 | 0.775 ± 0.026 | 0.756 ± 0.043 | **0.779 ± 0.036** | 0.767 ± 0.035 | 0.768 ± 0.033 | 0.636 ± 0.189 | 0.485 ± 0.203 | 0.645 ± 0.187 |
| yeast-0-3-5-9_vs_7-8 | **0.680 ± 0.044** | 0.548 ± 0.060 | 0.672 ± 0.045 | 0.674 ± 0.057 | 0.672 ± 0.051 | 0.610 ± 0.087 | 0.676 ± 0.042 | 0.679 ± 0.045 | 0.565 ± 0.117 | 0.186 ± 0.155 | 0.575 ± 0.131 |
| abalone-17_vs_7-8-9-10 | 0.808 ± 0.023 | 0.709 ± 0.053 | 0.802 ± 0.027 | 0.803 ± 0.038 | 0.797 ± 0.032 | **0.816 ± 0.028** | 0.810 ± 0.027 | 0.806 ± 0.022 | 0.584 ± 0.146 | 0.731 ± 0.082 | 0.666 ± 0.090 |
| abalone-19_vs_10-11-12-13 | 0.582 ± 0.101 | 0.445 ± 0.129 | 0.588 ± 0.098 | 0.589 ± 0.091 | 0.571 ± 0.092 | **0.617 ± 0.114** | 0.574 ± 0.106 | 0.582 ± 0.101 | 0.396 ± 0.258 | 0.508 ± 0.146 | 0.552 ± 0.098 |
| abalone-20_vs_8-9-10 | 0.789 ± 0.059 | 0.747 ± 0.055 | 0.794 ± 0.050 | 0.784 ± 0.058 | 0.776 ± 0.063 | **0.880 ± 0.055** | 0.778 ± 0.069 | 0.789 ± 0.059 | 0.604 ± 0.222 | 0.646 ± 0.120 | 0.695 ± 0.090 |
| abalone-21_vs_8 | 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 | 0.640 ± 0.234 | 0.591 ± 0.143 | 0.654 ± 0.146 |
| flare-F | 0.723 ± 0.050 | 0.630 ± 0.068 | 0.717 ± 0.055 | 0.728 ± 0.060 | 0.707 ± 0.054 | **0.766 ± 0.057** | 0.722 ± 0.056 | 0.723 ± 0.050 | 0.578 ± 0.122 | 0.415 ± 0.119 | 0.630 ± 0.173 |
| 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 | 0.964 ± 0.059 | 0.964 ± 0.059 | 0.964 ± 0.059 |
| 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 | 0.977 ± 0.023 | 0.972 ± 0.031 | 0.977 ± 0.023 | **0.991 ± 0.019** | **0.991 ± 0.019** | **0.991 ± 0.019** |
| 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 | 0.851 ± 0.112 | 0.721 ± 0.065 | 0.778 ± 0.157 |
| poker-8-9_vs_5 | 0.512 ± 0.141 | 0.402 ± 0.185 | 0.499 ± 0.129 | 0.493 ± 0.126 | 0.480 ± 0.152 | **0.624 ± 0.119** | 0.499 ± 0.103 | 0.512 ± 0.141 | 0.499 ± 0.222 | 0.500 ± 0.049 | 0.588 ± 0.188 |
| poker-8-9_vs_6 | 0.711 ± 0.092 | 0.666 ± 0.072 | 0.711 ± 0.092 | 0.695 ± 0.080 | 0.674 ± 0.100 | 0.934 ± 0.059 | 0.689 ± 0.154 | 0.711 ± 0.092 | 0.974 ± 0.070 | **0.975 ± 0.071** | 0.974 ± 0.070 |
| poker-8_vs_6 | 0.746 ± 0.101 | 0.645 ± 0.091 | 0.746 ± 0.101 | 0.755 ± 0.089 | 0.692 ± 0.118 | **0.966 ± 0.056** | 0.755 ± 0.089 | 0.746 ± 0.101 | 0.883 ± 0.150 | 0.922 ± 0.122 | 0.809 ± 0.223 |
| poker-9_vs_7 | 0.432 ± 0.296 | 0.412 ± 0.283 | 0.432 ± 0.296 | 0.432 ± 0.296 | 0.398 ± 0.340 | 0.501 ± 0.341 | 0.391 ± 0.267 | 0.432 ± 0.296 | **0.541 ± 0.338** | 0.441 ± 0.315 | 0.418 ± 0.311 |
| winequality-red-3_vs_5 | 0.221 ± 0.221 | 0.222 ± 0.222 | 0.221 ± 0.221 | 0.221 ± 0.221 | 0.221 ± 0.221 | 0.452 ± 0.171 | 0.266 ± 0.217 | 0.221 ± 0.221 | 0.252 ± 0.260 | **0.511 ± 0.204** | 0.330 ± 0.223 |
| winequality-red-4 | 0.585 ± 0.058 | 0.528 ± 0.054 | 0.576 ± 0.057 | 0.594 ± 0.057 | 0.559 ± 0.055 | 0.533 ± 0.057 | 0.589 ± 0.055 | 0.584 ± 0.058 | 0.259 ± 0.204 | **0.596 ± 0.069** | 0.459 ± 0.109 |
| winequality-red-8_vs_6-7 | 0.410 ± 0.167 | 0.333 ± 0.189 | 0.410 ± 0.167 | 0.409 ± 0.167 | 0.323 ± 0.226 | 0.347 ± 0.197 | 0.377 ± 0.154 | 0.410 ± 0.167 | 0.454 ± 0.099 | **0.529 ± 0.114** | 0.371 ± 0.212 |
| winequality-red-8_vs_6 | 0.517 ± 0.061 | 0.501 ± 0.049 | 0.517 ± 0.061 | 0.517 ± 0.061 | 0.530 ± 0.060 | 0.547 ± 0.114 | 0.537 ± 0.056 | 0.517 ± 0.061 | **0.577 ± 0.091** | 0.565 ± 0.121 | 0.485 ± 0.115 |
| winequality-white-3-9_vs_5 | 0.382 ± 0.160 | 0.228 ± 0.197 | 0.368 ± 0.165 | 0.374 ± 0.154 | 0.287 ± 0.161 | **0.624 ± 0.061** | 0.364 ± 0.157 | 0.382 ± 0.160 | 0.342 ± 0.251 | 0.530 ± 0.044 | 0.444 ± 0.085 |
| winequality-white-3_vs_7 | 0.246 ± 0.209 | 0.194 ± 0.199 | 0.292 ± 0.217 | 0.292 ± 0.216 | 0.297 ± 0.165 | **0.713 ± 0.105** | 0.278 ± 0.194 | 0.246 ± 0.209 | 0.315 ± 0.181 | 0.571 ± 0.192 | 0.391 ± 0.250 |
| winequality-white-9_vs_4 | 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 | 0.533 ± 0.360 | 0.624 ± 0.240 | 0.653 ± 0.258 |
| 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 | 0.666 ± 0.249 | **0.668 ± 0.253** | 0.596 ± 0.318 |
| 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 | 0.880 ± 0.028 | 0.227 ± 0.329 | **0.888 ± 0.026** |
| 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 | 0.863 ± 0.049 | 0.331 ± 0.338 | 0.869 ± 0.049 |
| ecoli3 | 0.888 ± 0.023 | 0.892 ± 0.026 | 0.886 ± 0.023 | **0.893 ± 0.018** | 0.893 ± 0.022 | 0.893 ± 0.019 | 0.886 ± 0.021 | 0.892 ± 0.022 | 0.835 ± 0.044 | 0.491 ± 0.361 | 0.811 ± 0.091 |
| glass0 | 0.772 ± 0.041 | **0.787 ± 0.020** | 0.779 ± 0.040 | 0.768 ± 0.041 | 0.787 ± 0.038 | 0.762 ± 0.037 | 0.786 ± 0.036 | 0.771 ± 0.037 | 0.759 ± 0.035 | 0.678 ± 0.112 | 0.710 ± 0.065 |
| 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 | 0.626 ± 0.123 | 0.512 ± 0.123 | 0.622 ± 0.074 |
| 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 | 0.498 ± 0.124 | 0.567 ± 0.098 | 0.559 ± 0.069 |
| page-blocks0 | 0.931 ± 0.008 | 0.897 ± 0.009 | 0.931 ± 0.007 | 0.922 ± 0.010 | 0.931 ± 0.008 | 0.838 ± 0.019 | 0.930 ± 0.009 | **0.931 ± 0.008** | 0.883 ± 0.045 | 0.898 ± 0.022 | 0.869 ± 0.031 |
| pima | 0.726 ± 0.030 | 0.715 ± 0.030 | 0.728 ± 0.024 | 0.725 ± 0.022 | 0.730 ± 0.025 | 0.728 ± 0.017 | **0.731 ± 0.028** | 0.727 ± 0.032 | 0.698 ± 0.013 | 0.625 ± 0.070 | 0.684 ± 0.069 |
| vehicle1 | 0.786 ± 0.026 | 0.741 ± 0.027 | 0.787 ± 0.026 | 0.787 ± 0.019 | 0.796 ± 0.015 | 0.789 ± 0.024 | 0.789 ± 0.018 | 0.789 ± 0.024 | 0.643 ± 0.082 | **0.798 ± 0.017** | 0.766 ± 0.047 |
| vehicle3 | 0.786 ± 0.020 | 0.728 ± 0.020 | 0.786 ± 0.016 | **0.793 ± 0.024** | 0.788 ± 0.016 | 0.786 ± 0.021 | 0.786 ± 0.017 | 0.787 ± 0.019 | 0.624 ± 0.058 | 0.781 ± 0.018 | 0.730 ± 0.062 |
| 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 | 0.619 ± 0.043 | 0.118 ± 0.016 | 0.618 ± 0.071 |
| yeast3 | 0.891 ± 0.024 | 0.879 ± 0.029 | 0.892 ± 0.022 | 0.891 ± 0.028 | 0.886 ± 0.021 | **0.895 ± 0.021** | 0.894 ± 0.025 | 0.891 ± 0.024 | 0.863 ± 0.033 | 0.113 ± 0.031 | 0.891 ± 0.019 |

## Table 6. KNN – Precision

| Dataset name | SMOTE | polynom-fit-SMOTE | Lee | SMOBD | G-SMOTE | LVQ-SMOTE | Assembled-SMOTE | SMOTE-TomekLinks | JFOTS_pr | JFOTS_rc | JFOTS_prom |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 0.010 ± 0.016 | 0.009 ± 0.027 | 0.000 ± 0.000 |
| abalone9-18 | 0.244 ± 0.036 | 0.278 ± 0.044 | 0.230 ± 0.029 | 0.233 ± 0.033 | 0.259 ± 0.042 | 0.275 ± 0.045 | 0.243 ± 0.034 | 0.246 ± 0.038 | **0.614 ± 0.166** | 0.163 ± 0.116 | 0.352 ± 0.281 |
| ecoli-0-1-3-7_vs_2-6 | 0.378 ± 0.110 | 0.413 ± 0.150 | 0.381 ± 0.119 | 0.371 ± 0.113 | **0.414 ± 0.151** | 0.354 ± 0.099 | 0.374 ± 0.111 | 0.378 ± 0.110 | 0.324 ± 0.261 | 0.296 ± 0.175 | 0.411 ± 0.263 |
| glass-0-1-6_vs_2 | 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 | 0.220 ± 0.096 | 0.149 ± 0.136 | 0.154 ± 0.109 |
| glass-0-1-6_vs_5 | 0.689 ± 0.156 | **0.712 ± 0.154** | 0.686 ± 0.148 | 0.686 ± 0.191 | 0.664 ± 0.174 | 0.505 ± 0.214 | 0.676 ± 0.152 | 0.689 ± 0.156 | 0.578 ± 0.169 | 0.348 ± 0.218 | 0.607 ± 0.272 |
| glass2 | 0.182 ± 0.110 | 0.180 ± 0.114 | 0.176 ± 0.109 | 0.180 ± 0.102 | 0.181 ± 0.113 | 0.170 ± 0.080 | 0.170 ± 0.104 | 0.176 ± 0.105 | **0.193 ± 0.145** | 0.142 ± 0.112 | 0.181 ± 0.168 |
| glass4 | 0.558 ± 0.133 | 0.582 ± 0.119 | 0.532 ± 0.120 | 0.545 ± 0.141 | 0.550 ± 0.141 | 0.508 ± 0.135 | 0.556 ± 0.128 | 0.558 ± 0.133 | **0.677 ± 0.202** | 0.408 ± 0.244 | 0.484 ± 0.160 |
| glass5 | 0.637 ± 0.131 | **0.679 ± 0.149** | 0.657 ± 0.165 | 0.637 ± 0.131 | 0.669 ± 0.157 | 0.408 ± 0.138 | 0.637 ± 0.131 | 0.637 ± 0.131 | 0.653 ± 0.187 | 0.653 ± 0.191 | 0.668 ± 0.232 |
| page-blocks-1-3_vs_4 | 0.778 ± 0.098 | 0.748 ± 0.095 | 0.768 ± 0.123 | 0.781 ± 0.110 | 0.774 ± 0.132 | 0.729 ± 0.119 | 0.778 ± 0.113 | 0.778 ± 0.098 | 0.760 ± 0.175 | 0.744 ± 0.131 | **0.809 ± 0.163** |
| yeast-0-5-6-7-9_vs_4 | 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 | **0.479 ± 0.127** | 0.033 ± 0.098 | 0.380 ± 0.139 |
| yeast-1-2-8-9_vs_7 | 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 | **0.400 ± 0.320** | 0.000 ± 0.000 | 0.256 ± 0.310 |
| yeast-1-4-5-8_vs_7 | 0.091 ± 0.016 | 0.093 ± 0.032 | 0.092 ± 0.019 | 0.086 ± 0.025 | 0.084 ± 0.028 | 0.080 ± 0.022 | 0.089 ± 0.017 | 0.091 ± 0.016 | **0.117 ± 0.144** | 0.000 ± 0.000 | 0.095 ± 0.084 |
| yeast-1_vs_7 | 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 | **0.378 ± 0.107** | 0.000 ± 0.000 | 0.189 ± 0.113 |
| yeast-2_vs_4 | 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 | **0.832 ± 0.076** | 0.338 ± 0.342 | 0.736 ± 0.111 |
| yeast-2_vs_8 | 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 | **0.755 ± 0.177** | 0.178 ± 0.359 | 0.518 ± 0.258 |
| 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 | **0.339 ± 0.127** | 0.000 ± 0.000 | 0.222 ± 0.149 |
| yeast5 | 0.504 ± 0.073 | 0.529 ± 0.071 | 0.499 ± 0.070 | 0.496 ± 0.060 | 0.522 ± 0.068 | 0.382 ± 0.060 | 0.493 ± 0.062 | 0.503 ± 0.074 | **0.576 ± 0.115** | 0.031 ± 0.094 | 0.566 ± 0.195 |
| yeast6 | 0.225 ± 0.035 | 0.277 ± 0.041 | 0.228 ± 0.039 | 0.221 ± 0.038 | 0.264 ± 0.038 | 0.150 ± 0.027 | 0.224 ± 0.040 | 0.226 ± 0.035 | **0.439 ± 0.086** | 0.000 ± 0.000 | 0.339 ± 0.077 |
| cleveland-0_vs_4 | 0.596 ± 0.150 | 0.584 ± 0.121 | 0.589 ± 0.154 | 0.574 ± 0.121 | **0.653 ± 0.105** | 0.634 ± 0.123 | 0.600 ± 0.131 | 0.596 ± 0.150 | 0.517 ± 0.185 | 0.329 ± 0.264 | 0.410 ± 0.206 |
| ecoli-0-1-4-7_vs_2-3-5-6 | 0.554 ± 0.092 | 0.619 ± 0.087 | 0.551 ± 0.075 | 0.572 ± 0.082 | 0.559 ± 0.090 | 0.532 ± 0.085 | 0.545 ± 0.103 | 0.559 ± 0.092 | **0.756 ± 0.102** | 0.193 ± 0.252 | 0.699 ± 0.123 |
| ecoli-0-1_vs_2-3-5 | 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 | 0.772 ± 0.168 | 0.441 ± 0.322 | 0.675 ± 0.113 |
| ecoli-0-2-6-7_vs_3-5 | 0.579 ± 0.118 | 0.612 ± 0.110 | 0.576 ± 0.136 | 0.630 ± 0.140 | 0.586 ± 0.125 | 0.527 ± 0.104 | 0.577 ± 0.126 | 0.575 ± 0.117 | **0.760 ± 0.165** | 0.253 ± 0.329 | 0.677 ± 0.172 |
| ecoli-0-6-7_vs_3-5 | 0.613 ± 0.140 | 0.645 ± 0.128 | 0.607 ± 0.156 | 0.685 ± 0.164 | 0.614 ± 0.117 | 0.591 ± 0.126 | 0.609 ± 0.132 | 0.619 ± 0.133 | 0.746 ± 0.121 | 0.369 ± 0.393 | **0.773 ± 0.158** |
| ecoli-0-6-7_vs_5 | 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 | **0.810 ± 0.132** | 0.201 ± 0.297 | 0.721 ± 0.147 |
| glass-0-1-4-6_vs_2 | 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 | 0.152 ± 0.072 | 0.102 ± 0.130 | 0.225 ± 0.124 |
| glass-0-1-5_vs_2 | 0.226 ± 0.048 | 0.235 ± 0.065 | 0.227 ± 0.048 | 0.226 ± 0.059 | 0.246 ± 0.087 | 0.204 ± 0.049 | 0.239 ± 0.056 | 0.225 ± 0.049 | **0.262 ± 0.146** | 0.122 ± 0.094 | 0.237 ± 0.151 |
| yeast-0-2-5-6_vs_3-7-8-9 | 0.332 ± 0.027 | 0.368 ± 0.033 | 0.330 ± 0.023 | 0.336 ± 0.033 | 0.356 ± 0.025 | 0.379 ± 0.058 | 0.332 ± 0.033 | 0.334 ± 0.028 | **0.436 ± 0.251** | 0.216 ± 0.202 | 0.346 ± 0.165 |
| yeast-0-3-5-9_vs_7-8 | 0.252 ± 0.043 | 0.281 ± 0.053 | 0.250 ± 0.042 | 0.245 ± 0.046 | 0.263 ± 0.042 | **0.285 ± 0.060** | 0.241 ± 0.030 | 0.252 ± 0.041 | 0.195 ± 0.137 | 0.040 ± 0.083 | 0.194 ± 0.111 |
| abalone-17_vs_7-8-9-10 | 0.190 ± 0.032 | 0.281 ± 0.044 | 0.191 ± 0.030 | 0.187 ± 0.028 | 0.231 ± 0.043 | 0.210 ± 0.032 | 0.194 ± 0.033 | 0.190 ± 0.033 | **0.353 ± 0.117** | 0.158 ± 0.086 | 0.122 ± 0.131 |
| abalone-19_vs_10-11-12-13 | 0.047 ± 0.012 | 0.056 ± 0.018 | 0.049 ± 0.012 | 0.049 ± 0.014 | 0.048 ± 0.025 | 0.047 ± 0.017 | 0.044 ± 0.014 | 0.047 ± 0.012 | **0.061 ± 0.075** | 0.007 ± 0.015 | 0.025 ± 0.041 |
| abalone-20_vs_8-9-10 | 0.164 ± 0.028 | 0.189 ± 0.051 | 0.169 ± 0.033 | 0.171 ± 0.031 | 0.166 ± 0.049 | 0.118 ± 0.029 | 0.167 ± 0.034 | 0.161 ± 0.028 | **0.380 ± 0.286** | 0.039 ± 0.058 | 0.141 ± 0.150 |
| abalone-21_vs_8 | 0.440 ± 0.119 | 0.520 ± 0.162 | 0.418 ± 0.108 | 0.412 ± 0.104 | 0.485 ± 0.165 | 0.393 ± 0.120 | 0.400 ± 0.098 | 0.437 ± 0.122 | **0.531 ± 0.298** | 0.230 ± 0.369 | 0.328 ± 0.195 |
| flare-F | 0.202 ± 0.038 | 0.209 ± 0.028 | 0.198 ± 0.040 | 0.202 ± 0.041 | 0.209 ± 0.039 | 0.195 ± 0.031 | 0.206 ± 0.046 | 0.197 ± 0.032 | 0.235 ± 0.189 | 0.150 ± 0.320 | **0.341 ± 0.270** |
| 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** | **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** | **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 | 0.758 ± 0.164 | 0.565 ± 0.090 | 0.740 ± 0.155 | 0.730 ± 0.153 | 0.621 ± 0.279 | 0.000 ± 0.000 | 0.760 ± 0.206 |
| poker-8-9_vs_5 | 0.065 ± 0.026 | **0.091 ± 0.037** | 0.066 ± 0.029 | 0.064 ± 0.029 | 0.055 ± 0.045 | 0.053 ± 0.018 | 0.069 ± 0.027 | 0.065 ± 0.026 | 0.063 ± 0.062 | 0.000 ± 0.000 | 0.062 ± 0.082 |
| poker-8-9_vs_6 | 0.428 ± 0.060 | 0.466 ± 0.080 | 0.426 ± 0.058 | 0.435 ± 0.064 | 0.505 ± 0.050 | 0.360 ± 0.065 | 0.434 ± 0.092 | 0.428 ± 0.060 | **1.000 ± 0.000** | **1.000 ± 0.000** | **1.000 ± 0.000** |
| poker-8_vs_6 | 0.310 ± 0.074 | 0.341 ± 0.111 | 0.308 ± 0.075 | 0.297 ± 0.072 | 0.350 ± 0.102 | 0.267 ± 0.049 | 0.314 ± 0.085 | 0.310 ± 0.074 | **1.000 ± 0.000** | **1.000 ± 0.000** | 0.900 ± 0.300 |
| poker-9_vs_7 | 0.497 ± 0.228 | 0.507 ± 0.234 | 0.495 ± 0.226 | 0.523 ± 0.267 | 0.550 ± 0.268 | **0.652 ± 0.273** | 0.532 ± 0.241 | 0.497 ± 0.228 | 0.466 ± 0.447 | 0.204 ± 0.297 | 0.317 ± 0.383 |
| winequality-red-3_vs_5 | 0.081 ± 0.045 | 0.095 ± 0.058 | 0.081 ± 0.045 | 0.080 ± 0.045 | 0.091 ± 0.051 | **0.161 ± 0.098** | 0.088 ± 0.050 | 0.081 ± 0.045 | 0.092 ± 0.160 | 0.031 ± 0.048 | 0.041 ± 0.063 |
| winequality-red-4 | 0.082 ± 0.015 | 0.080 ± 0.023 | 0.081 ± 0.018 | 0.080 ± 0.012 | 0.096 ± 0.025 | 0.085 ± 0.023 | 0.084 ± 0.015 | 0.082 ± 0.015 | **0.111 ± 0.108** | 0.047 ± 0.045 | 0.063 ± 0.056 |
| winequality-red-8_vs_6-7 | 0.031 ± 0.024 | 0.040 ± 0.029 | 0.033 ± 0.023 | 0.033 ± 0.024 | 0.042 ± 0.026 | 0.040 ± 0.030 | 0.035 ± 0.020 | 0.031 ± 0.024 | 0.050 ± 0.044 | **0.064 ± 0.051** | 0.061 ± 0.061 |
| winequality-red-8_vs_6 | 0.090 ± 0.019 | 0.108 ± 0.036 | 0.087 ± 0.023 | 0.089 ± 0.019 | 0.092 ± 0.038 | 0.094 ± 0.036 | 0.097 ± 0.037 | 0.090 ± 0.019 | **0.117 ± 0.062** | 0.054 ± 0.064 | 0.082 ± 0.071 |
| winequality-white-3-9_vs_5 | 0.068 ± 0.019 | 0.097 ± 0.030 | 0.066 ± 0.017 | 0.066 ± 0.017 | 0.082 ± 0.027 | **0.136 ± 0.074** | 0.060 ± 0.016 | 0.068 ± 0.019 | 0.063 ± 0.083 | 0.055 ± 0.047 | 0.086 ± 0.074 |
| winequality-white-3_vs_7 | 0.112 ± 0.065 | 0.100 ± 0.065 | 0.111 ± 0.066 | 0.105 ± 0.067 | 0.237 ± 0.270 | **0.414 ± 0.245** | 0.114 ± 0.068 | 0.112 ± 0.065 | 0.321 ± 0.379 | 0.276 ± 0.161 | 0.409 ± 0.297 |
| winequality-white-9_vs_4 | 0.514 ± 0.337 | **0.536 ± 0.319** | 0.514 ± 0.337 | 0.421 ± 0.392 | 0.516 ± 0.335 | 0.465 ± 0.373 | 0.514 ± 0.337 | 0.514 ± 0.337 | 0.310 ± 0.341 | 0.333 ± 0.342 | 0.387 ± 0.297 |
| 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 | **0.698 ± 0.351** | 0.692 ± 0.358 | 0.598 ± 0.391 |
| 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 | 0.636 ± 0.035 | 0.137 ± 0.273 | 0.684 ± 0.047 |
| ecoli2 | 0.692 ± 0.080 | **0.751 ± 0.089** | 0.687 ± 0.100 | 0.693 ± 0.088 | 0.727 ± 0.078 | 0.669 ± 0.064 | 0.689 ± 0.090 | 0.690 ± 0.079 | 0.727 ± 0.109 | 0.203 ± 0.323 | 0.639 ± 0.132 |
| ecoli3 | 0.475 ± 0.036 | 0.482 ± 0.036 | 0.473 ± 0.024 | 0.478 ± 0.043 | 0.477 ± 0.041 | 0.424 ± 0.034 | 0.476 ± 0.035 | 0.473 ± 0.037 | 0.500 ± 0.094 | 0.207 ± 0.215 | **0.563 ± 0.078** |
| glass0 | 0.608 ± 0.053 | 0.611 ± 0.056 | 0.599 ± 0.038 | 0.606 ± 0.043 | 0.610 ± 0.047 | 0.608 ± 0.055 | 0.616 ± 0.050 | 0.614 ± 0.054 | 0.596 ± 0.064 | 0.537 ± 0.207 | **0.620 ± 0.085** |
| 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 | 0.562 ± 0.098 | 0.449 ± 0.202 | 0.544 ± 0.086 |
| 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 | **0.412 ± 0.079** | 0.323 ± 0.114 | 0.381 ± 0.122 |
| page-blocks0 | 0.733 ± 0.025 | 0.804 ± 0.021 | 0.732 ± 0.026 | 0.750 ± 0.029 | 0.738 ± 0.016 | **0.855 ± 0.012** | 0.728 ± 0.025 | 0.732 ± 0.024 | 0.819 ± 0.042 | 0.759 ± 0.029 | 0.809 ± 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 | **0.595 ± 0.024** | 0.482 ± 0.071 | 0.530 ± 0.060 |
| vehicle1 | 0.476 ± 0.020 | **0.516 ± 0.027** | 0.476 ± 0.023 | 0.490 ± 0.021 | 0.485 ± 0.018 | 0.496 ± 0.029 | 0.487 ± 0.022 | 0.477 ± 0.021 | 0.493 ± 0.024 | 0.505 ± 0.021 | 0.502 ± 0.032 |
| vehicle3 | 0.470 ± 0.028 | 0.474 ± 0.037 | 0.473 ± 0.026 | 0.471 ± 0.028 | 0.475 ± 0.024 | 0.470 ± 0.029 | 0.467 ± 0.026 | 0.468 ± 0.029 | **0.516 ± 0.042** | 0.458 ± 0.030 | 0.466 ± 0.035 |
| 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 | 0.492 ± 0.120 | 0.000 ± 0.000 | 0.434 ± 0.275 |
| yeast3 | 0.589 ± 0.026 | 0.626 ± 0.034 | 0.587 ± 0.042 | 0.589 ± 0.036 | 0.598 ± 0.033 | 0.583 ± 0.043 | 0.580 ± 0.035 | 0.587 ± 0.025 | **0.770 ± 0.040** | 0.000 ± 0.000 | 0.693 ± 0.085 |

