Dataset	kNN (1)	OSB (2)	OKNORAU (3)	TBAC (4)	OTBAC (5)	TBAW (6)	OTBAW (7)
glass-0-1-6-vs-2	0.522 ± 0.062	0.672 ± 0.127	0.670 ± 0.122	0.735 ± 0.121	0.749 ± 0.093	0.739 ± 0.112	0.748 ± 0.094
ecoli - 0 - 3 - 4 - 7 - vs - 5 - 6	0.869 ± 0.097	0.895 ± 0.080	0.892 ± 0.080	0.880 ± 0.077	0.876 ± 0.080	0.890 ± 0.079	0.879 ± 0.080
shuttle- $c2$ - vs - $c4$	0.585 ± 0.177	$0.995 \stackrel{3}{\pm} 0.034$	$0.995 \stackrel{-}{\pm} 0.034$	0.855 ± 0.218	0.930 ± 0.166	0.865 ± 0.213	0.930 ± 0.166
$glass\hbox{-} 0\hbox{-} 1\hbox{-} 4\hbox{-} 6\hbox{-} vs\hbox{-} 2$	0.518 ± 0.062	0.702 ± 0.113	0.688 ± 0.121	$0.720 \stackrel{1}{\pm} 0.138$	$0.745 \stackrel{1}{\pm} 0.108$	$0.722 \stackrel{1}{\pm} 0.110$	$0.745 \stackrel{1}{\pm} 0.106$
yeast-1-2-8-9- vs -7	0.508 ± 0.024	0.631 ± 0.082	0.633 ± 0.082	0.617 ± 0.090	0.636 ± 0.091	0.649 ± 0.100	0.679 ± 0.082
ecoli- 0 - 1 - 4 - 6 - vs - 5	0.886 ± 0.091	0.916 ± 0.074	0.918 ± 0.075	$0.900 \stackrel{1}{\pm} 0.079$	$0.906 \stackrel{1}{\pm} 0.078$	0.902 ± 0.077	0.906 ± 0.078
$glass\hbox{-} 0\hbox{-} 1\hbox{-} 6\hbox{-} vs\hbox{-} 5$	0.668 ± 0.151	0.889 ± 0.138	0.884 ± 0.157	0.837 ± 0.159	0.822 ± 0.165	0.823 ± 0.164	0.831 ± 0.161
yeast-2-vs-4	0.820 ± 0.066	0.871 ± 0.061	0.877 ± 0.059	0.834 ± 0.062	$0.845 \stackrel{1}{\pm} 0.067$	0.841 ± 0.065	0.851 ± 0.066
$glass\hbox{-} 0\hbox{-} 6\hbox{-} vs\hbox{-} 5$	0.714 ± 0.194	0.920 ± 0.139	0.935 ± 0.111	0.785 ± 0.200	0.797 ± 0.181	0.821 ± 0.175	0.811 ± 0.177
ecoli-0-3-4-6- vs -5	0.895 ± 0.094	0.915 ± 0.087	0.915 ± 0.086	0.892 ± 0.087	$0.901 \stackrel{1}{\pm} 0.091$	$0.898 \stackrel{1}{\pm} 0.089$	$0.898 \stackrel{1}{\pm} 0.091$
$yeast\hbox{-}0\hbox{-}3\hbox{-}5\hbox{-}9\hbox{-}vs\hbox{-}7\hbox{-}8$	0.641 ± 0.058	0.707 ± 0.062	0.709 ± 0.060	0.649 ± 0.061	$0.649 \stackrel{1}{\pm} 0.063$	$0.660 \stackrel{1}{\pm} 0.059$	0.659 ± 0.061
$glass\hbox{-} 0\hbox{-} 1\hbox{-} 5\hbox{-} vs\hbox{-} 2$	0.533 ± 0.066	0.673 ± 0.141	0.670 ± 0.131	0.727 ± 0.135	0.728 ± 0.105	$0.709 \stackrel{1}{\pm} 0.128$	$0.723 \stackrel{1}{\pm} 0.104$
ecoli-0-6-7- vs -5	0.840 ± 0.108	0.868 ± 0.101	0.865 ± 0.102	0.867 ± 0.103	0.872 ± 0.104	0.870 ± 0.099	0.871 ± 0.106
ecoli-0-2-3-4-vs-5	0.890 ± 0.083	$0.912 \stackrel{4}{\pm} 0.080$	0.912 ± 0.079	$0.909 \stackrel{3}{\pm} 0.081$	0.907 ± 0.080	0.909 ± 0.081	$0.910 \stackrel{3}{\pm} 0.080$
ecoli4	0.894 ± 0.100	0.919 ± 0.098	0.918 ± 0.097	0.922 ± 0.090	0.935 ± 0.084	0.923 ± 0.097	0.929 ± 0.086
yeast5	0.821 ± 0.064	0.937 ± 0.045	0.933 ± 0.048	0.922 ± 0.062	0.936 ± 0.052	0.936 ± 0.057	0.932 ± 0.048