## Table 7. CART – Recall

| Dataset name | SMOTE | polynom-fit-SMOTE | Lee | SMOBD | G-SMOTE | LVQ-SMOTE | Assembled-SMOTE | SMOTE-TomekLinks | JFOTS_pr | JFOTS_rc | JFOTS_prom |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 0.031 ± 0.042 | **0.456 ± 0.370** | 0.425 ± 0.245 |
| abalone9-18 | 0.410 ± 0.123 | 0.281 ± 0.078 | 0.429 ± 0.119 | 0.452 ± 0.098 | 0.367 ± 0.068 | **0.486 ± 0.170** | 0.381 ± 0.077 | 0.419 ± 0.131 | 0.381 ± 0.085 | 0.390 ± 0.279 | 0.348 ± 0.195 |
| ecoli-0-1-3-7_vs_2-6 | 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 | 0.400 ± 0.232 | 0.233 ± 0.122 | 0.317 ± 0.283 |
| glass-0-1-6_vs_2 | 0.367 ± 0.114 | 0.244 ± 0.088 | 0.435 ± 0.125 | 0.375 ± 0.137 | 0.318 ± 0.126 | 0.369 ± 0.187 | 0.364 ± 0.211 | 0.365 ± 0.108 | 0.210 ± 0.170 | **0.501 ± 0.356** | 0.233 ± 0.171 |
| glass-0-1-6_vs_5 | 0.735 ± 0.273 | 0.735 ± 0.273 | 0.735 ± 0.273 | 0.735 ± 0.273 | 0.610 ± 0.369 | **0.805 ± 0.272** | 0.735 ± 0.273 | 0.735 ± 0.273 | 0.445 ± 0.394 | 0.765 ± 0.359 | 0.645 ± 0.411 |
| glass2 | 0.275 ± 0.223 | 0.233 ± 0.160 | 0.239 ± 0.199 | 0.312 ± 0.182 | 0.274 ± 0.216 | 0.318 ± 0.230 | 0.239 ± 0.175 | 0.300 ± 0.232 | 0.197 ± 0.201 | **0.397 ± 0.334** | 0.235 ± 0.217 |
| glass4 | 0.740 ± 0.165 | 0.707 ± 0.109 | 0.740 ± 0.165 | 0.724 ± 0.164 | **0.755 ± 0.151** | 0.681 ± 0.187 | 0.740 ± 0.165 | 0.740 ± 0.165 | 0.557 ± 0.254 | 0.683 ± 0.201 | 0.414 ± 0.215 |
| 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 | 0.655 ± 0.261 | 0.730 ± 0.266 | 0.755 ± 0.254 |
| page-blocks-1-3_vs_4 | 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 | 0.786 ± 0.124 | 0.786 ± 0.291 | 0.829 ± 0.151 |
| yeast-0-5-6-7-9_vs_4 | 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 | 0.412 ± 0.104 | **0.830 ± 0.318** | 0.422 ± 0.169 |
| yeast-1-2-8-9_vs_7 | 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 ± 0.103 | **1.000 ± 0.000** | 0.147 ± 0.088 |
| yeast-1-4-5-8_vs_7 | 0.167 ± 0.095 | 0.173 ± 0.053 | 0.167 ± 0.124 | 0.147 ± 0.083 | 0.153 ± 0.112 | 0.193 ± 0.101 | 0.200 ± 0.060 | 0.153 ± 0.085 | 0.073 ± 0.070 | **1.000 ± 0.000** | 0.107 ± 0.090 |
| yeast-1_vs_7 | 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 | 0.240 ± 0.147 | **0.767 ± 0.396** | 0.260 ± 0.105 |
| yeast-2_vs_4 | 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 | 0.691 ± 0.139 | 0.633 ± 0.340 | 0.636 ± 0.141 |
| yeast-2_vs_8 | 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 | 0.540 ± 0.102 | **0.920 ± 0.117** | 0.600 ± 0.155 |
| 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 | 0.286 ± 0.087 | **0.980 ± 0.020** | 0.237 ± 0.102 |
| yeast5 | 0.736 ± 0.149 | 0.705 ± 0.137 | 0.705 ± 0.129 | 0.732 ± 0.139 | 0.723 ± 0.132 | 0.795 ± 0.098 | 0.750 ± 0.117 | 0.741 ± 0.155 | 0.623 ± 0.161 | **0.936 ± 0.191** | 0.705 ± 0.146 |
| 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 | 0.297 ± 0.085 | **0.978 ± 0.067** | 0.356 ± 0.136 |
| cleveland-0_vs_4 | **0.681 ± 0.119** | 0.517 ± 0.264 | 0.624 ± 0.209 | 0.610 ± 0.175 | 0.550 ± 0.257 | 0.555 ± 0.096 | 0.652 ± 0.140 | **0.681 ± 0.119** | 0.624 ± 0.177 | 0.555 ± 0.142 | 0.495 ± 0.122 |
| ecoli-0-1-4-7_vs_2-3-5-6 | 0.648 ± 0.154 | 0.634 ± 0.089 | 0.696 ± 0.090 | 0.640 ± 0.139 | 0.601 ± 0.135 | **0.750 ± 0.092** | 0.702 ± 0.104 | 0.675 ± 0.169 | 0.400 ± 0.179 | 0.200 ± 0.247 | 0.496 ± 0.154 |
| ecoli-0-1_vs_2-3-5 | 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 ± 0.221 | 0.342 ± 0.270 | 0.583 ± 0.175 |
| ecoli-0-2-6-7_vs_3-5 | 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 | 0.600 ± 0.123 | 0.273 ± 0.279 | 0.618 ± 0.151 |
| ecoli-0-6-7_vs_3-5 | 0.655 ± 0.140 | 0.627 ± 0.103 | 0.682 ± 0.124 | 0.691 ± 0.130 | 0.718 ± 0.155 | **0.764 ± 0.136** | 0.655 ± 0.121 | 0.655 ± 0.140 | 0.591 ± 0.109 | 0.218 ± 0.227 | 0.627 ± 0.103 |
| ecoli-0-6-7_vs_5 | 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 | 0.700 ± 0.184 | 0.620 ± 0.331 | 0.660 ± 0.174 |
| glass-0-1-4-6_vs_2 | 0.272 ± 0.108 | 0.222 ± 0.157 | 0.310 ± 0.148 | 0.272 ± 0.131 | 0.318 ± 0.143 | 0.447 ± 0.163 | 0.211 ± 0.112 | 0.235 ± 0.129 | 0.196 ± 0.110 | **0.479 ± 0.378** | 0.203 ± 0.156 |
| glass-0-1-5_vs_2 | 0.482 ± 0.146 | 0.303 ± 0.122 | 0.461 ± 0.180 | 0.550 ± 0.213 | 0.364 ± 0.138 | 0.407 ± 0.188 | 0.411 ± 0.159 | 0.457 ± 0.129 | 0.315 ± 0.158 | **0.615 ± 0.309** | 0.358 ± 0.222 |
| yeast-0-2-5-6_vs_3-7-8-9 | 0.522 ± 0.078 | 0.492 ± 0.104 | 0.560 ± 0.076 | 0.518 ± 0.056 | 0.513 ± 0.068 | 0.550 ± 0.102 | 0.514 ± 0.069 | 0.499 ± 0.075 | 0.422 ± 0.122 | **0.675 ± 0.178** | 0.456 ± 0.135 |
| yeast-0-3-5-9_vs_7-8 | 0.336 ± 0.086 | 0.356 ± 0.083 | 0.380 ± 0.095 | 0.396 ± 0.090 | 0.352 ± 0.087 | 0.412 ± 0.088 | 0.368 ± 0.066 | 0.400 ± 0.067 | 0.212 ± 0.084 | **0.940 ± 0.155** | 0.332 ± 0.264 |
| abalone-17_vs_7-8-9-10 | 0.334 ± 0.089 | 0.310 ± 0.069 | 0.331 ± 0.090 | 0.366 ± 0.093 | 0.321 ± 0.090 | 0.390 ± 0.046 | 0.334 ± 0.082 | 0.331 ± 0.077 | 0.259 ± 0.089 | 0.179 ± 0.091 | **0.528 ± 0.242** |
| abalone-19_vs_10-11-12-13 | 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 | 0.050 ± 0.067 | **0.419 ± 0.395** | 0.281 ± 0.154 |
| abalone-20_vs_8-9-10 | 0.423 ± 0.105 | 0.185 ± 0.130 | 0.377 ± 0.126 | 0.392 ± 0.100 | 0.277 ± 0.143 | **0.638 ± 0.119** | 0.392 ± 0.121 | 0.423 ± 0.105 | 0.192 ± 0.099 | 0.500 ± 0.314 | 0.238 ± 0.170 |
| abalone-21_vs_8 | 0.486 ± 0.257 | 0.329 ± 0.144 | 0.429 ± 0.192 | 0.414 ± 0.234 | 0.500 ± 0.146 | **0.629 ± 0.146** | 0.414 ± 0.225 | 0.500 ± 0.265 | 0.329 ± 0.256 | 0.514 ± 0.405 | 0.400 ± 0.140 |
| flare-F | 0.149 ± 0.073 | 0.187 ± 0.062 | 0.173 ± 0.093 | 0.192 ± 0.081 | 0.210 ± 0.049 | 0.195 ± 0.074 | 0.187 ± 0.100 | 0.191 ± 0.075 | 0.393 ± 0.182 | **0.949 ± 0.052** | 0.413 ± 0.227 |
| 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** | **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 | 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 | **0.939 ± 0.083** | 0.915 ± 0.148 | 0.909 ± 0.116 | 0.925 ± 0.101 | 0.691 ± 0.195 | 0.769 ± 0.110 | 0.812 ± 0.188 |
| poker-8-9_vs_5 | 0.175 ± 0.078 | 0.135 ± 0.100 | 0.160 ± 0.063 | 0.175 ± 0.067 | 0.111 ± 0.102 | 0.215 ± 0.140 | 0.113 ± 0.056 | 0.175 ± 0.078 | 0.063 ± 0.058 | **0.427 ± 0.177** | 0.115 ± 0.124 |
| poker-8-9_vs_6 | 0.383 ± 0.172 | 0.654 ± 0.277 | 0.358 ± 0.186 | 0.308 ± 0.161 | 0.513 ± 0.278 | 0.294 ± 0.188 | 0.333 ± 0.208 | 0.383 ± 0.172 | **1.000 ± 0.000** | **1.000 ± 0.000** | **1.000 ± 0.000** |
| poker-8_vs_6 | 0.376 ± 0.197 | 0.378 ± 0.324 | 0.414 ± 0.246 | 0.378 ± 0.189 | 0.389 ± 0.192 | 0.363 ± 0.311 | 0.364 ± 0.193 | 0.376 ± 0.197 | **0.863 ± 0.169** | **0.863 ± 0.169** | 0.738 ± 0.322 |
| poker-9_vs_7 | 0.150 ± 0.166 | 0.125 ± 0.125 | 0.150 ± 0.166 | 0.150 ± 0.166 | 0.200 ± 0.187 | 0.250 ± 0.250 | 0.150 ± 0.166 | 0.150 ± 0.166 | 0.300 ± 0.350 | **0.325 ± 0.275** | 0.075 ± 0.160 |
| winequality-red-3_vs_5 | 0.060 ± 0.092 | 0.080 ± 0.133 | 0.040 ± 0.080 | 0.060 ± 0.092 | 0.080 ± 0.183 | **0.160 ± 0.120** | 0.080 ± 0.133 | 0.060 ± 0.092 | 0.040 ± 0.080 | 0.020 ± 0.060 | 0.020 ± 0.060 |
| winequality-red-4 | 0.182 ± 0.101 | 0.121 ± 0.062 | 0.234 ± 0.069 | 0.223 ± 0.077 | 0.156 ± 0.075 | 0.223 ± 0.079 | 0.177 ± 0.038 | 0.182 ± 0.104 | 0.087 ± 0.045 | 0.212 ± 0.174 | **0.234 ± 0.136** |
| winequality-red-8_vs_6-7 | 0.133 ± 0.083 | 0.156 ± 0.102 | 0.144 ± 0.087 | 0.167 ± 0.102 | 0.156 ± 0.113 | **0.178 ± 0.089** | 0.133 ± 0.097 | 0.133 ± 0.083 | 0.122 ± 0.116 | 0.144 ± 0.141 | 0.111 ± 0.122 |
| winequality-red-8_vs_6 | 0.278 ± 0.114 | 0.256 ± 0.132 | 0.267 ± 0.102 | 0.267 ± 0.142 | 0.200 ± 0.097 | 0.300 ± 0.122 | **0.322 ± 0.126** | 0.278 ± 0.114 | 0.133 ± 0.109 | 0.111 ± 0.111 | 0.111 ± 0.070 |
| winequality-white-3-9_vs_5 | 0.183 ± 0.129 | 0.120 ± 0.098 | 0.128 ± 0.106 | 0.145 ± 0.113 | 0.097 ± 0.121 | **0.338 ± 0.117** | 0.120 ± 0.073 | 0.183 ± 0.129 | 0.056 ± 0.053 | 0.072 ± 0.056 | 0.072 ± 0.074 |
| winequality-white-3_vs_7 | 0.120 ± 0.087 | 0.140 ± 0.120 | 0.190 ± 0.130 | 0.180 ± 0.108 | 0.210 ± 0.094 | **0.510 ± 0.176** | 0.090 ± 0.094 | 0.120 ± 0.087 | 0.160 ± 0.128 | 0.190 ± 0.158 | 0.160 ± 0.120 |
| winequality-white-9_vs_4 | **0.467 ± 0.332** | 0.367 ± 0.208 | **0.467 ± 0.332** | **0.467 ± 0.332** | **0.467 ± 0.332** | 0.417 ± 0.281 | **0.467 ± 0.332** | **0.467 ± 0.332** | 0.350 ± 0.189 | 0.300 ± 0.306 | 0.367 ± 0.306 |
| 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 | 0.567 ± 0.186 | **0.617 ± 0.224** | 0.517 ± 0.252 |
| 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 | 0.610 ± 0.082 | **0.828 ± 0.305** | 0.723 ± 0.113 |
| ecoli2 | 0.773 ± 0.070 | 0.738 ± 0.078 | 0.758 ± 0.064 | 0.758 ± 0.089 | 0.769 ± 0.060 | **0.827 ± 0.085** | 0.773 ± 0.102 | 0.769 ± 0.069 | 0.696 ± 0.088 | 0.781 ± 0.316 | 0.635 ± 0.140 |
| 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 | 0.525 ± 0.120 | 0.708 ± 0.269 | 0.554 ± 0.137 |
| glass0 | 0.743 ± 0.096 | 0.726 ± 0.106 | 0.706 ± 0.096 | 0.743 ± 0.076 | 0.740 ± 0.093 | **0.774 ± 0.071** | 0.751 ± 0.075 | 0.743 ± 0.048 | 0.597 ± 0.149 | 0.643 ± 0.124 | 0.711 ± 0.077 |
| 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 | 0.613 ± 0.184 | **0.803 ± 0.172** | 0.568 ± 0.100 |
| 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** | 0.363 ± 0.102 | 0.333 ± 0.050 | 0.311 ± 0.099 |
| page-blocks0 | 0.865 ± 0.026 | 0.820 ± 0.019 | 0.861 ± 0.022 | 0.858 ± 0.015 | 0.841 ± 0.020 | 0.823 ± 0.018 | **0.869 ± 0.024** | 0.864 ± 0.017 | 0.805 ± 0.019 | 0.792 ± 0.041 | 0.807 ± 0.047 |
| pima | 0.588 ± 0.050 | 0.584 ± 0.044 | 0.572 ± 0.045 | 0.581 ± 0.039 | 0.582 ± 0.039 | **0.611 ± 0.038** | 0.565 ± 0.036 | 0.590 ± 0.039 | 0.547 ± 0.044 | 0.515 ± 0.103 | 0.572 ± 0.064 |
| vehicle1 | 0.519 ± 0.058 | 0.519 ± 0.044 | 0.543 ± 0.085 | 0.527 ± 0.055 | 0.522 ± 0.061 | **0.579 ± 0.047** | 0.543 ± 0.053 | 0.537 ± 0.044 | 0.468 ± 0.099 | 0.487 ± 0.100 | 0.492 ± 0.046 |
| vehicle3 | 0.534 ± 0.046 | 0.558 ± 0.040 | 0.504 ± 0.044 | 0.559 ± 0.058 | 0.533 ± 0.039 | **0.576 ± 0.035** | 0.537 ± 0.054 | 0.535 ± 0.028 | 0.475 ± 0.038 | 0.500 ± 0.030 | 0.493 ± 0.070 |
| yeast1 | 0.531 ± 0.031 | 0.526 ± 0.029 | 0.537 ± 0.035 | 0.537 ± 0.027 | 0.540 ± 0.037 | 0.550 ± 0.040 | 0.538 ± 0.031 | 0.514 ± 0.019 | 0.527 ± 0.088 | **1.000 ± 0.000** | 0.503 ± 0.074 |
| yeast3 | 0.772 ± 0.056 | 0.704 ± 0.061 | 0.773 ± 0.044 | 0.746 ± 0.028 | 0.735 ± 0.045 | 0.778 ± 0.061 | 0.751 ± 0.060 | 0.778 ± 0.057 | 0.696 ± 0.050 | **0.994 ± 0.006** | 0.797 ± 0.087 |

## Table 8. SVM – Recall

| Dataset name | SMOTE | polynom-fit-SMOTE | Lee | SMOBD | G-SMOTE | LVQ-SMOTE | Assembled-SMOTE | SMOTE-TomekLinks | JFOTS_pr | JFOTS_rc | JFOTS_prom |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 0.356 ± 0.232 | **0.738 ± 0.187** | 0.694 ± 0.180 |
| abalone9-18 | 0.590 ± 0.107 | 0.448 ± 0.077 | 0.610 ± 0.073 | 0.614 ± 0.081 | 0.586 ± 0.107 | 0.648 ± 0.083 | 0.595 ± 0.071 | 0.590 ± 0.107 | 0.367 ± 0.111 | **0.738 ± 0.071** | 0.610 ± 0.218 |
| ecoli-0-1-3-7_vs_2-6 | 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 | 0.625 ± 0.233 | 0.592 ± 0.248 | 0.650 ± 0.203 |
| glass-0-1-6_vs_2 | 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 | 0.581 ± 0.276 | **0.837 ± 0.244** | 0.481 ± 0.171 |
| glass-0-1-6_vs_5 | 0.650 ± 0.201 | 0.590 ± 0.234 | 0.650 ± 0.201 | 0.650 ± 0.201 | 0.590 ± 0.234 | 0.720 ± 0.290 | 0.650 ± 0.201 | 0.650 ± 0.201 | 0.570 ± 0.222 | **0.765 ± 0.359** | 0.650 ± 0.318 |
| glass2 | 0.458 ± 0.275 | 0.415 ± 0.259 | 0.471 ± 0.274 | 0.449 ± 0.273 | 0.472 ± 0.278 | 0.539 ± 0.297 | 0.471 ± 0.285 | 0.458 ± 0.275 | 0.614 ± 0.335 | **0.732 ± 0.268** | 0.603 ± 0.240 |
| glass4 | **0.802 ± 0.195** | 0.721 ± 0.238 | 0.786 ± 0.225 | 0.771 ± 0.250 | 0.769 ± 0.214 | 0.798 ± 0.233 | 0.769 ± 0.171 | **0.802 ± 0.195** | 0.669 ± 0.211 | 0.729 ± 0.189 | 0.631 ± 0.182 |
| glass5 | 0.645 ± 0.217 | 0.625 ± 0.211 | 0.665 ± 0.203 | 0.665 ± 0.203 | 0.645 ± 0.217 | **0.755 ± 0.298** | 0.645 ± 0.217 | 0.645 ± 0.217 | 0.620 ± 0.218 | 0.660 ± 0.246 | 0.730 ± 0.266 |
| page-blocks-1-3_vs_4 | 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 | 0.693 ± 0.192 | **0.929 ± 0.150** | 0.736 ± 0.258 |
| yeast-0-5-6-7-9_vs_4 | 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 | 0.412 ± 0.133 | **0.873 ± 0.282** | 0.508 ± 0.140 |
| yeast-1-2-8-9_vs_7 | 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 | 0.213 ± 0.111 | **1.000 ± 0.000** | 0.340 ± 0.237 |
| yeast-1-4-5-8_vs_7 | 0.327 ± 0.101 | 0.280 ± 0.107 | 0.307 ± 0.100 | 0.313 ± 0.090 | 0.320 ± 0.107 | 0.353 ± 0.090 | 0.300 ± 0.095 | 0.327 ± 0.101 | 0.287 ± 0.270 | **1.000 ± 0.000** | 0.393 ± 0.190 |
| yeast-1_vs_7 | 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 | 0.307 ± 0.225 | **0.960 ± 0.120** | 0.473 ± 0.147 |
| yeast-2_vs_4 | 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 ± 0.101 | **0.933 ± 0.096** | 0.761 ± 0.116 |
| yeast-2_vs_8 | 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 ± 0.128 | **0.910 ± 0.137** | 0.620 ± 0.172 |
| 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 | 0.494 ± 0.191 | **0.980 ± 0.020** | 0.580 ± 0.150 |
| yeast5 | 0.882 ± 0.058 | 0.873 ± 0.060 | 0.882 ± 0.058 | 0.882 ± 0.058 | 0.886 ± 0.055 | 0.936 ± 0.051 | 0.882 ± 0.058 | 0.882 ± 0.058 | 0.895 ± 0.081 | **0.991 ± 0.027** | 0.886 ± 0.071 |
| 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 | 0.548 ± 0.122 | **0.978 ± 0.067** | 0.669 ± 0.144 |
| cleveland-0_vs_4 | 0.448 ± 0.177 | 0.369 ± 0.163 | 0.464 ± 0.203 | 0.481 ± 0.199 | 0.417 ± 0.169 | **0.719 ± 0.104** | 0.448 ± 0.177 | 0.448 ± 0.177 | 0.552 ± 0.082 | 0.564 ± 0.170 | 0.481 ± 0.151 |
| ecoli-0-1-4-7_vs_2-3-5-6 | 0.771 ± 0.066 | 0.717 ± 0.041 | 0.765 ± 0.066 | 0.758 ± 0.037 | 0.772 ± 0.072 | 0.826 ± 0.069 | 0.779 ± 0.071 | 0.771 ± 0.066 | 0.491 ± 0.238 | **0.852 ± 0.105** | 0.620 ± 0.193 |
| ecoli-0-1_vs_2-3-5 | 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 | 0.642 ± 0.204 | **0.850 ± 0.117** | 0.742 ± 0.102 |
| ecoli-0-2-6-7_vs_3-5 | 0.700 ± 0.108 | 0.700 ± 0.122 | 0.709 ± 0.114 | 0.709 ± 0.106 | 0.736 ± 0.125 | **0.809 ± 0.125** | 0.700 ± 0.122 | 0.700 ± 0.108 | 0.691 ± 0.101 | 0.700 ± 0.173 | 0.745 ± 0.089 |
| ecoli-0-6-7_vs_3-5 | 0.718 ± 0.111 | 0.718 ± 0.111 | 0.718 ± 0.111 | 0.736 ± 0.118 | 0.736 ± 0.125 | **0.800 ± 0.134** | 0.718 ± 0.125 | 0.718 ± 0.111 | 0.727 ± 0.108 | 0.773 ± 0.153 | 0.727 ± 0.108 |
| ecoli-0-6-7_vs_5 | 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 | 0.760 ± 0.143 | **0.850 ± 0.136** | 0.770 ± 0.168 |
| glass-0-1-4-6_vs_2 | 0.568 ± 0.209 | 0.456 ± 0.262 | 0.592 ± 0.235 | 0.553 ± 0.274 | 0.471 ± 0.243 | 0.411 ± 0.185 | 0.589 ± 0.267 | 0.568 ± 0.209 | 0.486 ± 0.308 | **0.768 ± 0.237** | 0.604 ± 0.225 |
| glass-0-1-5_vs_2 | 0.554 ± 0.135 | 0.433 ± 0.142 | 0.565 ± 0.130 | 0.578 ± 0.159 | 0.453 ± 0.132 | 0.290 ± 0.098 | 0.532 ± 0.150 | 0.554 ± 0.135 | 0.557 ± 0.184 | **0.828 ± 0.188** | 0.599 ± 0.158 |
| yeast-0-2-5-6_vs_3-7-8-9 | 0.635 ± 0.064 | 0.588 ± 0.087 | 0.635 ± 0.056 | 0.651 ± 0.057 | 0.621 ± 0.065 | 0.657 ± 0.061 | 0.643 ± 0.063 | 0.637 ± 0.062 | 0.471 ± 0.203 | **0.736 ± 0.107** | 0.542 ± 0.179 |
| yeast-0-3-5-9_vs_7-8 | 0.560 ± 0.082 | 0.316 ± 0.070 | 0.556 ± 0.081 | 0.556 ± 0.095 | 0.548 ± 0.084 | 0.428 ± 0.123 | 0.552 ± 0.071 | 0.560 ± 0.082 | 0.464 ± 0.174 | **0.968 ± 0.073** | 0.620 ± 0.153 |
| abalone-17_vs_7-8-9-10 | 0.717 ± 0.043 | 0.528 ± 0.079 | 0.707 ± 0.047 | 0.707 ± 0.069 | 0.693 ± 0.054 | 0.724 ± 0.056 | 0.721 ± 0.052 | 0.714 ± 0.041 | 0.383 ± 0.187 | **0.817 ± 0.098** | 0.738 ± 0.138 |
| abalone-19_vs_10-11-12-13 | 0.419 ± 0.158 | 0.231 ± 0.125 | 0.425 ± 0.155 | 0.425 ± 0.142 | 0.387 ± 0.136 | 0.463 ± 0.163 | 0.406 ± 0.164 | 0.419 ± 0.158 | 0.300 ± 0.292 | **0.738 ± 0.150** | 0.531 ± 0.200 |
| abalone-20_vs_8-9-10 | 0.654 ± 0.099 | 0.577 ± 0.086 | 0.662 ± 0.086 | 0.646 ± 0.099 | 0.631 ± 0.108 | **0.823 ± 0.103** | 0.638 ± 0.114 | 0.654 ± 0.099 | 0.431 ± 0.276 | 0.815 ± 0.110 | 0.592 ± 0.172 |
| abalone-21_vs_8 | 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 | 0.486 ± 0.214 | 0.614 ± 0.326 | 0.486 ± 0.204 |
| flare-F | 0.604 ± 0.093 | 0.419 ± 0.095 | 0.600 ± 0.097 | 0.609 ± 0.105 | 0.577 ± 0.090 | 0.674 ± 0.117 | 0.600 ± 0.095 | 0.604 ± 0.093 | 0.458 ± 0.222 | **0.944 ± 0.058** | 0.477 ± 0.238 |
| 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 | 0.933 ± 0.107 | 0.933 ± 0.107 | 0.933 ± 0.107 |
| 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 | **0.982 ± 0.036** | **0.982 ± 0.036** | **0.982 ± 0.036** |
| 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 | 0.794 ± 0.198 | 0.769 ± 0.110 | 0.648 ± 0.257 |
| poker-8-9_vs_5 | 0.297 ± 0.142 | 0.201 ± 0.135 | 0.280 ± 0.126 | 0.272 ± 0.121 | 0.263 ± 0.155 | 0.452 ± 0.167 | 0.273 ± 0.105 | 0.297 ± 0.142 | 0.326 ± 0.196 | 0.449 ± 0.112 | **0.465 ± 0.231** |
| poker-8-9_vs_6 | 0.514 ± 0.127 | 0.449 ± 0.095 | 0.514 ± 0.127 | 0.489 ± 0.107 | 0.465 ± 0.132 | 0.888 ± 0.112 | 0.499 ± 0.172 | 0.514 ± 0.127 | **0.958 ± 0.125** | **0.958 ± 0.125** | **0.958 ± 0.125** |
| poker-8_vs_6 | 0.567 ± 0.146 | 0.425 ± 0.118 | 0.567 ± 0.146 | 0.578 ± 0.131 | 0.493 ± 0.161 | **0.944 ± 0.102** | 0.578 ± 0.131 | 0.567 ± 0.146 | 0.804 ± 0.250 | 0.867 ± 0.210 | 0.707 ± 0.320 |
| poker-9_vs_7 | 0.275 ± 0.208 | 0.250 ± 0.194 | 0.275 ± 0.208 | 0.275 ± 0.208 | 0.275 ± 0.261 | 0.375 ± 0.280 | 0.225 ± 0.175 | 0.275 ± 0.208 | **0.425 ± 0.354** | 0.375 ± 0.321 | 0.300 ± 0.292 |
| winequality-red-3_vs_5 | 0.100 ± 0.100 | 0.100 ± 0.100 | 0.100 ± 0.100 | 0.100 ± 0.100 | 0.100 ± 0.100 | 0.240 ± 0.120 | 0.120 ± 0.098 | 0.100 ± 0.100 | 0.140 ± 0.156 | **0.400 ± 0.219** | 0.200 ± 0.179 |
| winequality-red-4 | 0.393 ± 0.088 | 0.309 ± 0.063 | 0.382 ± 0.084 | 0.404 ± 0.084 | 0.351 ± 0.069 | 0.313 ± 0.062 | 0.397 ± 0.084 | 0.393 ± 0.088 | 0.116 ± 0.125 | **0.657 ± 0.130** | 0.325 ± 0.137 |
| winequality-red-8_vs_6-7 | 0.211 ± 0.116 | 0.156 ± 0.113 | 0.211 ± 0.116 | 0.211 ± 0.116 | 0.167 ± 0.134 | 0.178 ± 0.133 | 0.178 ± 0.102 | 0.211 ± 0.116 | 0.267 ± 0.124 | **0.433 ± 0.195** | 0.233 ± 0.182 |
| winequality-red-8_vs_6 | 0.289 ± 0.074 | 0.267 ± 0.054 | 0.289 ± 0.074 | 0.289 ± 0.074 | 0.300 ± 0.071 | 0.344 ± 0.136 | 0.311 ± 0.067 | 0.289 ± 0.074 | 0.400 ± 0.174 | **0.478 ± 0.228** | 0.300 ± 0.132 |
| winequality-white-3-9_vs_5 | 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 | 0.210 ± 0.197 | **0.456 ± 0.149** | 0.224 ± 0.084 |
| winequality-white-3_vs_7 | 0.110 ± 0.104 | 0.080 ± 0.087 | 0.140 ± 0.143 | 0.140 ± 0.143 | 0.120 ± 0.087 | **0.530 ± 0.155** | 0.120 ± 0.098 | 0.110 ± 0.104 | 0.140 ± 0.111 | 0.430 ± 0.261 | 0.240 ± 0.224 |
| winequality-white-9_vs_4 | **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** | 0.433 ± 0.327 | 0.500 ± 0.247 | 0.517 ± 0.293 |
| 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 | **0.517 ± 0.253** | **0.517 ± 0.252** | 0.467 ± 0.296 |
| 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 | 0.917 ± 0.059 | **0.972 ± 0.048** | 0.930 ± 0.023 |
| 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 | 0.815 ± 0.080 | **0.927 ± 0.112** | 0.873 ± 0.064 |
| 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 | 0.806 ± 0.103 | **0.925 ± 0.046** | 0.738 ± 0.170 |
| glass0 | 0.860 ± 0.064 | 0.811 ± 0.063 | 0.863 ± 0.065 | 0.877 ± 0.070 | 0.866 ± 0.063 | 0.869 ± 0.055 | 0.874 ± 0.056 | 0.866 ± 0.063 | 0.894 ± 0.064 | **0.943 ± 0.060** | 0.846 ± 0.113 |
| 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 | 0.824 ± 0.103 | **0.924 ± 0.069** | 0.739 ± 0.121 |
| 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 | 0.316 ± 0.186 | **0.568 ± 0.107** | 0.425 ± 0.125 |
| page-blocks0 | 0.916 ± 0.019 | 0.824 ± 0.018 | 0.914 ± 0.017 | 0.891 ± 0.023 | 0.915 ± 0.019 | 0.719 ± 0.033 | 0.915 ± 0.020 | 0.916 ± 0.019 | 0.826 ± 0.100 | **0.964 ± 0.019** | 0.784 ± 0.066 |
| pima | 0.708 ± 0.047 | 0.635 ± 0.057 | 0.705 ± 0.049 | 0.694 ± 0.037 | 0.707 ± 0.036 | 0.688 ± 0.024 | 0.711 ± 0.051 | 0.712 ± 0.044 | 0.582 ± 0.036 | **0.816 ± 0.036** | 0.704 ± 0.062 |
| 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 | 0.495 ± 0.161 | **0.902 ± 0.043** | 0.787 ± 0.120 |
| vehicle3 | 0.845 ± 0.056 | 0.648 ± 0.053 | 0.850 ± 0.053 | 0.866 ± 0.056 | 0.848 ± 0.040 | 0.844 ± 0.052 | 0.845 ± 0.040 | 0.847 ± 0.055 | 0.440 ± 0.093 | **0.909 ± 0.057** | 0.729 ± 0.159 |
| yeast1 | 0.716 ± 0.033 | 0.544 ± 0.029 | 0.708 ± 0.024 | 0.724 ± 0.043 | 0.705 ± 0.040 | 0.668 ± 0.016 | 0.715 ± 0.038 | 0.717 ± 0.033 | 0.580 ± 0.135 | **1.000 ± 0.000** | 0.759 ± 0.114 |
| 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 | 0.767 ± 0.065 | **0.994 ± 0.006** | 0.904 ± 0.042 |