ecoli-0-4-6- vs -5	0.901 ± 0.084	0.916 ± 0.082	0.916 ± 0.081	0.905 ± 0.082	0.906 ± 0.083	0.903 ± 0.084	0.905 ± 0.083
$led 7 digit \hbox{-} 0\hbox{-} 2\hbox{-} 4\hbox{-} 5\hbox{-} 6\hbox{-} 7\hbox{-} 8\hbox{-} 9\hbox{-} vs\hbox{-} 1$	0.635 ± 0.077	0.898 ± 0.068	$4,5,6,7$ 0.860 ± 0.118	0.609 ± 0.081	0.661 ± 0.090	0.875 ± 0.086	0.873 ± 0.115
ecoli- 0 - 1 - vs - 5	$0.891 \stackrel{4}{\pm} 0.089$	0.920 ± 0.074	0.919 ± 0.074	0.904 ± 0.076	0.910 ± 0.075	0.908 ± 0.074	0.915 ± 0.073
ecoli - 0 - 2 - 6 - 7 - vs - 3 - 5	0.797 ± 0.125	0.857 ± 0.090	0.867 ± 0.080	0.834 ± 0.105	0.836 ± 0.103	0.843 ± 0.093	0.840 ± 0.097
ecoli - 0 - 1 - 4 - 7 - vs - 2 - 3 - 5 - 6	0.833 ± 0.100	0.850 ± 0.084	0.854 ± 0.079	0.861 ± 0.082	0.858 ± 0.087	0.862 ± 0.079	0.858 ± 0.085
shuttle-c0-vs-c4	0.996 ± 0.008						
ecoli-0-6-7- vs -3-5	0.792 ± 0.119	0.854 ± 0.102	0.863 ± 0.105	0.828 ± 0.104	0.827 ± 0.106	0.828 ± 0.103	0.831 ± 0.101
vowel0	0.970 ± 0.038	0.996 ± 0.019	0.997 ± 0.019	0.805 ± 0.063	0.913 ± 0.062	0.923 ± 0.058	0.922 ± 0.056
glass4	0.750 ± 0.158	0.909 ± 0.143	0.907 ± 0.143	0.783 ± 0.142	0.814 ± 0.155	0.779 ± 0.149	0.828 ± 0.153
yeast - 0 - 5 - 6 - 7 - 9 - vs - 4	0.649 ± 0.074	0.800 ± 0.055	0.798 ± 0.055	0.778 ± 0.060	0.793 ± 0.048	0.784 ± 0.060	0.805 ± 0.053
yeast - 0 - 2 - 5 - 6 - vs - 3 - 7 - 8 - 9	0.756 ± 0.042	0.791 ± 0.045	0.789 ± 0.047	0.766 ± 0.051	0.778 ± 0.052	0.761 ± 0.055	0.774 ± 0.052
ecoli- 0 - 1 - vs - 2 - 3 - 5	0.833 ± 0.093	0.876 ± 0.090	0.877 ± 0.091	0.853 ± 0.088	0.862 ± 0.090	0.859 ± 0.088	0.858 ± 0.085
ecoli-0-3-4- vs -5	0.903 ± 0.105	0.915 ± 0.100	0.914 ± 0.099	0.914 ± 0.102	0.913 ± 0.102	0.912 ± 0.102	0.908 ± 0.105
glass5	0.648 ± 0.165	0.814 ± 0.203	0.834 ± 0.194	0.810 ± 0.179	0.847 ± 0.174	0.798 ± 0.175	0.853 ± 0.175
yeast4	0.555 ± 0.043	0.725 ± 0.078	0.727 ± 0.077	0.736 ± 0.067	0.744 ± 0.070	0.759 ± 0.082	0.782 ± 0.078
$glass\hbox{-} 0\hbox{-} 4\hbox{-} vs\hbox{-} 5$	0.744 ± 0.204	0.982 ± 0.045	0.983 ± 0.044	0.819 ± 0.160	0.864 ± 0.166	0.839 ± 0.162	0.829 ± 0.166
yeast6	0.757 ± 0.091	0.823 ± 0.090	0.829 ± 0.086	0.835 ± 0.084	0.843 ± 0.087	0.844 ± 0.080	0.856 ± 0.085
page-blocks-1-3-vs-4	0.818 ± 0.106	0.922 ± 0.078	0.905 ± 0.083	0.752 ± 0.115	0.802 ± 0.100	0.808 ± 0.124	0.803 ± 0.106
yeast-1-vs-7	$0.529 \stackrel{4}{\pm} 0.043$	0.641 ± 0.104	0.638 ± 0.103	0.639 ± 0.084	0.631 ± 0.098	0.646 ± 0.096	0.661 ± 0.099
ecoli - 0 - 1 - 3 - 7 - vs - 2 - 6	0.850 ± 0.200	0.839 ± 0.197	0.843 ± 0.200	0.844 ± 0.206	0.840 ± 0.208	0.829 ± 0.199	0.838 ± 0.205
yeast-1-4-5-8- vs -7	0.501 ± 0.010	0.565 ± 0.081	0.570 ± 0.085	0.581 ± 0.094	0.588 ± 0.092	0.617 ± 0.103	0.610 ± 0.090