## Table 9. KNN – AUC

| Dataset name | SMOTE | polynom-fit-SMOTE | Lee | SMOBD | G-SMOTE | LVQ-SMOTE | Assembled-SMOTE | SMOTE-TomekLinks | JFOTS_pr | JFOTS_rc | JFOTS_prom |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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** | 0.504 ± 0.013 | 0.504 ± 0.018 | 0.498 ± 0.003 |
| abalone9-18 | 0.719 ± 0.033 | 0.704 ± 0.044 | 0.704 ± 0.034 | 0.709 ± 0.040 | 0.700 ± 0.048 | 0.692 ± 0.033 | 0.714 ± 0.041 | **0.720 ± 0.033** | 0.620 ± 0.032 | 0.574 ± 0.056 | 0.606 ± 0.078 |
| ecoli-0-1-3-7_vs_2-6 | 0.834 ± 0.075 | **0.835 ± 0.076** | 0.834 ± 0.074 | 0.833 ± 0.074 | **0.835 ± 0.076** | 0.833 ± 0.076 | 0.834 ± 0.075 | 0.834 ± 0.075 | 0.699 ± 0.117 | 0.694 ± 0.104 | 0.738 ± 0.117 |
| glass-0-1-6_vs_2 | 0.718 ± 0.086 | 0.682 ± 0.045 | 0.713 ± 0.081 | 0.714 ± 0.084 | 0.700 ± 0.056 | 0.657 ± 0.063 | **0.725 ± 0.082** | 0.717 ± 0.085 | 0.592 ± 0.110 | 0.566 ± 0.091 | 0.543 ± 0.064 |
| glass-0-1-6_vs_5 | 0.914 ± 0.097 | **0.915 ± 0.098** | 0.914 ± 0.097 | 0.914 ± 0.098 | 0.894 ± 0.135 | 0.881 ± 0.120 | 0.914 ± 0.097 | 0.914 ± 0.097 | 0.777 ± 0.117 | 0.763 ± 0.213 | 0.855 ± 0.128 |
| glass2 | 0.630 ± 0.134 | 0.633 ± 0.137 | 0.637 ± 0.151 | **0.644 ± 0.141** | 0.630 ± 0.135 | 0.627 ± 0.112 | 0.635 ± 0.145 | 0.628 ± 0.133 | 0.589 ± 0.128 | 0.564 ± 0.075 | 0.584 ± 0.110 |
| glass4 | 0.901 ± 0.057 | **0.903 ± 0.068** | 0.876 ± 0.056 | 0.885 ± 0.056 | 0.879 ± 0.071 | 0.863 ± 0.038 | 0.892 ± 0.048 | 0.901 ± 0.057 | 0.757 ± 0.075 | 0.748 ± 0.143 | 0.775 ± 0.118 |
| glass5 | 0.931 ± 0.110 | **0.933 ± 0.110** | 0.921 ± 0.116 | 0.931 ± 0.110 | 0.922 ± 0.108 | 0.862 ± 0.108 | 0.931 ± 0.110 | 0.931 ± 0.110 | 0.845 ± 0.079 | 0.820 ± 0.109 | 0.857 ± 0.130 |
| page-blocks-1-3_vs_4 | **0.983 ± 0.023** | 0.978 ± 0.024 | 0.982 ± 0.023 | **0.983 ± 0.023** | 0.949 ± 0.095 | 0.980 ± 0.016 | 0.976 ± 0.025 | **0.983 ± 0.023** | 0.842 ± 0.087 | 0.840 ± 0.127 | 0.915 ± 0.103 |
| yeast-0-5-6-7-9_vs_4 | 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 | 0.641 ± 0.039 | 0.519 ± 0.063 | 0.653 ± 0.083 |
| yeast-1-2-8-9_vs_7 | 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 | 0.577 ± 0.038 | 0.500 ± 0.000 | 0.550 ± 0.045 |
| yeast-1-4-5-8_vs_7 | 0.611 ± 0.040 | 0.595 ± 0.062 | **0.614 ± 0.044** | 0.594 ± 0.052 | 0.571 ± 0.051 | 0.577 ± 0.042 | 0.605 ± 0.039 | 0.611 ± 0.038 | 0.525 ± 0.047 | 0.500 ± 0.000 | 0.539 ± 0.052 |
| yeast-1_vs_7 | 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 | 0.586 ± 0.031 | 0.499 ± 0.002 | 0.586 ± 0.072 |
| yeast-2_vs_4 | 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 | 0.837 ± 0.056 | 0.679 ± 0.182 | 0.836 ± 0.039 |
| yeast-2_vs_8 | 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 | 0.779 ± 0.053 | 0.560 ± 0.121 | 0.753 ± 0.100 |
| 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 | 0.623 ± 0.047 | 0.500 ± 0.000 | 0.604 ± 0.060 |
| 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 | 0.842 ± 0.124 | 0.521 ± 0.064 | 0.837 ± 0.123 |
| 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 | 0.699 ± 0.086 | 0.500 ± 0.000 | 0.722 ± 0.092 |
| cleveland-0_vs_4 | 0.876 ± 0.069 | 0.868 ± 0.036 | 0.881 ± 0.029 | 0.875 ± 0.068 | 0.873 ± 0.033 | 0.813 ± 0.069 | **0.883 ± 0.024** | 0.876 ± 0.069 | 0.755 ± 0.073 | 0.665 ± 0.141 | 0.720 ± 0.094 |
| ecoli-0-1-4-7_vs_2-3-5-6 | 0.883 ± 0.018 | 0.878 ± 0.024 | 0.880 ± 0.018 | 0.876 ± 0.018 | **0.884 ± 0.022** | 0.877 ± 0.028 | 0.882 ± 0.021 | 0.884 ± 0.018 | 0.732 ± 0.113 | 0.594 ± 0.135 | 0.782 ± 0.078 |
| ecoli-0-1_vs_2-3-5 | 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 | 0.829 ± 0.104 | 0.702 ± 0.158 | 0.803 ± 0.062 |
| ecoli-0-2-6-7_vs_3-5 | 0.839 ± 0.051 | 0.839 ± 0.051 | 0.842 ± 0.061 | 0.840 ± 0.053 | **0.843 ± 0.057** | 0.840 ± 0.038 | 0.838 ± 0.049 | 0.839 ± 0.050 | 0.808 ± 0.039 | 0.582 ± 0.122 | 0.817 ± 0.070 |
| ecoli-0-6-7_vs_3-5 | 0.851 ± 0.054 | 0.855 ± 0.053 | 0.854 ± 0.064 | **0.858 ± 0.050** | 0.847 ± 0.061 | 0.841 ± 0.052 | 0.851 ± 0.052 | 0.852 ± 0.053 | 0.818 ± 0.053 | 0.633 ± 0.157 | 0.828 ± 0.051 |
| ecoli-0-6-7_vs_5 | 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 | 0.840 ± 0.078 | 0.570 ± 0.128 | 0.863 ± 0.067 |
| glass-0-1-4-6_vs_2 | **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 | 0.568 ± 0.059 | 0.544 ± 0.111 | 0.613 ± 0.115 |
| glass-0-1-5_vs_2 | 0.676 ± 0.059 | 0.674 ± 0.055 | **0.684 ± 0.063** | 0.669 ± 0.065 | 0.667 ± 0.084 | 0.631 ± 0.060 | 0.683 ± 0.059 | 0.675 ± 0.060 | 0.606 ± 0.088 | 0.552 ± 0.073 | 0.608 ± 0.092 |
| yeast-0-2-5-6_vs_3-7-8-9 | 0.772 ± 0.031 | 0.768 ± 0.025 | **0.775 ± 0.028** | 0.772 ± 0.026 | 0.773 ± 0.030 | 0.764 ± 0.033 | 0.772 ± 0.031 | 0.773 ± 0.032 | 0.658 ± 0.099 | 0.553 ± 0.090 | 0.637 ± 0.097 |
| yeast-0-3-5-9_vs_7-8 | 0.679 ± 0.037 | 0.675 ± 0.035 | 0.679 ± 0.037 | 0.670 ± 0.043 | 0.678 ± 0.037 | **0.681 ± 0.050** | 0.669 ± 0.030 | 0.680 ± 0.038 | 0.544 ± 0.052 | 0.505 ± 0.015 | 0.572 ± 0.065 |
| abalone-17_vs_7-8-9-10 | 0.749 ± 0.046 | 0.719 ± 0.034 | **0.752 ± 0.045** | 0.745 ± 0.046 | 0.713 ± 0.044 | 0.739 ± 0.042 | 0.743 ± 0.044 | 0.749 ± 0.046 | 0.586 ± 0.046 | 0.596 ± 0.049 | 0.527 ± 0.036 |
| abalone-19_vs_10-11-12-13 | 0.583 ± 0.037 | 0.551 ± 0.025 | 0.587 ± 0.040 | **0.589 ± 0.047** | 0.554 ± 0.046 | 0.569 ± 0.045 | 0.570 ± 0.044 | 0.582 ± 0.037 | 0.519 ± 0.021 | 0.501 ± 0.014 | 0.511 ± 0.025 |
| abalone-20_vs_8-9-10 | 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 | 0.571 ± 0.051 | 0.515 ± 0.023 | 0.561 ± 0.062 |
| abalone-21_vs_8 | **0.830 ± 0.084** | 0.771 ± 0.079 | 0.815 ± 0.074 | 0.815 ± 0.076 | 0.797 ± 0.080 | 0.794 ± 0.065 | 0.822 ± 0.080 | 0.830 ± 0.084 | 0.680 ± 0.075 | 0.557 ± 0.094 | 0.672 ± 0.119 |
| flare-F | 0.693 ± 0.044 | 0.674 ± 0.035 | 0.690 ± 0.050 | 0.693 ± 0.044 | 0.671 ± 0.043 | 0.693 ± 0.036 | **0.694 ± 0.041** | 0.692 ± 0.044 | 0.550 ± 0.055 | 0.504 ± 0.009 | 0.545 ± 0.037 |
| 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 | **0.970 ± 0.031** | **0.970 ± 0.031** | **0.970 ± 0.031** |
| 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** | 0.959 ± 0.038 | 0.959 ± 0.038 | 0.959 ± 0.038 |
| kr-vs-k-zero_vs_eight | 0.940 ± 0.050 | 0.930 ± 0.053 | 0.944 ± 0.050 | 0.944 ± 0.049 | 0.926 ± 0.061 | **0.944 ± 0.060** | 0.929 ± 0.060 | 0.940 ± 0.050 | 0.793 ± 0.126 | 0.500 ± 0.000 | 0.776 ± 0.129 |
| poker-8-9_vs_5 | 0.609 ± 0.059 | 0.578 ± 0.036 | 0.617 ± 0.065 | 0.608 ± 0.062 | 0.548 ± 0.044 | **0.643 ± 0.048** | 0.614 ± 0.061 | 0.609 ± 0.059 | 0.533 ± 0.039 | 0.500 ± 0.000 | 0.537 ± 0.061 |
| poker-8-9_vs_6 | 0.949 ± 0.040 | 0.912 ± 0.033 | 0.949 ± 0.039 | 0.949 ± 0.039 | 0.904 ± 0.053 | 0.976 ± 0.027 | 0.937 ± 0.031 | 0.949 ± 0.040 | **0.988 ± 0.035** | **0.988 ± 0.035** | **0.988 ± 0.035** |
| poker-8_vs_6 | 0.942 ± 0.061 | 0.851 ± 0.057 | 0.942 ± 0.061 | 0.942 ± 0.061 | 0.875 ± 0.098 | **0.978 ± 0.018** | 0.932 ± 0.078 | 0.942 ± 0.061 | 0.906 ± 0.096 | 0.931 ± 0.084 | 0.864 ± 0.166 |
| poker-9_vs_7 | 0.839 ± 0.152 | **0.839 ± 0.152** | 0.839 ± 0.152 | **0.839 ± 0.152** | 0.816 ± 0.135 | 0.795 ± 0.125 | 0.828 ± 0.145 | 0.839 ± 0.152 | 0.680 ± 0.191 | 0.594 ± 0.145 | 0.591 ± 0.151 |
| winequality-red-3_vs_5 | 0.584 ± 0.061 | 0.577 ± 0.053 | 0.584 ± 0.061 | 0.583 ± 0.061 | 0.578 ± 0.053 | **0.592 ± 0.064** | 0.575 ± 0.052 | 0.584 ± 0.061 | 0.522 ± 0.048 | 0.521 ± 0.044 | 0.521 ± 0.046 |
| winequality-red-4 | 0.597 ± 0.027 | 0.583 ± 0.043 | 0.596 ± 0.029 | 0.596 ± 0.021 | 0.588 ± 0.036 | 0.557 ± 0.024 | **0.602 ± 0.024** | 0.597 ± 0.026 | 0.521 ± 0.029 | 0.516 ± 0.029 | 0.517 ± 0.027 |
| winequality-red-8_vs_6-7 | 0.530 ± 0.064 | **0.543 ± 0.068** | 0.536 ± 0.063 | 0.537 ± 0.063 | 0.536 ± 0.055 | 0.530 ± 0.060 | 0.534 ± 0.055 | 0.531 ± 0.064 | 0.529 ± 0.037 | 0.539 ± 0.042 | 0.537 ± 0.042 |
| winequality-red-8_vs_6 | **0.635 ± 0.050** | 0.630 ± 0.052 | 0.624 ± 0.055 | 0.635 ± 0.051 | 0.595 ± 0.050 | 0.600 ± 0.052 | 0.632 ± 0.043 | 0.635 ± 0.050 | 0.569 ± 0.042 | 0.519 ± 0.036 | 0.543 ± 0.052 |
| winequality-white-3-9_vs_5 | **0.618 ± 0.030** | 0.613 ± 0.033 | 0.617 ± 0.035 | 0.617 ± 0.034 | 0.573 ± 0.029 | 0.602 ± 0.053 | 0.599 ± 0.034 | **0.618 ± 0.030** | 0.531 ± 0.048 | 0.520 ± 0.032 | 0.536 ± 0.037 |
| winequality-white-3_vs_7 | 0.630 ± 0.086 | 0.573 ± 0.064 | 0.633 ± 0.092 | 0.619 ± 0.094 | 0.577 ± 0.058 | **0.644 ± 0.084** | 0.630 ± 0.099 | 0.630 ± 0.086 | 0.541 ± 0.045 | 0.637 ± 0.084 | 0.620 ± 0.084 |
| winequality-white-9_vs_4 | 0.878 ± 0.091 | **0.882 ± 0.095** | 0.878 ± 0.091 | 0.766 ± 0.164 | 0.879 ± 0.092 | 0.774 ± 0.172 | 0.878 ± 0.091 | 0.878 ± 0.091 | 0.638 ± 0.145 | 0.639 ± 0.148 | 0.701 ± 0.125 |
| 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** | 0.772 ± 0.147 | 0.748 ± 0.132 | 0.722 ± 0.146 |
| 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 | 0.804 ± 0.049 | 0.560 ± 0.119 | 0.839 ± 0.034 |
| 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 | 0.863 ± 0.066 | 0.592 ± 0.146 | 0.836 ± 0.089 |
| ecoli3 | 0.866 ± 0.019 | 0.857 ± 0.022 | **0.868 ± 0.015** | 0.859 ± 0.025 | 0.854 ± 0.035 | 0.851 ± 0.028 | 0.861 ± 0.018 | 0.865 ± 0.015 | 0.765 ± 0.074 | 0.604 ± 0.116 | 0.758 ± 0.073 |
| glass0 | 0.791 ± 0.035 | 0.799 ± 0.036 | 0.786 ± 0.034 | 0.794 ± 0.028 | 0.797 ± 0.027 | 0.787 ± 0.041 | 0.800 ± 0.030 | **0.800 ± 0.034** | 0.760 ± 0.067 | 0.728 ± 0.104 | 0.780 ± 0.043 |
| 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 | 0.688 ± 0.101 | 0.577 ± 0.106 | 0.664 ± 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 | 0.582 ± 0.047 | 0.533 ± 0.080 | 0.563 ± 0.064 |
| 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 | 0.897 ± 0.014 | 0.901 ± 0.019 | 0.897 ± 0.020 |
| pima | 0.685 ± 0.021 | **0.708 ± 0.018** | 0.686 ± 0.013 | 0.687 ± 0.016 | 0.682 ± 0.017 | 0.690 ± 0.021 | 0.687 ± 0.017 | 0.693 ± 0.024 | 0.678 ± 0.022 | 0.601 ± 0.053 | 0.645 ± 0.054 |
| vehicle1 | 0.723 ± 0.026 | **0.740 ± 0.017** | 0.720 ± 0.024 | 0.736 ± 0.025 | 0.725 ± 0.019 | 0.720 ± 0.022 | 0.731 ± 0.022 | 0.724 ± 0.027 | 0.652 ± 0.030 | 0.721 ± 0.025 | 0.708 ± 0.021 |
| vehicle3 | 0.708 ± 0.018 | 0.700 ± 0.029 | 0.712 ± 0.019 | **0.718 ± 0.025** | 0.710 ± 0.017 | 0.692 ± 0.023 | 0.712 ± 0.020 | 0.706 ± 0.020 | 0.643 ± 0.024 | 0.682 ± 0.031 | 0.671 ± 0.030 |
| yeast1 | 0.675 ± 0.010 | **0.697 ± 0.012** | 0.676 ± 0.010 | 0.676 ± 0.015 | 0.669 ± 0.012 | 0.667 ± 0.011 | 0.674 ± 0.013 | 0.678 ± 0.010 | 0.596 ± 0.072 | 0.500 ± 0.000 | 0.573 ± 0.072 |
| 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 | 0.850 ± 0.022 | 0.500 ± 0.000 | 0.732 ± 0.121 |

## Table 10. CART – BAC

| Dataset name | SMOTE | polynom-fit-SMOTE | Lee | SMOBD | G-SMOTE | LVQ-SMOTE | Assembled-SMOTE | SMOTE-TomekLinks | JFOTS_pr | JFOTS_rc | JFOTS_prom |
|---|---|---|---|---|---|---|---|---|---|---|---|
| abalone19 | 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 | 0.511 ± 0.022 | 0.573 ± 0.062 | **0.593 ± 0.057** |
| abalone9-18 | 0.665 ± 0.059 | 0.609 ± 0.040 | 0.672 ± 0.051 | **0.685 ± 0.051** | 0.653 ± 0.033 | 0.684 ± 0.082 | 0.649 ± 0.038 | 0.667 ± 0.062 | 0.673 ± 0.039 | 0.569 ± 0.051 | 0.611 ± 0.064 |
| ecoli-0-1-3-7_vs_2-6 | 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 | 0.691 ± 0.117 | 0.608 ± 0.059 | 0.650 ± 0.145 |
| glass-0-1-6_vs_2 | 0.629 ± 0.058 | 0.570 ± 0.054 | **0.663 ± 0.054** | 0.642 ± 0.063 | 0.609 ± 0.057 | 0.588 ± 0.108 | 0.633 ± 0.108 | 0.628 ± 0.055 | 0.552 ± 0.072 | 0.570 ± 0.057 | 0.549 ± 0.041 |
| glass-0-1-6_vs_5 | 0.860 ± 0.133 | 0.858 ± 0.133 | 0.860 ± 0.133 | 0.860 ± 0.133 | 0.794 ± 0.185 | **0.894 ± 0.133** | 0.860 ± 0.133 | 0.860 ± 0.133 | 0.713 ± 0.198 | 0.866 ± 0.175 | 0.806 ± 0.201 |
| glass2 | 0.591 ± 0.121 | 0.563 ± 0.077 | 0.577 ± 0.111 | **0.610 ± 0.101** | 0.599 ± 0.108 | 0.582 ± 0.110 | 0.575 ± 0.094 | 0.606 ± 0.124 | 0.560 ± 0.106 | 0.516 ± 0.071 | 0.533 ± 0.063 |
| glass4 | 0.854 ± 0.086 | 0.835 ± 0.053 | 0.854 ± 0.087 | 0.845 ± 0.086 | **0.857 ± 0.082** | 0.808 ± 0.090 | 0.853 ± 0.090 | 0.854 ± 0.086 | 0.761 ± 0.129 | 0.747 ± 0.164 | 0.689 ± 0.102 |
| glass5 | 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 | 0.820 ± 0.130 | 0.857 ± 0.128 | 0.865 ± 0.122 |
| 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 | 0.887 ± 0.062 | 0.887 ± 0.151 | 0.909 ± 0.076 |
| yeast-0-5-6-7-9_vs_4 | 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 | 0.667 ± 0.047 | 0.511 ± 0.063 | 0.642 ± 0.080 |
| yeast-1-2-8-9_vs_7 | 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 | 0.561 ± 0.053 | 0.509 ± 0.004 | 0.550 ± 0.049 |
| yeast-1-4-5-8_vs_7 | 0.532 ± 0.049 | **0.554 ± 0.026** | 0.535 ± 0.064 | 0.523 ± 0.045 | 0.537 ± 0.053 | 0.518 ± 0.041 | 0.551 ± 0.029 | 0.526 ± 0.048 | 0.514 ± 0.035 | 0.508 ± 0.005 | 0.502 ± 0.039 |
| yeast-1_vs_7 | 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 | 0.558 ± 0.061 | 0.513 ± 0.034 | 0.568 ± 0.046 |
| yeast-2_vs_4 | 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 ± 0.087 | 0.661 ± 0.173 | 0.801 ± 0.068 |
| yeast-2_vs_8 | 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 | 0.760 ± 0.045 | 0.549 ± 0.062 | 0.745 ± 0.062 |
| yeast4 | 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 | 0.619 ± 0.060 | 0.498 ± 0.008 | 0.582 ± 0.057 |
| yeast5 | 0.862 ± 0.073 | 0.846 ± 0.068 | 0.846 ± 0.064 | 0.859 ± 0.068 | 0.855 ± 0.065 | **0.878 ± 0.049** | 0.868 ± 0.057 | 0.864 ± 0.076 | 0.805 ± 0.081 | 0.526 ± 0.049 | 0.799 ± 0.110 |
| yeast6 | 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 | 0.639 ± 0.043 | 0.522 ± 0.035 | 0.669 ± 0.068 |
| cleveland-0_vs_4 | **0.814 ± 0.055** | 0.731 ± 0.129 | 0.785 ± 0.103 | 0.782 ± 0.083 | 0.750 ± 0.127 | 0.745 ± 0.048 | 0.801 ± 0.063 | **0.814 ± 0.055** | 0.782 ± 0.086 | 0.666 ± 0.109 | 0.703 ± 0.050 |
| ecoli-0-1-4-7_vs_2-3-5-6 | 0.792 ± 0.074 | 0.794 ± 0.048 | 0.822 ± 0.039 | 0.790 ± 0.069 | 0.776 ± 0.066 | 0.822 ± 0.050 | **0.827 ± 0.054** | 0.806 ± 0.077 | 0.688 ± 0.084 | 0.579 ± 0.118 | 0.732 ± 0.077 |
| ecoli-0-1_vs_2-3-5 | 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 | 0.767 ± 0.105 | 0.648 ± 0.124 | 0.777 ± 0.088 |
| ecoli-0-2-6-7_vs_3-5 | 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 | 0.783 ± 0.055 | 0.573 ± 0.121 | 0.788 ± 0.074 |
| ecoli-0-6-7_vs_3-5 | 0.795 ± 0.069 | 0.794 ± 0.048 | 0.810 ± 0.052 | 0.813 ± 0.063 | 0.832 ± 0.070 | **0.834 ± 0.060** | 0.790 ± 0.056 | 0.796 ± 0.069 | 0.776 ± 0.054 | 0.586 ± 0.120 | 0.797 ± 0.052 |
| ecoli-0-6-7_vs_5 | 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 | 0.837 ± 0.087 | 0.591 ± 0.123 | 0.818 ± 0.079 |
| glass-0-1-4-6_vs_2 | 0.595 ± 0.051 | 0.560 ± 0.082 | 0.610 ± 0.072 | 0.591 ± 0.062 | 0.613 ± 0.070 | **0.638 ± 0.077** | 0.558 ± 0.066 | 0.576 ± 0.062 | 0.556 ± 0.058 | 0.551 ± 0.078 | 0.566 ± 0.081 |
| glass-0-1-5_vs_2 | 0.689 ± 0.067 | 0.597 ± 0.068 | 0.677 ± 0.082 | **0.713 ± 0.110** | 0.631 ± 0.069 | 0.605 ± 0.090 | 0.649 ± 0.079 | 0.678 ± 0.062 | 0.607 ± 0.068 | 0.548 ± 0.080 | 0.565 ± 0.100 |
| yeast-0-2-5-6_vs_3-7-8-9 | 0.713 ± 0.037 | 0.712 ± 0.051 | **0.735 ± 0.038** | 0.714 ± 0.027 | 0.717 ± 0.033 | 0.728 ± 0.046 | 0.709 ± 0.037 | 0.700 ± 0.034 | 0.633 ± 0.064 | 0.548 ± 0.086 | 0.625 ± 0.097 |
| yeast-0-3-5-9_vs_7-8 | 0.598 ± 0.035 | **0.638 ± 0.041** | 0.621 ± 0.044 | 0.623 ± 0.050 | 0.614 ± 0.049 | 0.629 ± 0.050 | 0.615 ± 0.028 | 0.630 ± 0.031 | 0.539 ± 0.038 | 0.519 ± 0.026 | 0.540 ± 0.041 |
| abalone-17_vs_7-8-9-10 | 0.644 ± 0.041 | 0.642 ± 0.033 | 0.643 ± 0.042 | 0.660 ± 0.045 | 0.645 ± 0.045 | **0.667 ± 0.024** | 0.646 ± 0.039 | 0.642 ± 0.036 | 0.619 ± 0.044 | 0.556 ± 0.035 | 0.595 ± 0.052 |
| abalone-19_vs_10-11-12-13 | 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 | 0.514 ± 0.036 | 0.495 ± 0.027 | 0.526 ± 0.041 |
| abalone-20_vs_8-9-10 | 0.696 ± 0.050 | 0.584 ± 0.065 | 0.674 ± 0.065 | 0.682 ± 0.050 | 0.630 ± 0.071 | **0.789 ± 0.061** | 0.681 ± 0.059 | 0.696 ± 0.050 | 0.590 ± 0.050 | 0.591 ± 0.065 | 0.576 ± 0.054 |
| abalone-21_vs_8 | 0.726 ± 0.121 | 0.655 ± 0.074 | 0.699 ± 0.092 | 0.691 ± 0.116 | 0.736 ± 0.075 | **0.790 ± 0.070** | 0.692 ± 0.105 | 0.734 ± 0.126 | 0.660 ± 0.129 | 0.602 ± 0.108 | 0.675 ± 0.074 |
| flare-F | 0.558 ± 0.035 | 0.581 ± 0.030 | 0.570 ± 0.045 | 0.578 ± 0.038 | 0.588 ± 0.025 | 0.580 ± 0.034 | 0.576 ± 0.048 | 0.577 ± 0.035 | 0.611 ± 0.060 | 0.576 ± 0.068 | **0.673 ± 0.097** |
| 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** | **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 | 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 | **0.968 ± 0.042** | 0.954 ± 0.074 | 0.954 ± 0.058 | 0.961 ± 0.050 | 0.822 ± 0.084 | 0.728 ± 0.066 | 0.902 ± 0.092 |
| poker-8-9_vs_5 | 0.572 ± 0.039 | 0.558 ± 0.049 | 0.566 ± 0.032 | 0.572 ± 0.032 | 0.545 ± 0.051 | **0.585 ± 0.070** | 0.543 ± 0.028 | 0.572 ± 0.039 | 0.523 ± 0.032 | 0.512 ± 0.056 | 0.533 ± 0.046 |
| poker-8-9_vs_6 | 0.680 ± 0.087 | 0.824 ± 0.141 | 0.670 ± 0.096 | 0.644 ± 0.084 | 0.750 ± 0.143 | 0.628 ± 0.096 | 0.657 ± 0.105 | 0.680 ± 0.087 | 1.000 ± 0.001 | **1.000 ± 0.001** | 1.000 ± 0.001 |
| poker-8_vs_6 | 0.685 ± 0.101 | 0.685 ± 0.163 | 0.703 ± 0.123 | 0.685 ± 0.095 | 0.691 ± 0.098 | 0.669 ± 0.162 | 0.677 ± 0.100 | 0.685 ± 0.101 | **0.931 ± 0.084** | 0.931 ± 0.084 | 0.868 ± 0.163 |
| poker-9_vs_7 | 0.564 ± 0.082 | 0.548 ± 0.063 | 0.564 ± 0.082 | 0.562 ± 0.084 | 0.586 ± 0.095 | 0.613 ± 0.127 | 0.563 ± 0.081 | 0.564 ± 0.082 | **0.642 ± 0.180** | 0.619 ± 0.127 | 0.515 ± 0.076 |
| winequality-red-3_vs_5 | 0.516 ± 0.043 | 0.529 ± 0.066 | 0.506 ± 0.040 | 0.518 ± 0.045 | 0.528 ± 0.089 | **0.565 ± 0.056** | 0.525 ± 0.064 | 0.516 ± 0.043 | 0.515 ± 0.039 | 0.494 ± 0.009 | 0.506 ± 0.028 |
| winequality-red-4 | 0.552 ± 0.048 | 0.528 ± 0.030 | **0.576 ± 0.029** | 0.572 ± 0.036 | 0.564 ± 0.040 | 0.571 ± 0.036 | 0.548 ± 0.017 | 0.552 ± 0.050 | 0.526 ± 0.023 | 0.522 ± 0.014 | 0.532 ± 0.033 |
| winequality-red-8_vs_6-7 | 0.543 ± 0.041 | 0.557 ± 0.050 | 0.550 ± 0.039 | **0.562 ± 0.051** | 0.556 ± 0.054 | 0.555 ± 0.043 | 0.545 ± 0.048 | 0.543 ± 0.041 | 0.552 ± 0.058 | 0.548 ± 0.048 | 0.533 ± 0.048 |
| winequality-red-8_vs_6 | 0.609 ± 0.052 | 0.608 ± 0.064 | 0.605 ± 0.046 | 0.603 ± 0.067 | 0.579 ± 0.047 | 0.614 ± 0.058 | **0.630 ± 0.056** | 0.609 ± 0.052 | 0.556 ± 0.054 | 0.528 ± 0.052 | 0.543 ± 0.040 |
| winequality-white-3-9_vs_5 | 0.566 ± 0.063 | 0.544 ± 0.047 | 0.540 ± 0.054 | 0.546 ± 0.056 | 0.533 ± 0.061 | **0.643 ± 0.056** | 0.535 ± 0.037 | 0.566 ± 0.063 | 0.521 ± 0.027 | 0.507 ± 0.015 | 0.529 ± 0.035 |
| winequality-white-3_vs_7 | 0.539 ± 0.045 | 0.557 ± 0.060 | 0.576 ± 0.061 | 0.567 ± 0.055 | 0.590 ± 0.046 | **0.737 ± 0.086** | 0.524 ± 0.047 | 0.539 ± 0.045 | 0.573 ± 0.064 | 0.581 ± 0.081 | 0.573 ± 0.059 |
| winequality-white-9_vs_4 | 0.722 ± 0.163 | 0.672 ± 0.100 | 0.721 ± 0.162 | 0.721 ± 0.162 | **0.722 ± 0.162** | 0.692 ± 0.141 | 0.721 ± 0.162 | 0.722 ± 0.163 | 0.656 ± 0.093 | 0.633 ± 0.160 | 0.668 ± 0.157 |
| 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 | 0.770 ± 0.080 | **0.797 ± 0.108** | 0.744 ± 0.116 |
| ecoli1 | 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** | 0.745 ± 0.045 | 0.560 ± 0.114 | 0.817 ± 0.053 |
| ecoli2 | 0.855 ± 0.028 | 0.838 ± 0.035 | 0.850 ± 0.033 | 0.852 ± 0.036 | 0.854 ± 0.029 | **0.866 ± 0.037** | 0.852 ± 0.041 | 0.855 ± 0.028 | 0.816 ± 0.046 | 0.592 ± 0.125 | 0.779 ± 0.066 |
| ecoli3 | 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 | 0.727 ± 0.069 | 0.593 ± 0.120 | 0.748 ± 0.072 |
| glass0 | 0.767 ± 0.036 | 0.770 ± 0.060 | 0.772 ± 0.038 | 0.787 ± 0.033 | 0.781 ± 0.041 | **0.802 ± 0.041** | 0.794 ± 0.040 | 0.774 ± 0.025 | 0.712 ± 0.092 | 0.703 ± 0.068 | 0.780 ± 0.050 |
| glass1 | 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 | 0.683 ± 0.096 | 0.595 ± 0.051 | 0.639 ± 0.070 |
| 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** | 0.572 ± 0.038 | 0.528 ± 0.054 | 0.547 ± 0.032 |
| page-blocks0 | 0.917 ± 0.012 | 0.898 ± 0.010 | 0.915 ± 0.010 | 0.914 ± 0.008 | 0.907 ± 0.009 | 0.900 ± 0.009 | **0.919 ± 0.011** | 0.917 ± 0.008 | 0.891 ± 0.009 | 0.884 ± 0.020 | 0.892 ± 0.025 |
| pima | 0.665 ± 0.020 | 0.673 ± 0.023 | 0.660 ± 0.021 | 0.665 ± 0.015 | 0.663 ± 0.024 | **0.678 ± 0.027** | 0.658 ± 0.021 | 0.670 ± 0.025 | 0.649 ± 0.023 | 0.588 ± 0.049 | 0.632 ± 0.056 |
| vehicle1 | 0.668 ± 0.024 | 0.668 ± 0.021 | 0.680 ± 0.032 | 0.671 ± 0.025 | 0.664 ± 0.028 | **0.685 ± 0.023** | 0.674 ± 0.024 | 0.676 ± 0.014 | 0.644 ± 0.046 | 0.660 ± 0.048 | 0.663 ± 0.021 |
| vehicle3 | 0.666 ± 0.023 | **0.690 ± 0.023** | 0.655 ± 0.023 | 0.677 ± 0.028 | 0.671 ± 0.019 | 0.685 ± 0.014 | 0.674 ± 0.020 | 0.667 ± 0.013 | 0.647 ± 0.025 | 0.665 ± 0.022 | 0.658 ± 0.030 |
| yeast1 | 0.643 ± 0.017 | **0.653 ± 0.017** | 0.653 ± 0.016 | 0.650 ± 0.011 | 0.649 ± 0.012 | 0.653 ± 0.017 | 0.652 ± 0.021 | 0.641 ± 0.009 | 0.607 ± 0.031 | 0.507 ± 0.002 | 0.577 ± 0.042 |
| yeast3 | 0.864 ± 0.029 | 0.832 ± 0.033 | 0.863 ± 0.024 | 0.849 ± 0.015 | 0.845 ± 0.024 | 0.860 ± 0.027 | 0.854 ± 0.031 | **0.867 ± 0.030** | 0.829 ± 0.024 | 0.504 ± 0.003 | 0.854 ± 0.027 |

## **Table 11.** SVM – BAC

| Dataset name | SMOTE | polynom-fit-SMOTE | Lee | SMOBD | G-SMOTE | LVQ-SMOTE | Assembled-SMOTE | SMOTE-TomekLinks | JFOTS_pr | JFOTS_rc | JFOTS_prom |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 0.606 ± 0.090 | 0.653 ± 0.053 | **0.668 ± 0.043** |
| abalone9-18 | 0.740 ± 0.052 | 0.698 ± 0.036 | 0.745 ± 0.035 | 0.750 ± 0.042 | 0.738 ± 0.055 | **0.782 ± 0.043** | 0.739 ± 0.038 | 0.739 ± 0.051 | 0.671 ± 0.047 | 0.695 ± 0.117 | 0.702 ± 0.099 |
| ecoli-0-1-3-7_vs_2-6 | 0.845 ± 0.075 | **0.847 ± 0.078** | 0.838 ± 0.074 | 0.842 ± 0.076 | 0.845 ± 0.079 | 0.828 ± 0.078 | 0.844 ± 0.075 | 0.845 ± 0.075 | 0.777 ± 0.112 | 0.762 ± 0.124 | 0.774 ± 0.103 |
| glass-0-1-6_vs_2 | 0.740 ± 0.099 | 0.697 ± 0.081 | **0.744 ± 0.090** | 0.740 ± 0.079 | 0.690 ± 0.076 | 0.622 ± 0.083 | 0.743 ± 0.072 | 0.740 ± 0.100 | 0.658 ± 0.115 | 0.653 ± 0.116 | 0.585 ± 0.054 |
| glass-0-1-6_vs_5 | 0.820 ± 0.098 | 0.792 ± 0.117 | 0.820 ± 0.098 | 0.820 ± 0.098 | 0.792 ± 0.116 | 0.843 ± 0.147 | 0.820 ± 0.098 | 0.820 ± 0.098 | 0.758 ± 0.103 | **0.852 ± 0.173** | 0.791 ± 0.153 |
| glass2 | 0.642 ± 0.143 | 0.638 ± 0.134 | 0.648 ± 0.140 | 0.637 ± 0.137 | 0.651 ± 0.137 | **0.677 ± 0.158** | 0.648 ± 0.146 | 0.641 ± 0.143 | 0.650 ± 0.100 | 0.608 ± 0.102 | 0.619 ± 0.133 |
| glass4 | **0.892 ± 0.094** | 0.852 ± 0.116 | 0.883 ± 0.108 | 0.876 ± 0.121 | 0.876 ± 0.103 | 0.870 ± 0.111 | 0.876 ± 0.082 | **0.892 ± 0.094** | 0.826 ± 0.104 | 0.760 ± 0.161 | 0.789 ± 0.090 |
| glass5 | 0.818 ± 0.106 | 0.809 ± 0.103 | 0.828 ± 0.099 | 0.828 ± 0.099 | 0.817 ± 0.106 | **0.854 ± 0.155** | 0.818 ± 0.106 | 0.818 ± 0.106 | 0.802 ± 0.104 | 0.808 ± 0.110 | 0.840 ± 0.129 |
| page-blocks-1-3_vs_4 | 0.904 ± 0.114 | 0.791 ± 0.070 | **0.908 ± 0.112** | 0.907 ± 0.112 | 0.903 ± 0.119 | 0.796 ± 0.048 | 0.888 ± 0.116 | 0.904 ± 0.114 | 0.806 ± 0.073 | 0.907 ± 0.078 | 0.847 ± 0.119 |
| yeast-0-5-6-7-9_vs_4 | 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 | 0.680 ± 0.058 | 0.523 ± 0.116 | 0.676 ± 0.083 |
| yeast-1-2-8-9_vs_7 | 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 | 0.565 ± 0.050 | 0.509 ± 0.004 | 0.587 ± 0.061 |
| yeast-1-4-5-8_vs_7 | 0.571 ± 0.051 | 0.568 ± 0.051 | 0.564 ± 0.047 | 0.561 ± 0.037 | 0.577 ± 0.047 | **0.600 ± 0.034** | 0.557 ± 0.035 | 0.571 ± 0.050 | 0.564 ± 0.073 | 0.508 ± 0.005 | 0.564 ± 0.057 |
| yeast-1_vs_7 | 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 | 0.584 ± 0.044 | 0.510 ± 0.024 | 0.614 ± 0.062 |
| yeast-2_vs_4 | 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 | 0.846 ± 0.049 | 0.698 ± 0.212 | 0.855 ± 0.049 |
| yeast-2_vs_8 | 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 | 0.767 ± 0.061 | 0.536 ± 0.051 | 0.759 ± 0.092 |
| 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 | 0.722 ± 0.080 | 0.498 ± 0.008 | 0.713 ± 0.070 |
| yeast5 | 0.927 ± 0.029 | 0.924 ± 0.030 | 0.927 ± 0.029 | 0.927 ± 0.029 | 0.930 ± 0.028 | **0.941 ± 0.024** | 0.927 ± 0.029 | 0.927 ± 0.029 | 0.931 ± 0.036 | 0.550 ± 0.123 | 0.883 ± 0.128 |
| 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 | 0.762 ± 0.054 | 0.521 ± 0.032 | 0.805 ± 0.062 |
| cleveland-0_vs_4 | 0.719 ± 0.089 | 0.681 ± 0.082 | 0.728 ± 0.101 | 0.736 ± 0.099 | 0.704 ± 0.084 | **0.845 ± 0.052** | 0.719 ± 0.088 | 0.719 ± 0.089 | 0.749 ± 0.037 | 0.673 ± 0.120 | 0.689 ± 0.057 |
| ecoli-0-1-4-7_vs_2-3-5-6 | 0.872 ± 0.032 | 0.851 ± 0.020 | 0.867 ± 0.029 | 0.866 ± 0.019 | 0.870 ± 0.033 | **0.884 ± 0.033** | 0.871 ± 0.037 | 0.872 ± 0.032 | 0.738 ± 0.115 | 0.629 ± 0.166 | 0.790 ± 0.088 |
| ecoli-0-1_vs_2-3-5 | 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 | 0.804 ± 0.097 | 0.731 ± 0.184 | 0.832 ± 0.069 |
| ecoli-0-2-6-7_vs_3-5 | 0.834 ± 0.056 | 0.842 ± 0.061 | 0.838 ± 0.056 | 0.843 ± 0.056 | 0.853 ± 0.063 | **0.871 ± 0.050** | 0.835 ± 0.059 | 0.834 ± 0.056 | 0.827 ± 0.049 | 0.647 ± 0.159 | 0.849 ± 0.052 |
| ecoli-0-6-7_vs_3-5 | 0.846 ± 0.055 | 0.851 ± 0.056 | 0.843 ± 0.056 | 0.857 ± 0.059 | 0.856 ± 0.062 | **0.869 ± 0.060** | 0.846 ± 0.061 | 0.846 ± 0.055 | 0.846 ± 0.052 | 0.689 ± 0.163 | 0.843 ± 0.055 |
| ecoli-0-6-7_vs_5 | 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 | 0.868 ± 0.064 | 0.672 ± 0.143 | 0.861 ± 0.076 |
| glass-0-1-4-6_vs_2 | 0.710 ± 0.101 | 0.669 ± 0.128 | 0.713 ± 0.107 | 0.702 ± 0.131 | 0.665 ± 0.120 | 0.625 ± 0.090 | **0.716 ± 0.127** | 0.709 ± 0.101 | 0.593 ± 0.111 | 0.601 ± 0.102 | 0.680 ± 0.100 |
| glass-0-1-5_vs_2 | 0.696 ± 0.063 | 0.659 ± 0.067 | 0.701 ± 0.062 | **0.711 ± 0.071** | 0.671 ± 0.071 | 0.581 ± 0.049 | 0.685 ± 0.068 | 0.696 ± 0.063 | 0.637 ± 0.060 | 0.600 ± 0.123 | 0.640 ± 0.112 |
| yeast-0-2-5-6_vs_3-7-8-9 | 0.782 ± 0.026 | 0.775 ± 0.041 | 0.778 ± 0.032 | 0.788 ± 0.019 | 0.772 ± 0.038 | **0.791 ± 0.030** | 0.781 ± 0.029 | 0.783 ± 0.026 | 0.695 ± 0.120 | 0.575 ± 0.123 | 0.688 ± 0.136 |
| yeast-0-3-5-9_vs_7-8 | **0.696 ± 0.035** | 0.640 ± 0.032 | 0.687 ± 0.036 | 0.690 ± 0.045 | 0.689 ± 0.041 | 0.660 ± 0.053 | 0.692 ± 0.034 | 0.695 ± 0.036 | 0.599 ± 0.085 | 0.519 ± 0.028 | 0.614 ± 0.069 |
| abalone-17_vs_7-8-9-10 | 0.814 ± 0.021 | 0.742 ± 0.040 | 0.809 ± 0.024 | 0.810 ± 0.034 | 0.806 ± 0.028 | **0.823 ± 0.025** | 0.816 ± 0.024 | 0.813 ± 0.019 | 0.670 ± 0.084 | 0.748 ± 0.068 | 0.692 ± 0.066 |
| abalone-19_vs_10-11-12-13 | 0.633 ± 0.062 | 0.582 ± 0.058 | 0.637 ± 0.061 | 0.636 ± 0.052 | 0.629 ± 0.058 | **0.659 ± 0.075** | 0.629 ± 0.067 | 0.633 ± 0.062 | 0.584 ± 0.085 | 0.579 ± 0.076 | 0.573 ± 0.089 |
| abalone-20_vs_8-9-10 | 0.806 ± 0.048 | 0.775 ± 0.041 | 0.809 ± 0.043 | 0.802 ± 0.047 | 0.797 ± 0.051 | **0.884 ± 0.051** | 0.798 ± 0.055 | 0.806 ± 0.048 | 0.702 ± 0.128 | 0.676 ± 0.095 | 0.721 ± 0.069 |
| abalone-21_vs_8 | 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 | 0.716 ± 0.118 | 0.651 ± 0.110 | 0.706 ± 0.104 |
| flare-F | 0.738 ± 0.040 | 0.689 ± 0.046 | 0.732 ± 0.044 | 0.743 ± 0.049 | 0.725 ± 0.043 | **0.777 ± 0.047** | 0.738 ± 0.045 | 0.738 ± 0.040 | 0.638 ± 0.073 | 0.573 ± 0.069 | 0.694 ± 0.104 |
| 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 | 0.967 ± 0.054 | 0.967 ± 0.054 | 0.967 ± 0.054 |
| 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 | **0.991 ± 0.018** | **0.991 ± 0.018** | **0.991 ± 0.018** |
| 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 | 0.867 ± 0.095 | 0.727 ± 0.064 | 0.814 ± 0.121 |
| poker-8-9_vs_5 | 0.625 ± 0.067 | 0.588 ± 0.066 | 0.617 ± 0.058 | 0.613 ± 0.056 | 0.614 ± 0.073 | **0.677 ± 0.074** | 0.614 ± 0.047 | 0.625 ± 0.067 | 0.614 ± 0.117 | 0.512 ± 0.046 | 0.648 ± 0.123 |
| poker-8-9_vs_6 | 0.757 ± 0.064 | 0.724 ± 0.047 | 0.757 ± 0.064 | 0.744 ± 0.054 | 0.732 ± 0.066 | 0.937 ± 0.055 | 0.749 ± 0.086 | 0.757 ± 0.064 | 0.977 ± 0.062 | **0.978 ± 0.062** | 0.977 ± 0.062 |
| poker-8_vs_6 | 0.783 ± 0.073 | 0.712 ± 0.059 | 0.783 ± 0.073 | 0.789 ± 0.066 | 0.746 ± 0.081 | **0.968 ± 0.051** | 0.789 ± 0.065 | 0.783 ± 0.073 | 0.901 ± 0.124 | 0.933 ± 0.104 | 0.845 ± 0.174 |
| poker-9_vs_7 | 0.636 ± 0.104 | 0.624 ± 0.097 | 0.636 ± 0.104 | 0.636 ± 0.104 | 0.636 ± 0.130 | 0.680 ± 0.135 | 0.611 ± 0.087 | 0.636 ± 0.104 | **0.685 ± 0.188** | 0.620 ± 0.123 | 0.613 ± 0.144 |
| winequality-red-3_vs_5 | 0.540 ± 0.049 | 0.542 ± 0.050 | 0.539 ± 0.049 | 0.540 ± 0.049 | 0.541 ± 0.049 | **0.608 ± 0.057** | 0.550 ± 0.050 | 0.540 ± 0.049 | 0.540 ± 0.078 | 0.604 ± 0.100 | 0.539 ± 0.054 |
| winequality-red-4 | 0.638 ± 0.034 | 0.611 ± 0.029 | 0.632 ± 0.033 | **0.644 ± 0.035** | 0.625 ± 0.032 | 0.617 ± 0.029 | 0.641 ± 0.034 | 0.637 ± 0.033 | 0.542 ± 0.049 | 0.605 ± 0.072 | 0.532 ± 0.059 |
| winequality-red-8_vs_6-7 | 0.571 ± 0.054 | 0.550 ± 0.055 | **0.572 ± 0.054** | 0.571 ± 0.054 | 0.555 ± 0.062 | 0.541 ± 0.063 | 0.557 ± 0.048 | 0.571 ± 0.054 | 0.552 ± 0.036 | 0.571 ± 0.079 | 0.549 ± 0.053 |
| winequality-red-8_vs_6 | 0.614 ± 0.031 | 0.610 ± 0.024 | 0.615 ± 0.031 | 0.615 ± 0.030 | 0.625 ± 0.030 | 0.627 ± 0.065 | 0.625 ± 0.030 | 0.614 ± 0.031 | **0.642 ± 0.053** | 0.602 ± 0.097 | 0.575 ± 0.062 |
| winequality-white-3-9_vs_5 | 0.565 ± 0.051 | 0.529 ± 0.045 | 0.559 ± 0.057 | 0.560 ± 0.048 | 0.542 ± 0.039 | **0.685 ± 0.039** | 0.557 ± 0.051 | 0.565 ± 0.051 | 0.565 ± 0.067 | 0.561 ± 0.036 | 0.571 ± 0.046 |
| winequality-white-3_vs_7 | 0.533 ± 0.049 | 0.528 ± 0.041 | 0.549 ± 0.066 | 0.547 ± 0.067 | 0.546 ± 0.039 | **0.756 ± 0.077** | 0.539 ± 0.047 | 0.533 ± 0.049 | 0.549 ± 0.051 | 0.644 ± 0.126 | 0.586 ± 0.094 |
| winequality-white-9_vs_4 | 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 | 0.695 ± 0.164 | 0.702 ± 0.137 | 0.734 ± 0.151 |
| 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 | 0.751 ± 0.120 | **0.752 ± 0.126** | 0.726 ± 0.142 |
| 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 | 0.881 ± 0.028 | 0.576 ± 0.146 | **0.889 ± 0.025** |
| 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 | 0.866 ± 0.046 | 0.609 ± 0.148 | 0.871 ± 0.049 |
| ecoli3 | 0.889 ± 0.022 | 0.893 ± 0.024 | 0.887 ± 0.022 | **0.894 ± 0.017** | 0.893 ± 0.021 | 0.893 ± 0.019 | 0.887 ± 0.021 | 0.892 ± 0.021 | 0.839 ± 0.042 | 0.670 ± 0.182 | 0.825 ± 0.067 |
| glass0 | 0.779 ± 0.040 | 0.790 ± 0.020 | 0.785 ± 0.039 | 0.778 ± 0.037 | **0.793 ± 0.037** | 0.771 ± 0.032 | 0.792 ± 0.034 | 0.778 ± 0.036 | 0.771 ± 0.030 | 0.726 ± 0.066 | 0.729 ± 0.052 |
| 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 | 0.667 ± 0.083 | 0.618 ± 0.067 | 0.644 ± 0.053 |
| 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 | 0.594 ± 0.062 | 0.583 ± 0.088 | 0.595 ± 0.058 |
| page-blocks0 | 0.931 ± 0.008 | 0.900 ± 0.008 | 0.931 ± 0.007 | 0.923 ± 0.009 | 0.932 ± 0.008 | 0.848 ± 0.016 | 0.930 ± 0.008 | **0.932 ± 0.008** | 0.888 ± 0.039 | 0.901 ± 0.021 | 0.874 ± 0.027 |
| pima | 0.727 ± 0.030 | 0.722 ± 0.027 | 0.729 ± 0.023 | 0.726 ± 0.022 | 0.731 ± 0.025 | 0.730 ± 0.017 | **0.732 ± 0.028** | 0.728 ± 0.032 | 0.711 ± 0.012 | 0.651 ± 0.053 | 0.693 ± 0.054 |
| vehicle1 | 0.789 ± 0.027 | 0.749 ± 0.023 | 0.790 ± 0.026 | 0.790 ± 0.020 | 0.798 ± 0.016 | 0.792 ± 0.023 | 0.791 ± 0.019 | 0.793 ± 0.025 | 0.682 ± 0.050 | **0.804 ± 0.019** | 0.771 ± 0.041 |
| vehicle3 | 0.789 ± 0.022 | 0.734 ± 0.017 | 0.790 ± 0.018 | **0.797 ± 0.026** | 0.790 ± 0.016 | 0.789 ± 0.023 | 0.789 ± 0.018 | 0.790 ± 0.021 | 0.671 ± 0.031 | 0.792 ± 0.017 | 0.742 ± 0.041 |
| 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 | 0.645 ± 0.046 | 0.507 ± 0.002 | 0.647 ± 0.049 |
| yeast3 | 0.893 ± 0.022 | 0.884 ± 0.027 | 0.894 ± 0.020 | 0.893 ± 0.026 | 0.889 ± 0.020 | **0.896 ± 0.020** | 0.895 ± 0.023 | 0.893 ± 0.022 | 0.870 ± 0.029 | 0.504 ± 0.003 | 0.892 ± 0.018 |

## 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 | JFOTS_prom |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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** | 0.074 ± 0.114 | 0.035 ± 0.106 | 0.000 ± 0.000 |
| abalone9-18 | 0.696 ± 0.043 | 0.666 ± 0.064 | 0.676 ± 0.047 | 0.681 ± 0.055 | 0.662 ± 0.069 | 0.649 ± 0.054 | 0.687 ± 0.056 | **0.696 ± 0.044** | 0.493 ± 0.076 | 0.347 ± 0.234 | 0.440 ± 0.209 |
| ecoli-0-1-3-7_vs_2-6 | 0.817 ± 0.096 | **0.818 ± 0.097** | 0.817 ± 0.096 | 0.816 ± 0.096 | 0.818 ± 0.097 | 0.816 ± 0.097 | 0.817 ± 0.096 | 0.817 ± 0.096 | 0.597 ± 0.241 | 0.593 ± 0.230 | 0.655 ± 0.245 |
| glass-0-1-6_vs_2 | 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 | 0.465 ± 0.173 | 0.342 ± 0.262 | 0.363 ± 0.198 |
| glass-0-1-6_vs_5 | 0.905 ± 0.110 | **0.906 ± 0.111** | 0.905 ± 0.110 | 0.904 ± 0.111 | 0.873 ± 0.175 | 0.863 ± 0.158 | 0.904 ± 0.110 | 0.905 ± 0.110 | 0.732 ± 0.164 | 0.624 ± 0.384 | 0.831 ± 0.166 |
| glass2 | 0.543 ± 0.246 | 0.523 ± 0.291 | 0.522 ± 0.300 | **0.558 ± 0.255** | 0.513 ± 0.288 | 0.551 ± 0.222 | 0.520 ± 0.295 | 0.541 ± 0.245 | 0.409 ± 0.292 | 0.335 ± 0.251 | 0.368 ± 0.285 |
| glass4 | 0.897 ± 0.063 | **0.898 ± 0.075** | 0.870 ± 0.063 | 0.880 ± 0.062 | 0.873 ± 0.077 | 0.858 ± 0.042 | 0.888 ± 0.054 | 0.897 ± 0.063 | 0.715 ± 0.109 | 0.634 ± 0.328 | 0.733 ± 0.170 |
| glass5 | 0.917 ± 0.145 | **0.919 ± 0.146** | 0.906 ± 0.151 | 0.917 ± 0.145 | 0.908 ± 0.143 | 0.849 ± 0.125 | 0.917 ± 0.145 | 0.917 ± 0.145 | 0.828 ± 0.098 | 0.790 ± 0.143 | 0.831 ± 0.165 |
| page-blocks-1-3_vs_4 | **0.983 ± 0.023** | 0.978 ± 0.024 | 0.982 ± 0.023 | 0.983 ± 0.023 | 0.941 ± 0.118 | 0.980 ± 0.016 | 0.976 ± 0.026 | **0.983 ± 0.023** | 0.823 ± 0.105 | 0.812 ± 0.157 | 0.905 ± 0.121 |
| yeast-0-5-6-7-9_vs_4 | 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 | 0.550 ± 0.073 | 0.069 ± 0.206 | 0.542 ± 0.211 |
| yeast-1-2-8-9_vs_7 | 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 | 0.398 ± 0.104 | 0.000 ± 0.000 | 0.278 ± 0.196 |
| yeast-1-4-5-8_vs_7 | 0.573 ± 0.058 | 0.528 ± 0.098 | **0.577 ± 0.060** | 0.543 ± 0.086 | 0.482 ± 0.092 | 0.519 ± 0.063 | 0.563 ± 0.062 | 0.573 ± 0.052 | 0.194 ± 0.201 | 0.000 ± 0.000 | 0.276 ± 0.205 |
| yeast-1_vs_7 | 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 | 0.435 ± 0.070 | 0.000 ± 0.000 | 0.442 ± 0.186 |
| yeast-2_vs_4 | 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 | 0.821 ± 0.067 | 0.426 ± 0.427 | 0.823 ± 0.048 |
| yeast-2_vs_8 | 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 | 0.747 ± 0.072 | 0.154 ± 0.309 | 0.677 ± 0.237 |
| 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 | 0.502 ± 0.094 | 0.000 ± 0.000 | 0.423 ± 0.220 |
| 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 | 0.808 ± 0.189 | 0.066 ± 0.199 | 0.778 ± 0.266 |
| 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 | 0.620 ± 0.146 | 0.000 ± 0.000 | 0.656 ± 0.153 |
| cleveland-0_vs_4 | 0.869 ± 0.083 | 0.863 ± 0.039 | 0.878 ± 0.031 | 0.868 ± 0.082 | 0.867 ± 0.038 | 0.794 ± 0.087 | **0.880 ± 0.027** | 0.869 ± 0.083 | 0.726 ± 0.091 | 0.481 ± 0.342 | 0.648 ± 0.225 |
| ecoli-0-1-4-7_vs_2-3-5-6 | 0.882 ± 0.018 | 0.874 ± 0.026 | 0.878 ± 0.020 | 0.873 ± 0.020 | 0.882 ± 0.024 | 0.874 ± 0.030 | 0.880 ± 0.022 | **0.882 ± 0.019** | 0.664 ± 0.172 | 0.281 ± 0.353 | 0.748 ± 0.117 |
| ecoli-0-1_vs_2-3-5 | 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 | 0.796 ± 0.175 | 0.531 ± 0.365 | 0.783 ± 0.079 |
| ecoli-0-2-6-7_vs_3-5 | 0.831 ± 0.059 | 0.829 ± 0.060 | 0.833 ± 0.068 | 0.831 ± 0.061 | 0.834 ± 0.065 | **0.834 ± 0.042** | 0.830 ± 0.057 | 0.830 ± 0.058 | 0.789 ± 0.049 | 0.325 ± 0.308 | 0.800 ± 0.084 |
| ecoli-0-6-7_vs_3-5 | 0.844 ± 0.061 | 0.848 ± 0.060 | 0.847 ± 0.071 | **0.850 ± 0.059** | 0.838 ± 0.068 | 0.833 ± 0.057 | 0.844 ± 0.060 | 0.845 ± 0.060 | 0.801 ± 0.062 | 0.381 ± 0.383 | 0.814 ± 0.059 |
| ecoli-0-6-7_vs_5 | 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 | 0.822 ± 0.092 | 0.272 ± 0.314 | 0.852 ± 0.078 |
| glass-0-1-4-6_vs_2 | **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 | 0.432 ± 0.176 | 0.254 ± 0.288 | 0.479 ± 0.233 |
| glass-0-1-5_vs_2 | 0.662 ± 0.070 | 0.660 ± 0.063 | **0.673 ± 0.073** | 0.654 ± 0.077 | 0.638 ± 0.122 | 0.602 ± 0.078 | 0.669 ± 0.068 | 0.661 ± 0.070 | 0.494 ± 0.202 | 0.325 ± 0.246 | 0.461 ± 0.254 |
| yeast-0-2-5-6_vs_3-7-8-9 | 0.767 ± 0.036 | 0.760 ± 0.030 | **0.771 ± 0.031** | 0.768 ± 0.028 | 0.767 ± 0.034 | 0.755 ± 0.036 | 0.768 ± 0.035 | 0.768 ± 0.036 | 0.511 ± 0.273 | 0.247 ± 0.257 | 0.503 ± 0.234 |
| yeast-0-3-5-9_vs_7-8 | 0.662 ± 0.042 | 0.649 ± 0.043 | 0.662 ± 0.043 | 0.652 ± 0.050 | 0.657 ± 0.048 | 0.653 ± 0.065 | 0.650 ± 0.037 | **0.664 ± 0.044** | 0.305 ± 0.192 | 0.065 ± 0.142 | 0.428 ± 0.188 |
| abalone-17_vs_7-8-9-10 | 0.722 ± 0.061 | 0.672 ± 0.048 | **0.726 ± 0.060** | 0.717 ± 0.060 | 0.666 ± 0.062 | 0.706 ± 0.056 | 0.714 ± 0.059 | 0.721 ± 0.061 | 0.405 ± 0.117 | 0.455 ± 0.109 | 0.162 ± 0.177 |
| abalone-19_vs_10-11-12-13 | 0.492 ± 0.070 | 0.379 ± 0.064 | 0.498 ± 0.076 | **0.500 ± 0.091** | 0.385 ± 0.153 | 0.454 ± 0.085 | 0.462 ± 0.085 | 0.492 ± 0.070 | 0.179 ± 0.151 | 0.059 ± 0.120 | 0.117 ± 0.151 |
| abalone-20_vs_8-9-10 | 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 | 0.346 ± 0.158 | 0.121 ± 0.152 | 0.273 ± 0.234 |
| abalone-21_vs_8 | **0.810 ± 0.104** | 0.732 ± 0.107 | 0.793 ± 0.092 | 0.794 ± 0.093 | 0.768 ± 0.101 | 0.769 ± 0.082 | 0.801 ± 0.098 | 0.810 ± 0.104 | 0.596 ± 0.109 | 0.182 ± 0.284 | 0.515 ± 0.290 |
| flare-F | 0.651 ± 0.061 | 0.619 ± 0.057 | 0.647 ± 0.072 | 0.651 ± 0.063 | 0.614 ± 0.068 | **0.654 ± 0.053** | 0.653 ± 0.057 | 0.651 ± 0.062 | 0.262 ± 0.200 | 0.043 ± 0.085 | 0.272 ± 0.163 |
| 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 | **0.969 ± 0.033** | **0.969 ± 0.033** | **0.969 ± 0.033** |
| 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** | 0.957 ± 0.040 | 0.957 ± 0.040 | 0.957 ± 0.040 |
| kr-vs-k-zero_vs_eight | 0.937 ± 0.052 | 0.926 ± 0.057 | 0.941 ± 0.052 | 0.941 ± 0.052 | 0.921 ± 0.067 | **0.941 ± 0.066** | 0.924 ± 0.066 | 0.937 ± 0.052 | 0.721 ± 0.259 | 0.000 ± 0.000 | 0.715 ± 0.205 |
| poker-8-9_vs_5 | 0.486 ± 0.126 | 0.406 ± 0.091 | 0.498 ± 0.136 | 0.484 ± 0.129 | 0.294 ± 0.170 | **0.577 ± 0.084** | 0.492 ± 0.132 | 0.486 ± 0.126 | 0.212 ± 0.183 | 0.000 ± 0.000 | 0.182 ± 0.230 |
| poker-8-9_vs_6 | 0.948 ± 0.042 | 0.908 ± 0.036 | 0.947 ± 0.041 | 0.947 ± 0.041 | 0.899 ± 0.060 | 0.976 ± 0.027 | 0.936 ± 0.032 | 0.948 ± 0.042 | **0.988 ± 0.037** | **0.988 ± 0.037** | **0.988 ± 0.037** |
| poker-8_vs_6 | 0.940 ± 0.065 | 0.838 ± 0.067 | 0.940 ± 0.065 | 0.939 ± 0.065 | 0.860 ± 0.122 | **0.978 ± 0.018** | 0.926 ± 0.087 | 0.940 ± 0.065 | 0.895 ± 0.109 | 0.924 ± 0.093 | 0.800 ± 0.298 |
| poker-9_vs_7 | 0.773 ± 0.290 | **0.773 ± 0.291** | 0.773 ± 0.290 | 0.773 ± 0.291 | 0.748 ± 0.276 | 0.723 ± 0.265 | 0.761 ± 0.284 | 0.773 ± 0.290 | 0.484 ± 0.372 | 0.297 ± 0.330 | 0.299 ± 0.331 |
| winequality-red-3_vs_5 | 0.388 ± 0.206 | 0.371 ± 0.193 | 0.388 ± 0.206 | 0.388 ± 0.206 | 0.371 ± 0.193 | **0.392 ± 0.208** | 0.371 ± 0.192 | 0.388 ± 0.206 | 0.134 ± 0.204 | 0.132 ± 0.202 | 0.133 ± 0.203 |
| winequality-red-4 | 0.525 ± 0.046 | 0.484 ± 0.086 | 0.523 ± 0.055 | 0.525 ± 0.039 | 0.482 ± 0.074 | 0.410 ± 0.056 | **0.535 ± 0.039** | 0.525 ± 0.046 | 0.175 ± 0.157 | 0.196 ± 0.171 | 0.201 ± 0.147 |
| winequality-red-8_vs_6-7 | 0.332 ± 0.195 | 0.334 ± 0.202 | 0.345 ± 0.197 | 0.345 ± 0.197 | 0.334 ± 0.148 | 0.302 ± 0.179 | **0.356 ± 0.152** | 0.332 ± 0.195 | 0.223 ± 0.188 | 0.270 ± 0.185 | 0.237 ± 0.201 |
| winequality-red-8_vs_6 | **0.573 ± 0.083** | 0.555 ± 0.083 | 0.555 ± 0.089 | 0.573 ± 0.083 | 0.486 ± 0.100 | 0.496 ± 0.102 | 0.567 ± 0.074 | 0.573 ± 0.083 | 0.385 ± 0.148 | 0.209 ± 0.176 | 0.280 ± 0.198 |
| winequality-white-3-9_vs_5 | **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** | 0.179 ± 0.197 | 0.218 ± 0.150 | 0.240 ± 0.171 |
| winequality-white-3_vs_7 | 0.489 ± 0.249 | 0.360 ± 0.208 | 0.494 ± 0.254 | 0.465 ± 0.255 | 0.367 ± 0.201 | **0.502 ± 0.209** | 0.479 ± 0.264 | 0.489 ± 0.249 | 0.225 ± 0.196 | 0.491 ± 0.208 | 0.434 ± 0.243 |
| winequality-white-9_vs_4 | 0.865 ± 0.105 | **0.869 ± 0.109** | 0.865 ± 0.105 | 0.646 ± 0.344 | 0.865 ± 0.106 | 0.653 ± 0.351 | 0.865 ± 0.105 | 0.865 ± 0.105 | 0.427 ± 0.354 | 0.429 ± 0.356 | 0.578 ± 0.297 |
| 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** | 0.695 ± 0.268 | 0.667 ± 0.252 | 0.595 ± 0.318 |
| 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 | 0.797 ± 0.057 | 0.158 ± 0.316 | 0.836 ± 0.038 |
| 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 | 0.857 ± 0.072 | 0.239 ± 0.367 | 0.825 ± 0.106 |
| ecoli3 | 0.865 ± 0.020 | 0.856 ± 0.023 | **0.867 ± 0.015** | 0.858 ± 0.026 | 0.852 ± 0.036 | 0.850 ± 0.029 | 0.860 ± 0.019 | 0.865 ± 0.016 | 0.739 ± 0.100 | 0.333 ± 0.341 | 0.726 ± 0.098 |
| glass0 | 0.787 ± 0.035 | 0.794 ± 0.037 | 0.782 ± 0.033 | 0.789 ± 0.028 | 0.792 ± 0.027 | 0.785 ± 0.040 | 0.796 ± 0.030 | **0.796 ± 0.035** | 0.756 ± 0.070 | 0.677 ± 0.237 | 0.776 ± 0.043 |
| 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 | 0.669 ± 0.131 | 0.356 ± 0.267 | 0.648 ± 0.103 |
| 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 | 0.514 ± 0.094 | 0.482 ± 0.103 | 0.503 ± 0.088 |
| 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 | 0.893 ± 0.016 | 0.898 ± 0.020 | 0.893 ± 0.022 |
| pima | 0.684 ± 0.021 | **0.706 ± 0.019** | 0.684 ± 0.014 | 0.687 ± 0.016 | 0.681 ± 0.018 | 0.688 ± 0.022 | 0.686 ± 0.017 | 0.692 ± 0.024 | 0.668 ± 0.026 | 0.575 ± 0.085 | 0.627 ± 0.083 |
| vehicle1 | 0.722 ± 0.026 | **0.739 ± 0.018** | 0.720 ± 0.024 | 0.735 ± 0.025 | 0.724 ± 0.019 | 0.718 ± 0.023 | 0.730 ± 0.023 | 0.723 ± 0.027 | 0.623 ± 0.045 | 0.716 ± 0.031 | 0.702 ± 0.026 |
| 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 | 0.602 ± 0.034 | 0.676 ± 0.036 | 0.658 ± 0.042 |
| 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 | 0.444 ± 0.227 | 0.000 ± 0.000 | 0.347 ± 0.276 |
| yeast3 | 0.871 ± 0.019 | 0.871 ± 0.023 | 0.872 ± 0.020 | 0.865 ± 0.025 | 0.868 ± 0.019 | 0.866 ± 0.018 | **0.872 ± 0.019** | 0.870 ± 0.019 | 0.841 ± 0.025 | 0.000 ± 0.000 | 0.663 ± 0.188 |

## Table 13. CART – Precision

| Dataset name | SMOTE | polynom-fit-SMOTE | Lee | SMOBD | G-SMOTE | LVQ-SMOTE | Assembled-SMOTE | SMOTE-TomekLinks | JFOTS_pr | JFOTS_rc | JFOTS_prom |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 0.036 ± 0.051 | 0.014 ± 0.018 | 0.011 ± 0.006 |
| abalone9-18 | 0.236 ± 0.058 | 0.222 ± 0.067 | 0.237 ± 0.029 | 0.256 ± 0.070 | 0.270 ± 0.050 | 0.196 ± 0.057 | 0.224 ± 0.048 | 0.230 ± 0.057 | **0.399 ± 0.045** | 0.191 ± 0.112 | 0.299 ± 0.138 |
| ecoli-0-1-3-7_vs_2-6 | 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 | 0.338 ± 0.164 | 0.315 ± 0.281 | 0.345 ± 0.376 |
| glass-0-1-6_vs_2 | 0.253 ± 0.080 | 0.222 ± 0.146 | 0.281 ± 0.059 | **0.284 ± 0.073** | 0.268 ± 0.116 | 0.168 ± 0.106 | 0.262 ± 0.128 | 0.254 ± 0.087 | 0.164 ± 0.085 | 0.173 ± 0.110 | 0.178 ± 0.102 |
| glass-0-1-6_vs_5 | **0.759 ± 0.181** | 0.704 ± 0.145 | **0.759 ± 0.181** | **0.759 ± 0.181** | 0.604 ± 0.280 | 0.747 ± 0.186 | **0.759 ± 0.181** | **0.759 ± 0.181** | 0.430 ± 0.400 | 0.572 ± 0.209 | 0.543 ± 0.367 |
| glass2 | 0.214 ± 0.174 | 0.174 ± 0.128 | 0.214 ± 0.185 | 0.237 ± 0.164 | **0.240 ± 0.221** | 0.143 ± 0.081 | 0.204 ± 0.153 | 0.228 ± 0.173 | 0.220 ± 0.253 | 0.144 ± 0.126 | 0.125 ± 0.114 |
| glass4 | 0.610 ± 0.155 | 0.573 ± 0.117 | **0.614 ± 0.167** | 0.604 ± 0.160 | 0.580 ± 0.186 | 0.425 ± 0.122 | 0.612 ± 0.176 | 0.610 ± 0.155 | 0.510 ± 0.205 | 0.480 ± 0.293 | 0.432 ± 0.232 |
| 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 | 0.718 ± 0.235 | **0.746 ± 0.193** | 0.676 ± 0.221 |
| page-blocks-1-3_vs_4 | **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** | 0.828 ± 0.113 | 0.785 ± 0.248 | 0.834 ± 0.107 |
| yeast-0-5-6-7-9_vs_4 | 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 ± 0.063 | 0.115 ± 0.095 | 0.341 ± 0.127 |
| yeast-1-2-8-9_vs_7 | 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 | 0.143 ± 0.091 | 0.032 ± 0.000 | **0.161 ± 0.138** |
| yeast-1-4-5-8_vs_7 | 0.072 ± 0.044 | **0.112 ± 0.041** | 0.073 ± 0.053 | 0.065 ± 0.042 | 0.076 ± 0.048 | 0.050 ± 0.019 | 0.086 ± 0.025 | 0.070 ± 0.048 | 0.072 ± 0.066 | 0.044 ± 0.000 | 0.053 ± 0.053 |
| yeast-1_vs_7 | 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 | 0.156 ± 0.098 | 0.056 ± 0.029 | 0.168 ± 0.077 |
| yeast-2_vs_4 | 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 | 0.616 ± 0.151 | 0.412 ± 0.364 | **0.696 ± 0.124** |
| yeast-2_vs_8 | 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 | **0.677 ± 0.224** | 0.048 ± 0.009 | 0.503 ± 0.291 |
| 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 | 0.240 ± 0.113 | 0.034 ± 0.001 | 0.185 ± 0.108 |
| yeast5 | 0.649 ± 0.091 | 0.624 ± 0.086 | 0.623 ± 0.080 | 0.618 ± 0.101 | 0.638 ± 0.056 | 0.393 ± 0.060 | 0.646 ± 0.077 | **0.655 ± 0.095** | 0.633 ± 0.154 | 0.065 ± 0.105 | 0.611 ± 0.217 |
| yeast6 | 0.269 ± 0.050 | 0.272 ± 0.072 | 0.281 ± 0.096 | 0.280 ± 0.061 | **0.354 ± 0.070** | 0.171 ± 0.029 | 0.288 ± 0.081 | 0.273 ± 0.051 | 0.283 ± 0.079 | 0.025 ± 0.004 | 0.320 ± 0.101 |
| cleveland-0_vs_4 | **0.558 ± 0.149** | 0.419 ± 0.187 | 0.506 ± 0.173 | 0.542 ± 0.127 | 0.491 ± 0.209 | 0.451 ± 0.154 | 0.555 ± 0.136 | **0.558 ± 0.149** | 0.496 ± 0.164 | 0.330 ± 0.191 | 0.383 ± 0.173 |
| ecoli-0-1-4-7_vs_2-3-5-6 | 0.502 ± 0.110 | 0.583 ± 0.115 | 0.583 ± 0.100 | 0.510 ± 0.109 | 0.536 ± 0.073 | 0.423 ± 0.111 | 0.589 ± 0.116 | 0.539 ± 0.140 | 0.625 ± 0.112 | 0.179 ± 0.249 | **0.631 ± 0.174** |
| ecoli-0-1_vs_2-3-5 | 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 | **0.720 ± 0.137** | 0.365 ± 0.284 | 0.698 ± 0.144 |
| ecoli-0-2-6-7_vs_3-5 | 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 | **0.698 ± 0.141** | 0.332 ± 0.367 | 0.634 ± 0.134 |
| ecoli-0-6-7_vs_3-5 | 0.563 ± 0.149 | **0.746 ± 0.229** | 0.608 ± 0.165 | 0.586 ± 0.161 | 0.625 ± 0.123 | 0.510 ± 0.146 | 0.537 ± 0.145 | 0.570 ± 0.143 | 0.662 ± 0.152 | 0.317 ± 0.357 | 0.715 ± 0.172 |
| ecoli-0-6-7_vs_5 | 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 | **0.795 ± 0.145** | 0.303 ± 0.297 | 0.789 ± 0.134 |
| glass-0-1-4-6_vs_2 | 0.231 ± 0.080 | 0.164 ± 0.111 | 0.237 ± 0.096 | 0.219 ± 0.088 | **0.244 ± 0.101** | 0.192 ± 0.055 | 0.184 ± 0.099 | 0.201 ± 0.102 | 0.181 ± 0.100 | 0.146 ± 0.157 | 0.210 ± 0.155 |
| glass-0-1-5_vs_2 | 0.335 ± 0.060 | 0.249 ± 0.137 | **0.392 ± 0.230** | 0.340 ± 0.138 | 0.317 ± 0.152 | 0.181 ± 0.077 | 0.300 ± 0.102 | 0.338 ± 0.098 | 0.273 ± 0.146 | 0.190 ± 0.104 | 0.202 ± 0.124 |
| yeast-0-2-5-6_vs_3-7-8-9 | 0.377 ± 0.050 | **0.444 ± 0.067** | 0.409 ± 0.051 | 0.394 ± 0.055 | 0.416 ± 0.048 | 0.395 ± 0.052 | 0.373 ± 0.056 | 0.359 ± 0.046 | 0.325 ± 0.139 | 0.176 ± 0.122 | 0.330 ± 0.162 |
| yeast-0-3-5-9_vs_7-8 | 0.206 ± 0.036 | **0.326 ± 0.058** | 0.237 ± 0.046 | 0.226 ± 0.055 | 0.240 ± 0.062 | 0.233 ± 0.062 | 0.230 ± 0.031 | 0.244 ± 0.044 | 0.150 ± 0.043 | 0.105 ± 0.012 | 0.168 ± 0.088 |
| abalone-17_vs_7-8-9-10 | 0.162 ± 0.052 | 0.229 ± 0.038 | 0.160 ± 0.023 | 0.172 ± 0.037 | 0.205 ± 0.050 | 0.155 ± 0.033 | 0.176 ± 0.045 | 0.161 ± 0.053 | **0.235 ± 0.060** | 0.130 ± 0.088 | 0.096 ± 0.121 |
| abalone-19_vs_10-11-12-13 | 0.049 ± 0.022 | 0.040 ± 0.031 | 0.047 ± 0.023 | 0.043 ± 0.015 | 0.050 ± 0.037 | 0.045 ± 0.017 | **0.055 ± 0.018** | 0.053 ± 0.016 | 0.054 ± 0.079 | 0.012 ± 0.010 | 0.040 ± 0.035 |
| abalone-20_vs_8-9-10 | 0.155 ± 0.024 | 0.128 ± 0.097 | 0.161 ± 0.065 | 0.159 ± 0.042 | 0.169 ± 0.069 | 0.131 ± 0.031 | 0.161 ± 0.045 | 0.156 ± 0.024 | **0.215 ± 0.141** | 0.027 ± 0.012 | 0.101 ± 0.100 |
| abalone-21_vs_8 | 0.278 ± 0.171 | 0.354 ± 0.197 | 0.272 ± 0.166 | 0.264 ± 0.191 | 0.382 ± 0.208 | 0.278 ± 0.121 | 0.281 ± 0.179 | 0.285 ± 0.173 | 0.420 ± 0.287 | 0.068 ± 0.093 | **0.437 ± 0.312** |
| flare-F | 0.155 ± 0.060 | **0.247 ± 0.080** | 0.175 ± 0.067 | 0.187 ± 0.051 | 0.224 ± 0.070 | 0.215 ± 0.094 | 0.177 ± 0.058 | 0.180 ± 0.044 | 0.173 ± 0.129 | 0.051 ± 0.018 | 0.237 ± 0.087 |
| 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** | **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** | **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 | 0.895 ± 0.093 | 0.708 ± 0.134 | 0.901 ± 0.094 | 0.881 ± 0.077 | 0.632 ± 0.276 | 0.050 ± 0.018 | 0.746 ± 0.170 |
| poker-8-9_vs_5 | 0.066 ± 0.033 | **0.079 ± 0.065** | 0.066 ± 0.028 | 0.068 ± 0.024 | 0.059 ± 0.059 | 0.056 ± 0.034 | 0.049 ± 0.022 | 0.066 ± 0.033 | 0.066 ± 0.065 | 0.013 ± 0.003 | 0.047 ± 0.060 |
| poker-8-9_vs_6 | 0.247 ± 0.095 | 0.643 ± 0.299 | 0.345 ± 0.312 | 0.255 ± 0.209 | 0.469 ± 0.318 | 0.145 ± 0.125 | 0.274 ± 0.188 | 0.247 ± 0.095 | 0.962 ± 0.081 | **0.975 ± 0.075** | 0.962 ± 0.081 |
| poker-8_vs_6 | 0.509 ± 0.330 | 0.375 ± 0.281 | 0.451 ± 0.263 | 0.420 ± 0.268 | 0.503 ± 0.308 | 0.315 ± 0.381 | 0.474 ± 0.347 | 0.509 ± 0.330 | **0.986 ± 0.043** | 0.975 ± 0.051 | 0.839 ± 0.317 |
| poker-9_vs_7 | 0.166 ± 0.198 | 0.120 ± 0.126 | 0.166 ± 0.198 | 0.166 ± 0.198 | 0.199 ± 0.209 | 0.271 ± 0.320 | 0.148 ± 0.176 | 0.166 ± 0.198 | **0.407 ± 0.442** | 0.186 ± 0.239 | 0.044 ± 0.119 |
| winequality-red-3_vs_5 | 0.026 ± 0.045 | **0.073 ± 0.151** | 0.025 ± 0.060 | 0.042 ± 0.077 | 0.026 ± 0.061 | 0.070 ± 0.056 | 0.034 ± 0.059 | 0.026 ± 0.045 | 0.034 ± 0.070 | 0.002 ± 0.005 | 0.014 ± 0.043 |
| winequality-red-4 | 0.072 ± 0.035 | 0.060 ± 0.028 | 0.088 ± 0.016 | 0.090 ± 0.030 | **0.104 ± 0.048** | 0.086 ± 0.021 | 0.069 ± 0.012 | 0.071 ± 0.036 | 0.083 ± 0.039 | 0.057 ± 0.022 | 0.063 ± 0.050 |
| winequality-red-8_vs_6-7 | 0.060 ± 0.045 | 0.072 ± 0.045 | 0.060 ± 0.039 | 0.079 ± 0.044 | 0.074 ± 0.063 | 0.055 ± 0.025 | 0.061 ± 0.041 | 0.060 ± 0.045 | 0.119 ± 0.118 | **0.156 ± 0.286** | 0.083 ± 0.089 |
| winequality-red-8_vs_6 | 0.123 ± 0.048 | **0.201 ± 0.174** | 0.121 ± 0.041 | 0.116 ± 0.058 | 0.132 ± 0.087 | 0.107 ± 0.044 | 0.140 ± 0.054 | 0.123 ± 0.048 | 0.155 ± 0.150 | 0.091 ± 0.103 | 0.147 ± 0.092 |
| winequality-white-3-9_vs_5 | 0.059 ± 0.048 | 0.055 ± 0.038 | 0.047 ± 0.042 | 0.045 ± 0.038 | 0.054 ± 0.067 | **0.101 ± 0.029** | 0.041 ± 0.024 | 0.059 ± 0.048 | 0.073 ± 0.071 | 0.022 ± 0.025 | 0.066 ± 0.058 |
| winequality-white-3_vs_7 | 0.068 ± 0.047 | 0.111 ± 0.088 | 0.088 ± 0.054 | 0.085 ± 0.052 | 0.136 ± 0.052 | **0.252 ± 0.070** | 0.047 ± 0.044 | 0.068 ± 0.047 | 0.192 ± 0.181 | 0.225 ± 0.208 | 0.188 ± 0.130 |
| winequality-white-9_vs_4 | 0.377 ± 0.294 | 0.345 ± 0.283 | 0.360 ± 0.282 | 0.380 ± 0.277 | 0.368 ± 0.277 | 0.363 ± 0.280 | 0.360 ± 0.282 | 0.377 ± 0.294 | 0.312 ± 0.285 | 0.365 ± 0.373 | **0.462 ± 0.395** |
| 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 | 0.727 ± 0.302 | **0.738 ± 0.286** | 0.627 ± 0.355 |
| 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 | 0.604 ± 0.074 | 0.302 ± 0.217 | 0.711 ± 0.056 |
| ecoli2 | 0.706 ± 0.080 | 0.702 ± 0.097 | **0.740 ± 0.129** | 0.734 ± 0.082 | 0.714 ± 0.106 | 0.624 ± 0.078 | 0.692 ± 0.099 | 0.724 ± 0.092 | 0.682 ± 0.113 | 0.322 ± 0.303 | 0.630 ± 0.119 |
| ecoli3 | 0.474 ± 0.059 | 0.504 ± 0.083 | 0.462 ± 0.084 | 0.503 ± 0.072 | 0.494 ± 0.078 | 0.462 ± 0.051 | 0.486 ± 0.068 | 0.482 ± 0.062 | 0.477 ± 0.131 | 0.270 ± 0.196 | **0.521 ± 0.106** |
| glass0 | 0.637 ± 0.044 | 0.656 ± 0.076 | 0.689 ± 0.072 | 0.689 ± 0.067 | 0.683 ± 0.089 | 0.693 ± 0.069 | **0.710 ± 0.111** | 0.660 ± 0.066 | 0.630 ± 0.135 | 0.616 ± 0.133 | 0.702 ± 0.088 |
| 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 | 0.591 ± 0.117 | 0.451 ± 0.102 | 0.537 ± 0.092 |
| 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** | 0.379 ± 0.062 | 0.318 ± 0.090 | 0.375 ± 0.097 |
| 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 | **0.809 ± 0.020** | 0.790 ± 0.017 | 0.795 ± 0.042 |
| pima | 0.552 ± 0.030 | **0.566 ± 0.022** | 0.553 ± 0.038 | 0.556 ± 0.028 | 0.550 ± 0.033 | 0.564 ± 0.040 | 0.550 ± 0.031 | 0.559 ± 0.034 | 0.541 ± 0.030 | 0.466 ± 0.078 | 0.514 ± 0.076 |
| vehicle1 | 0.495 ± 0.033 | 0.498 ± 0.039 | 0.505 ± 0.024 | 0.496 ± 0.034 | 0.482 ± 0.033 | 0.492 ± 0.044 | 0.491 ± 0.030 | 0.503 ± 0.025 | 0.470 ± 0.054 | 0.496 ± 0.051 | **0.509 ± 0.037** |
| vehicle3 | 0.471 ± 0.033 | **0.512 ± 0.040** | 0.467 ± 0.042 | 0.477 ± 0.038 | 0.483 ± 0.028 | 0.486 ± 0.037 | 0.490 ± 0.025 | 0.473 ± 0.028 | 0.470 ± 0.042 | 0.500 ± 0.047 | 0.482 ± 0.033 |
| yeast1 | 0.470 ± 0.023 | **0.495 ± 0.029** | 0.487 ± 0.020 | 0.480 ± 0.018 | 0.477 ± 0.015 | 0.479 ± 0.018 | 0.484 ± 0.033 | 0.474 ± 0.016 | 0.428 ± 0.070 | 0.292 ± 0.001 | 0.391 ± 0.081 |
| yeast3 | 0.687 ± 0.048 | 0.689 ± 0.064 | 0.670 ± 0.045 | 0.661 ± 0.042 | 0.671 ± 0.054 | 0.629 ± 0.056 | 0.682 ± 0.048 | 0.684 ± 0.046 | **0.700 ± 0.043** | 0.111 ± 0.001 | 0.561 ± 0.115 |

## Table 14. SVM – Precision

| Dataset name | SMOTE | polynom-fit-SMOTE | Lee | SMOBD | G-SMOTE | LVQ-SMOTE | Assembled-SMOTE | SMOTE-TomekLinks | JFOTS_pr | JFOTS_rc | JFOTS_prom |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 | 0.018 ± 0.011 | 0.014 ± 0.003 | 0.015 ± 0.002 |
| abalone9-18 | 0.247 ± 0.040 | 0.361 ± 0.062 | 0.239 ± 0.030 | 0.254 ± 0.052 | 0.250 ± 0.055 | 0.334 ± 0.077 | 0.240 ± 0.042 | 0.245 ± 0.039 | **0.597 ± 0.192** | 0.178 ± 0.106 | 0.296 ± 0.220 |
| ecoli-0-1-3-7_vs_2-6 | 0.775 ± 0.287 | **0.842 ± 0.256** | 0.544 ± 0.260 | 0.648 ± 0.273 | 0.802 ± 0.308 | 0.297 ± 0.239 | 0.725 ± 0.287 | 0.775 ± 0.287 | 0.373 ± 0.301 | 0.247 ± 0.129 | 0.392 ± 0.352 |
| glass-0-1-6_vs_2 | 0.294 ± 0.091 | **0.315 ± 0.098** | 0.276 ± 0.073 | 0.283 ± 0.081 | 0.285 ± 0.076 | 0.194 ± 0.057 | 0.292 ± 0.081 | 0.293 ± 0.093 | 0.207 ± 0.128 | 0.165 ± 0.093 | 0.138 ± 0.034 |
| glass-0-1-6_vs_5 | 0.837 ± 0.170 | **0.845 ± 0.198** | 0.837 ± 0.170 | 0.837 ± 0.170 | 0.840 ± 0.179 | 0.592 ± 0.267 | 0.837 ± 0.170 | 0.837 ± 0.170 | 0.459 ± 0.284 | 0.382 ± 0.129 | 0.381 ± 0.282 |
| glass2 | 0.189 ± 0.107 | 0.210 ± 0.117 | 0.192 ± 0.106 | 0.185 ± 0.103 | 0.195 ± 0.107 | **0.218 ± 0.126** | 0.192 ± 0.112 | 0.188 ± 0.106 | 0.152 ± 0.084 | 0.140 ± 0.072 | 0.151 ± 0.083 |
| glass4 | 0.768 ± 0.106 | 0.755 ± 0.111 | 0.749 ± 0.105 | 0.749 ± 0.105 | **0.782 ± 0.125** | 0.485 ± 0.113 | 0.770 ± 0.134 | 0.768 ± 0.106 | 0.735 ± 0.142 | 0.492 ± 0.338 | 0.484 ± 0.165 |
| glass5 | 0.788 ± 0.151 | **0.823 ± 0.151** | 0.803 ± 0.139 | 0.803 ± 0.139 | 0.771 ± 0.179 | 0.454 ± 0.232 | 0.788 ± 0.151 | 0.788 ± 0.151 | 0.711 ± 0.204 | 0.551 ± 0.268 | 0.454 ± 0.239 |
| page-blocks-1-3_vs_4 | 0.650 ± 0.107 | **0.801 ± 0.131** | 0.658 ± 0.109 | 0.640 ± 0.112 | 0.637 ± 0.128 | 0.490 ± 0.089 | 0.613 ± 0.102 | 0.650 ± 0.107 | 0.591 ± 0.322 | 0.524 ± 0.273 | 0.617 ± 0.201 |
| yeast-0-5-6-7-9_vs_4 | 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 | **0.484 ± 0.104** | 0.120 ± 0.101 | 0.363 ± 0.148 |
| yeast-1-2-8-9_vs_7 | 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 | **0.325 ± 0.371** | 0.032 ± 0.000 | 0.150 ± 0.185 |
| yeast-1-4-5-8_vs_7 | 0.076 ± 0.024 | 0.080 ± 0.027 | 0.073 ± 0.021 | 0.070 ± 0.016 | 0.080 ± 0.023 | **0.095 ± 0.017** | 0.068 ± 0.014 | 0.076 ± 0.023 | 0.093 ± 0.089 | 0.044 ± 0.000 | 0.069 ± 0.023 |
| yeast-1_vs_7 | 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 | **0.512 ± 0.372** | 0.068 ± 0.007 | 0.172 ± 0.119 |
| yeast-2_vs_4 | 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 | **0.782 ± 0.126** | 0.336 ± 0.245 | 0.673 ± 0.165 |
| yeast-2_vs_8 | 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 | 0.834 ± 0.251 | 0.046 ± 0.007 | 0.692 ± 0.345 |
| 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 | **0.318 ± 0.102** | 0.034 ± 0.001 | 0.165 ± 0.073 |
| yeast5 | 0.502 ± 0.067 | **0.541 ± 0.081** | 0.502 ± 0.065 | 0.504 ± 0.072 | 0.515 ± 0.077 | 0.347 ± 0.043 | 0.502 ± 0.064 | 0.502 ± 0.067 | 0.482 ± 0.107 | 0.055 ± 0.074 | 0.468 ± 0.162 |
| yeast6 | 0.306 ± 0.042 | 0.336 ± 0.045 | 0.309 ± 0.044 | 0.279 ± 0.039 | 0.320 ± 0.042 | 0.168 ± 0.014 | 0.297 ± 0.045 | 0.306 ± 0.042 | **0.428 ± 0.133** | 0.025 ± 0.003 | 0.267 ± 0.124 |
| cleveland-0_vs_4 | 0.797 ± 0.159 | 0.792 ± 0.195 | 0.805 ± 0.158 | **0.813 ± 0.153** | 0.788 ± 0.163 | 0.665 ± 0.093 | 0.802 ± 0.158 | 0.797 ± 0.159 | 0.569 ± 0.234 | 0.355 ± 0.200 | 0.348 ± 0.190 |
| ecoli-0-1-4-7_vs_2-3-5-6 | 0.732 ± 0.067 | **0.814 ± 0.037** | 0.710 ± 0.057 | 0.733 ± 0.068 | 0.711 ± 0.099 | 0.588 ± 0.080 | 0.688 ± 0.108 | 0.732 ± 0.067 | 0.748 ± 0.129 | 0.214 ± 0.170 | 0.633 ± 0.125 |
| ecoli-0-1_vs_2-3-5 | 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 | 0.703 ± 0.143 | 0.384 ± 0.250 | 0.571 ± 0.184 |
| ecoli-0-2-6-7_vs_3-5 | 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 | 0.755 ± 0.201 | 0.340 ± 0.294 | 0.668 ± 0.164 |
| ecoli-0-6-7_vs_3-5 | 0.805 ± 0.190 | **0.858 ± 0.147** | 0.768 ± 0.211 | 0.825 ± 0.180 | 0.813 ± 0.185 | 0.627 ± 0.161 | 0.800 ± 0.183 | 0.805 ± 0.190 | 0.765 ± 0.172 | 0.443 ± 0.358 | 0.718 ± 0.175 |
| ecoli-0-6-7_vs_5 | 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 | 0.808 ± 0.152 | 0.272 ± 0.235 | 0.661 ± 0.157 |
| glass-0-1-4-6_vs_2 | **0.253 ± 0.082** | 0.251 ± 0.122 | 0.237 ± 0.071 | 0.243 ± 0.096 | 0.228 ± 0.109 | 0.191 ± 0.071 | 0.243 ± 0.090 | 0.251 ± 0.083 | 0.121 ± 0.056 | 0.116 ± 0.046 | 0.187 ± 0.066 |
| glass-0-1-5_vs_2 | 0.278 ± 0.062 | 0.300 ± 0.086 | 0.278 ± 0.058 | 0.289 ± 0.055 | **0.325 ± 0.103** | 0.215 ± 0.090 | 0.270 ± 0.057 | 0.279 ± 0.061 | 0.194 ± 0.060 | 0.159 ± 0.068 | 0.204 ± 0.076 |
| yeast-0-2-5-6_vs_3-7-8-9 | 0.503 ± 0.061 | **0.636 ± 0.085** | 0.489 ± 0.093 | 0.500 ± 0.067 | 0.494 ± 0.108 | 0.502 ± 0.076 | 0.485 ± 0.088 | 0.504 ± 0.061 | 0.428 ± 0.213 | 0.185 ± 0.137 | 0.360 ± 0.173 |
| yeast-0-3-5-9_vs_7-8 | 0.272 ± 0.039 | **0.518 ± 0.126** | 0.256 ± 0.036 | 0.259 ± 0.040 | 0.263 ± 0.039 | 0.319 ± 0.082 | 0.272 ± 0.047 | 0.270 ± 0.042 | 0.174 ± 0.074 | 0.104 ± 0.008 | 0.167 ± 0.048 |
| abalone-17_vs_7-8-9-10 | 0.174 ± 0.025 | **0.246 ± 0.055** | 0.172 ± 0.026 | 0.177 ± 0.029 | 0.183 ± 0.030 | 0.198 ± 0.041 | 0.174 ± 0.027 | 0.173 ± 0.025 | 0.211 ± 0.093 | 0.093 ± 0.067 | 0.694 ± 0.099 |
| abalone-19_vs_10-11-12-13 | 0.051 ± 0.010 | **0.063 ± 0.028** | 0.052 ± 0.009 | 0.053 ± 0.008 | 0.057 ± 0.012 | 0.061 ± 0.018 | 0.051 ± 0.012 | 0.051 ± 0.010 | 0.042 ± 0.034 | 0.028 ± 0.009 | 0.029 ± 0.012 |
| abalone-20_vs_8-9-10 | 0.189 ± 0.054 | 0.234 ± 0.049 | 0.191 ± 0.056 | 0.188 ± 0.052 | 0.202 ± 0.048 | 0.173 ± 0.027 | 0.182 ± 0.048 | 0.189 ± 0.055 | **0.264 ± 0.137** | 0.027 ± 0.010 | 0.103 ± 0.085 |
| abalone-21_vs_8 | 0.466 ± 0.088 | **0.623 ± 0.171** | 0.452 ± 0.101 | 0.441 ± 0.083 | 0.463 ± 0.101 | 0.454 ± 0.112 | 0.462 ± 0.117 | 0.472 ± 0.084 | 0.371 ± 0.290 | 0.146 ± 0.210 | 0.289 ± 0.238 |
| flare-F | 0.166 ± 0.019 | **0.305 ± 0.056** | 0.157 ± 0.021 | 0.173 ± 0.021 | 0.161 ± 0.022 | 0.197 ± 0.033 | 0.169 ± 0.025 | 0.166 ± 0.019 | 0.164 ± 0.116 | 0.051 ± 0.018 | 0.226 ± 0.084 |
| 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** | **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** | **1.000 ± 0.000** |
| kr-vs-k-zero_vs_eight | 0.785 ± 0.139 | 0.787 ± 0.141 | 0.785 ± 0.139 | 0.781 ± 0.142 | 0.796 ± 0.151 | 0.507 ± 0.092 | **0.799 ± 0.143** | 0.785 ± 0.139 | 0.416 ± 0.181 | 0.049 ± 0.016 | 0.515 ± 0.228 |
| poker-8-9_vs_5 | 0.068 ± 0.025 | 0.079 ± 0.047 | 0.065 ± 0.020 | 0.063 ± 0.021 | 0.079 ± 0.033 | 0.060 ± 0.028 | 0.067 ± 0.015 | 0.068 ± 0.025 | **0.089 ± 0.101** | 0.013 ± 0.003 | 0.074 ± 0.093 |
| poker-8-9_vs_6 | 0.958 ± 0.068 | **0.969 ± 0.062** | 0.958 ± 0.068 | 0.940 ± 0.105 | 0.879 ± 0.146 | 0.541 ± 0.085 | 0.887 ± 0.150 | 0.958 ± 0.068 | 0.866 ± 0.220 | 0.948 ± 0.156 | 0.866 ± 0.220 |
| poker-8_vs_6 | 0.942 ± 0.092 | 0.910 ± 0.111 | 0.942 ± 0.092 | 0.917 ± 0.105 | 0.865 ± 0.149 | 0.579 ± 0.135 | 0.942 ± 0.092 | 0.942 ± 0.092 | **0.944 ± 0.167** | **0.944 ± 0.167** | 0.845 ± 0.324 |
| poker-9_vs_7 | **0.617 ± 0.435** | **0.617 ± 0.435** | **0.617 ± 0.435** | **0.617 ± 0.435** | 0.525 ± 0.453 | 0.435 ± 0.361 | 0.567 ± 0.416 | **0.617 ± 0.435** | 0.418 ± 0.420 | 0.148 ± 0.287 | 0.252 ± 0.315 |
| winequality-red-3_vs_5 | 0.068 ± 0.080 | 0.079 ± 0.088 | 0.067 ± 0.080 | 0.067 ± 0.080 | 0.071 ± 0.082 | **0.153 ± 0.107** | 0.094 ± 0.094 | 0.068 ± 0.080 | 0.074 ± 0.146 | 0.041 ± 0.027 | 0.034 ± 0.035 |
| winequality-red-4 | 0.102 ± 0.010 | 0.108 ± 0.017 | 0.100 ± 0.008 | 0.105 ± 0.010 | 0.107 ± 0.019 | **0.125 ± 0.033** | 0.105 ± 0.008 | 0.102 ± 0.009 | 0.106 ± 0.085 | 0.050 ± 0.011 | 0.055 ± 0.044 |
| winequality-red-8_vs_6-7 | 0.058 ± 0.028 | 0.055 ± 0.038 | **0.060 ± 0.029** | 0.058 ± 0.027 | 0.051 ± 0.039 | 0.038 ± 0.024 | 0.055 ± 0.029 | 0.058 ± 0.028 | 0.034 ± 0.009 | 0.033 ± 0.013 | 0.035 ± 0.023 |
| winequality-red-8_vs_6 | 0.122 ± 0.019 | 0.144 ± 0.035 | 0.122 ± 0.019 | 0.123 ± 0.019 | **0.151 ± 0.030** | 0.095 ± 0.031 | 0.132 ± 0.032 | 0.122 ± 0.019 | 0.099 ± 0.022 | 0.049 ± 0.020 | 0.070 ± 0.038 |
| winequality-white-3-9_vs_5 | 0.054 ± 0.028 | 0.039 ± 0.037 | 0.049 ± 0.028 | 0.053 ± 0.027 | 0.065 ± 0.044 | **0.172 ± 0.066** | 0.052 ± 0.029 | 0.054 ± 0.028 | 0.034 ± 0.029 | 0.026 ± 0.010 | 0.068 ± 0.044 |
| winequality-white-3_vs_7 | 0.051 ± 0.044 | 0.054 ± 0.056 | 0.061 ± 0.047 | 0.058 ± 0.045 | 0.089 ± 0.058 | **0.430 ± 0.151** | 0.062 ± 0.046 | 0.051 ± 0.044 | 0.182 ± 0.286 | 0.074 ± 0.042 | 0.069 ± 0.043 |
| winequality-white-9_vs_4 | 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 | 0.398 ± 0.368 | 0.461 ± 0.397 | 0.456 ± 0.370 |
| 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 | **0.732 ± 0.362** | 0.725 ± 0.369 | 0.632 ± 0.410 |
| 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 | 0.639 ± 0.027 | 0.312 ± 0.166 | 0.649 ± 0.052 |
| ecoli2 | 0.833 ± 0.047 | **0.859 ± 0.042** | 0.837 ± 0.050 | 0.845 ± 0.053 | 0.839 ± 0.051 | 0.790 ± 0.065 | 0.834 ± 0.055 | 0.837 ± 0.055 | 0.670 ± 0.141 | 0.307 ± 0.244 | 0.594 ± 0.170 |
| ecoli3 | 0.504 ± 0.032 | **0.555 ± 0.052** | 0.494 ± 0.027 | 0.531 ± 0.049 | 0.500 ± 0.026 | 0.447 ± 0.037 | 0.506 ± 0.039 | 0.507 ± 0.031 | 0.453 ± 0.107 | 0.237 ± 0.147 | 0.529 ± 0.111 |
| glass0 | 0.585 ± 0.058 | **0.636 ± 0.050** | 0.594 ± 0.057 | 0.579 ± 0.064 | 0.607 ± 0.062 | 0.573 ± 0.069 | 0.600 ± 0.056 | 0.582 ± 0.057 | 0.557 ± 0.039 | 0.499 ± 0.077 | 0.526 ± 0.064 |
| 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 | 0.503 ± 0.097 | 0.440 ± 0.078 | 0.489 ± 0.072 |
| 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 | 0.463 ± 0.090 | 0.364 ± 0.102 | 0.422 ± 0.099 |
| page-blocks0 | 0.664 ± 0.017 | **0.801 ± 0.026** | 0.667 ± 0.019 | 0.690 ± 0.023 | 0.668 ± 0.017 | 0.778 ± 0.044 | 0.659 ± 0.016 | 0.664 ± 0.017 | 0.678 ± 0.110 | 0.417 ± 0.082 | 0.739 ± 0.092 |
| pima | 0.600 ± 0.040 | 0.640 ± 0.033 | 0.606 ± 0.030 | 0.607 ± 0.031 | 0.608 ± 0.038 | 0.620 ± 0.032 | 0.608 ± 0.035 | 0.600 ± 0.040 | **0.665 ± 0.044** | 0.466 ± 0.053 | 0.562 ± 0.084 |
| vehicle1 | 0.538 ± 0.022 | **0.593 ± 0.033** | 0.538 ± 0.027 | 0.542 ± 0.028 | 0.549 ± 0.028 | 0.541 ± 0.025 | 0.544 ± 0.025 | 0.540 ± 0.022 | 0.583 ± 0.053 | 0.515 ± 0.017 | 0.529 ± 0.032 |
| vehicle3 | 0.515 ± 0.016 | 0.549 ± 0.027 | 0.513 ± 0.020 | 0.515 ± 0.020 | 0.516 ± 0.023 | 0.515 ± 0.022 | 0.514 ± 0.020 | 0.515 ± 0.017 | **0.623 ± 0.091** | 0.486 ± 0.031 | 0.520 ± 0.084 |
| yeast1 | 0.497 ± 0.007 | **0.591 ± 0.019** | 0.503 ± 0.020 | 0.487 ± 0.019 | 0.500 ± 0.017 | 0.531 ± 0.022 | 0.496 ± 0.010 | 0.498 ± 0.006 | 0.507 ± 0.126 | 0.292 ± 0.001 | 0.421 ± 0.081 |
| yeast3 | 0.649 ± 0.037 | 0.737 ± 0.032 | 0.646 ± 0.039 | 0.657 ± 0.030 | 0.650 ± 0.026 | 0.641 ± 0.045 | 0.645 ± 0.034 | 0.649 ± 0.038 | **0.785 ± 0.049** | 0.111 ± 0.001 | 0.496 ± 0.077 |

## Table 15. KNN – Recall

| Dataset name | SMOTE | polynom-fit-SMOTE | Lee | SMOBD | G-SMOTE | LVQ-SMOTE | Assembled-SMOTE | SMOTE-TomekLinks | JFOTS_pr | JFOTS_rc | JFOTS_prom |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 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** | 0.019 ± 0.029 | 0.013 ± 0.037 | 0.000 ± 0.000 |
| abalone9-18 | **0.543 ± 0.068** | 0.486 ± 0.090 | 0.514 ± 0.076 | 0.524 ± 0.088 | 0.486 ± 0.106 | 0.462 ± 0.083 | 0.529 ± 0.086 | **0.543 ± 0.068** | 0.252 ± 0.071 | 0.186 ± 0.135 | 0.248 ± 0.166 |
| ecoli-0-1-3-7_vs_2-6 | **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** | 0.425 ± 0.228 | 0.417 ± 0.211 | 0.500 ± 0.227 |
| glass-0-1-6_vs_2 | 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 | 0.272 ± 0.227 | 0.207 ± 0.203 | 0.193 ± 0.127 |
| glass-0-1-6_vs_5 | **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** | 0.580 ± 0.245 | 0.565 ± 0.442 | 0.745 ± 0.257 |
| glass2 | 0.424 ± 0.259 | 0.426 ± 0.270 | 0.436 ± 0.310 | **0.460 ± 0.292** | 0.411 ± 0.280 | 0.438 ± 0.236 | 0.435 ± 0.303 | 0.424 ± 0.259 | 0.285 ± 0.260 | 0.197 ± 0.190 | 0.235 ± 0.230 |
| glass4 | **0.850 ± 0.111** | **0.850 ± 0.134** | 0.802 ± 0.114 | 0.819 ± 0.105 | 0.805 ± 0.132 | 0.783 ± 0.078 | 0.833 ± 0.099 | **0.850 ± 0.111** | 0.536 ± 0.157 | 0.545 ± 0.309 | 0.595 ± 0.240 |
| glass5 | **0.885 ± 0.226** | **0.885 ± 0.226** | 0.865 ± 0.241 | **0.885 ± 0.226** | 0.865 ± 0.224 | 0.780 ± 0.212 | **0.885 ± 0.226** | **0.885 ± 0.226** | 0.710 ± 0.161 | 0.660 ± 0.229 | 0.735 ± 0.267 |
| page-blocks-1-3_vs_4 | **0.986 ± 0.043** | 0.979 ± 0.046 | **0.986 ± 0.043** | **0.986 ± 0.043** | 0.914 ± 0.188 | **0.986 ± 0.029** | 0.971 ± 0.047 | **0.986 ± 0.043** | 0.700 ± 0.171 | 0.693 ± 0.252 | 0.843 ± 0.199 |
| yeast-0-5-6-7-9_vs_4 | 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 | 0.322 ± 0.085 | 0.054 ± 0.162 | 0.362 ± 0.186 |
| yeast-1-2-8-9_vs_7 | **0.500 ± 0.100** | 0.493 ± 0.095 | 0.493 ± 0.085 | 0.480 ± 0.088 | 0.490 ± 0.133 | 0.453 ± 0.111 | 0.487 ± 0.108 | **0.500 ± 0.100** | 0.173 ± 0.085 | 0.000 ± 0.000 | 0.120 ± 0.102 |
| yeast-1-4-5-8_vs_7 | 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 | 0.080 ± 0.088 | 0.000 ± 0.000 | 0.127 ± 0.121 |
| yeast-1_vs_7 | 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 | 0.200 ± 0.067 | 0.000 ± 0.000 | 0.253 ± 0.154 |
| yeast-2_vs_4 | 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 | 0.691 ± 0.116 | 0.380 ± 0.385 | 0.702 ± 0.086 |
| yeast-2_vs_8 | **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** | 0.570 ± 0.110 | 0.120 ± 0.244 | 0.530 ± 0.215 |
| 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 | 0.266 ± 0.100 | 0.000 ± 0.000 | 0.235 ± 0.135 |
| 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 | 0.700 ± 0.252 | 0.045 ± 0.136 | 0.686 ± 0.251 |
| 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 | 0.412 ± 0.176 | 0.000 ± 0.000 | 0.464 ± 0.189 |
| cleveland-0_vs_4 | 0.802 ± 0.140 | 0.786 ± 0.070 | **0.817 ± 0.052** | 0.802 ± 0.140 | 0.783 ± 0.078 | 0.662 ± 0.147 | **0.817 ± 0.052** | 0.802 ± 0.140 | 0.569 ± 0.136 | 0.367 ± 0.299 | 0.507 ± 0.200 |
| ecoli-0-1-4-7_vs_2-3-5-6 | **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** | 0.478 ± 0.231 | 0.214 ± 0.286 | 0.591 ± 0.169 |
| ecoli-0-1_vs_2-3-5 | 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 | 0.683 ± 0.217 | 0.433 ± 0.331 | 0.642 ± 0.124 |
| ecoli-0-2-6-7_vs_3-5 | 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 | 0.645 ± 0.095 | 0.209 ± 0.237 | 0.673 ± 0.130 |
| ecoli-0-6-7_vs_3-5 | 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 | 0.664 ± 0.100 | 0.300 ± 0.304 | 0.682 ± 0.093 |
| ecoli-0-6-7_vs_5 | 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 | 0.700 ± 0.161 | 0.180 ± 0.252 | 0.760 ± 0.143 |
| glass-0-1-4-6_vs_2 | **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 | 0.249 ± 0.139 | 0.165 ± 0.238 | 0.312 ± 0.234 |
| glass-0-1-5_vs_2 | 0.574 ± 0.135 | 0.561 ± 0.115 | **0.597 ± 0.137** | 0.562 ± 0.131 | 0.514 ± 0.158 | 0.460 ± 0.120 | 0.575 ± 0.123 | 0.574 ± 0.135 | 0.326 ± 0.186 | 0.196 ± 0.197 | 0.310 ± 0.198 |
| yeast-0-2-5-6_vs_3-7-8-9 | 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 | 0.349 ± 0.207 | 0.135 ± 0.199 | 0.335 ± 0.224 |
| yeast-0-3-5-9_vs_7-8 | 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** | 0.140 ± 0.122 | 0.028 ± 0.072 | 0.248 ± 0.148 |
| abalone-17_vs_7-8-9-10 | 0.559 ± 0.092 | 0.469 ± 0.069 | **0.566 ± 0.094** | 0.552 ± 0.094 | 0.466 ± 0.089 | 0.531 ± 0.097 | 0.545 ± 0.088 | 0.559 ± 0.092 | 0.179 ± 0.096 | 0.228 ± 0.100 | 0.059 ± 0.077 |
| abalone-19_vs_10-11-12-13 | 0.281 ± 0.085 | 0.156 ± 0.050 | 0.287 ± 0.094 | **0.294 ± 0.105** | 0.188 ± 0.097 | 0.237 ± 0.092 | 0.250 ± 0.101 | 0.281 ± 0.085 | 0.056 ± 0.052 | 0.019 ± 0.040 | 0.038 ± 0.057 |
| abalone-20_vs_8-9-10 | 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 | 0.146 ± 0.106 | 0.038 ± 0.052 | 0.131 ± 0.129 |
| abalone-21_vs_8 | **0.686 ± 0.178** | 0.557 ± 0.162 | 0.657 ± 0.159 | 0.657 ± 0.159 | 0.614 ± 0.170 | 0.614 ± 0.129 | 0.671 ± 0.170 | **0.686 ± 0.178** | 0.371 ± 0.146 | 0.114 ± 0.190 | 0.357 ± 0.249 |
| flare-F | 0.465 ± 0.092 | 0.415 ± 0.079 | 0.460 ± 0.103 | 0.465 ± 0.091 | 0.410 ± 0.094 | **0.470 ± 0.081** | 0.465 ± 0.081 | 0.465 ± 0.092 | 0.110 ± 0.112 | 0.009 ± 0.018 | 0.102 ± 0.083 |
| 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 | **0.940 ± 0.063** | **0.940 ± 0.063** | **0.940 ± 0.063** |
| 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** | 0.918 ± 0.076 | 0.918 ± 0.076 | 0.918 ± 0.076 |
| kr-vs-k-zero_vs_eight | 0.887 ± 0.098 | 0.865 ± 0.105 | 0.895 ± 0.098 | 0.895 ± 0.098 | 0.857 ± 0.121 | **0.902 ± 0.119** | 0.864 ± 0.118 | 0.887 ± 0.098 | 0.591 ± 0.254 | 0.000 ± 0.000 | 0.555 ± 0.259 |
| poker-8-9_vs_5 | 0.265 ± 0.121 | 0.177 ± 0.072 | 0.280 ± 0.135 | 0.263 ± 0.127 | 0.119 ± 0.092 | **0.373 ± 0.103** | 0.272 ± 0.129 | 0.265 ± 0.121 | 0.079 ± 0.078 | 0.000 ± 0.000 | 0.087 ± 0.123 |
| poker-8-9_vs_6 | 0.920 ± 0.081 | 0.841 ± 0.068 | 0.919 ± 0.081 | 0.919 ± 0.081 | 0.823 ± 0.110 | **0.983 ± 0.050** | 0.896 ± 0.063 | 0.920 ± 0.081 | 0.977 ± 0.069 | 0.977 ± 0.069 | 0.977 ± 0.069 |
| poker-8_vs_6 | 0.910 ± 0.120 | 0.719 ± 0.112 | 0.910 ± 0.120 | 0.910 ± 0.120 | 0.768 ± 0.197 | **0.989 ± 0.033** | 0.887 ± 0.157 | 0.910 ± 0.120 | 0.812 ± 0.193 | 0.863 ± 0.169 | 0.729 ± 0.328 |
| poker-9_vs_7 | **0.700 ± 0.312** | **0.700 ± 0.312** | **0.700 ± 0.312** | **0.700 ± 0.312** | 0.650 ± 0.278 | 0.600 ± 0.255 | 0.675 ± 0.297 | **0.700 ± 0.312** | 0.375 ± 0.375 | 0.200 ± 0.292 | 0.200 ± 0.292 |
| winequality-red-3_vs_5 | **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** | 0.060 ± 0.092 | 0.060 ± 0.092 | 0.060 ± 0.092 |
| winequality-red-4 | 0.317 ± 0.052 | 0.271 ± 0.093 | 0.317 ± 0.059 | 0.317 ± 0.044 | 0.269 ± 0.072 | 0.184 ± 0.050 | **0.328 ± 0.047** | 0.317 ± 0.052 | 0.056 ± 0.061 | 0.071 ± 0.069 | 0.064 ± 0.058 |
| winequality-red-8_vs_6-7 | 0.167 ± 0.134 | 0.167 ± 0.143 | **0.178 ± 0.133** | **0.178 ± 0.133** | 0.144 ± 0.112 | 0.133 ± 0.120 | 0.167 ± 0.114 | 0.167 ± 0.134 | 0.089 ± 0.083 | 0.111 ± 0.086 | 0.100 ± 0.092 |
| winequality-red-8_vs_6 | **0.378 ± 0.113** | 0.344 ± 0.105 | 0.356 ± 0.120 | **0.378 ± 0.113** | 0.267 ± 0.102 | 0.278 ± 0.102 | 0.367 ± 0.100 | **0.378 ± 0.113** | 0.178 ± 0.089 | 0.078 ± 0.071 | 0.122 ± 0.105 |
| winequality-white-3-9_vs_5 | **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** | 0.072 ± 0.100 | 0.072 ± 0.056 | 0.088 ± 0.078 |
| winequality-white-3_vs_7 | 0.320 ± 0.172 | 0.180 ± 0.133 | **0.330 ± 0.185** | 0.300 ± 0.190 | 0.180 ± 0.117 | 0.300 ± 0.173 | 0.320 ± 0.204 | 0.320 ± 0.172 | 0.090 ± 0.094 | 0.290 ± 0.170 | 0.250 ± 0.169 |
| winequality-white-9_vs_4 | **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** | 0.317 ± 0.273 | 0.317 ± 0.273 | 0.433 ± 0.238 |
| 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** | 0.567 ± 0.291 | 0.517 ± 0.252 | 0.467 ± 0.296 |
| 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 | 0.733 ± 0.111 | 0.138 ± 0.277 | 0.790 ± 0.079 |
| 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** | 0.781 ± 0.118 | 0.204 ± 0.316 | 0.750 ± 0.171 |
| ecoli3 | 0.840 ± 0.033 | 0.817 ± 0.041 | **0.846 ± 0.035** | 0.823 ± 0.039 | 0.811 ± 0.067 | 0.835 ± 0.063 | 0.828 ± 0.037 | 0.840 ± 0.023 | 0.602 ± 0.160 | 0.249 ± 0.273 | 0.569 ± 0.156 |
| glass0 | 0.854 ± 0.052 | **0.874 ± 0.053** | 0.851 ± 0.061 | 0.866 ± 0.057 | 0.869 ± 0.055 | 0.843 ± 0.052 | 0.869 ± 0.060 | 0.871 ± 0.041 | 0.774 ± 0.136 | 0.697 ± 0.242 | 0.817 ± 0.067 |
| 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 | 0.634 ± 0.219 | 0.245 ± 0.293 | 0.595 ± 0.174 |
| 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** | 0.338 ± 0.127 | 0.326 ± 0.114 | 0.329 ± 0.115 |
| page-blocks0 | 0.896 ± 0.023 | 0.846 ± 0.025 | 0.893 ± 0.026 | 0.875 ± 0.027 | 0.884 ± 0.024 | 0.789 ± 0.032 | **0.901 ± 0.021** | 0.897 ± 0.023 | 0.815 ± 0.033 | 0.831 ± 0.038 | 0.816 ± 0.041 |
| pima | 0.660 ± 0.035 | 0.669 ± 0.037 | 0.654 ± 0.035 | 0.663 ± 0.030 | 0.651 ± 0.033 | 0.640 ± 0.036 | 0.661 ± 0.034 | **0.675 ± 0.040** | 0.561 ± 0.044 | 0.473 ± 0.139 | 0.543 ± 0.141 |
| vehicle1 | 0.717 ± 0.054 | 0.713 ± 0.037 | 0.711 ± 0.044 | **0.736 ± 0.057** | 0.710 ± 0.040 | 0.679 ± 0.052 | 0.726 ± 0.052 | 0.721 ± 0.057 | 0.470 ± 0.082 | 0.669 ± 0.079 | 0.637 ± 0.073 |
| vehicle3 | 0.671 ± 0.035 | 0.637 ± 0.042 | 0.679 ± 0.039 | **0.700 ± 0.047** | 0.667 ± 0.034 | 0.619 ± 0.048 | 0.687 ± 0.036 | 0.668 ± 0.036 | 0.419 ± 0.050 | 0.605 ± 0.069 | 0.558 ± 0.089 |
| yeast1 | 0.641 ± 0.016 | 0.600 ± 0.026 | 0.641 ± 0.018 | 0.633 ± 0.028 | 0.626 ± 0.027 | 0.586 ± 0.024 | 0.636 ± 0.024 | **0.648 ± 0.020** | 0.295 ± 0.215 | 0.000 ± 0.000 | 0.247 ± 0.245 |
| 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 | 0.728 ± 0.043 | 0.000 ± 0.000 | 0.495 ± 0.261 |