ecoli - 0 - 1 - 4 - 7 - vs - 5 - 6	0.865 ± 0.098	$0.897 \stackrel{1}{\pm} 0.074$	0.902 ± 0.067	$0.888 \stackrel{1}{\pm} 0.077$	0.885 ± 0.080	0.894 ± 0.073	0.891 ± 0.081
yeast-2- vs -8	0.774 ± 0.114	0.768 ± 0.113	0.773 ± 0.111	0.773 ± 0.116	0.776 ± 0.111	0.773 ± 0.116	0.775 ± 0.111
$yeast\hbox{-}0\hbox{-}2\hbox{-}5\hbox{-}7\hbox{-}9\hbox{-}vs\hbox{-}3\hbox{-}6\hbox{-}8$	0.892 ± 0.042	0.894 ± 0.040	0.892 ± 0.040	0.896 ± 0.040	0.902 ± 0.038	0.895 ± 0.041	0.900 ± 0.039
glass2	0.547 ± 0.083	0.708 ± 0.109	0.695 ± 0.114	0.759 ± 0.118	0.757 ± 0.113	0.746 ± 0.105	0.752 ± 0.110
	<u> </u>	1	1	all	1,2,3,6	1,2,3	1,2,3,6

Table 1: Results for BAC metric

	kNN (1) OSB (2) OKNORAU (3) TBAC (4) OTBAC (5) TBAW (6) OTBAW (7)									
$Mean\ rank$	1.610	5.061	4.902	3.244	4.329	4.134	4.720			
	_	1,4,6	1,4	1	1,4	1,4	1,4,6			

Table 2: Results for mean ranks according to BAC metric

Dataset	kNN (1)	OSB (2)	OKNORAU (3)	TBAC (4)	OTBAC (5)	TBAW (6)	OTBAW (7)
glass-0-1-6-vs-2	0.088 ± 0.169	0.334 ± 0.169	0.332 ± 0.168	0.342 ± 0.115	0.326 ± 0.086	0.315 ± 0.090	0.325 ± 0.084
ecoli-0-3-4-7-vs-5-6	0.813 ± 0.131	0.768 ± 0.116	0.752 ± 0.115	0.803 ± 0.115	0.785 ± 0.127	0.781 ± 0.125	0.774 ± 0.131
shuttle- $c2$ - vs - $c4$	0.180 ± 0.366	$0.993 \stackrel{3}{\pm} 0.046$	0.993 ± 0.046	0.720 ± 0.433	0.867 ± 0.326	$0.740 \stackrel{-}{\pm} 0.423$	0.867 ± 0.326
glass-0-1-4-6-vs-2	0.074 ± 0.165	0.354 ± 0.148	0.340 ± 0.161	$0.324 \stackrel{1}{\pm} 0.133$	$0.322 \stackrel{1}{\pm} 0.103$	$0.302 \stackrel{1}{\pm} 0.103$	$0.323 \stackrel{1}{\pm} 0.099$
yeast-1-2-8-9- vs -7	0.026 ± 0.079	0.235 ± 0.125	0.229 ± 0.119	0.173 ± 0.100	0.164 ± 0.095	$0.167 \stackrel{1}{\pm} 0.087$	0.184 ± 0.066
ecoli-0-1-4-6-vs-5	0.845 ± 0.127	$0.843 \stackrel{all}{\pm} 0.110$	0.839 ± 0.112	$0.829 \stackrel{1}{\pm} 0.105$	$0.827 \stackrel{1}{\pm} 0.108$	$0.831 \stackrel{1}{\pm} 0.106$	0.827 ± 0.107
$glass\hbox{-} 0\hbox{-} 1\hbox{-} 6\hbox{-} vs\hbox{-} 5$	0.332 ± 0.282	0.626 ± 0.242	0.620 ± 0.280	0.550 ± 0.249	0.499 ± 0.253	0.534 ± 0.256	0.510 ± 0.250
yeast-2- vs -4	0.752 ± 0.104	0.748 ± 0.086	0.757 ± 0.090	0.754 ± 0.095	$0.762 \stackrel{1}{\pm} 0.100$	0.745 ± 0.102	$0.753 \stackrel{1}{\pm} 0.097$
glass-0-6-vs-5	0.490 ± 0.393	0.787 ± 0.265	0.807 ± 0.220	0.602 ± 0.374	0.625 ± 0.333	0.665 ± 0.317	0.640 ± 0.318
ecoli-0-3-4-6-vs-5	0.853 ± 0.140	0.833 ± 0.135	0.833 ± 0.126	$0.778 \stackrel{1}{\pm} 0.148$	0.782 ± 0.157	$0.790 \stackrel{1}{\pm} 0.151$	0.776 ± 0.158
yeast - 0 - 3 - 5 - 9 - vs - 7 - 8	0.397 ± 0.126	0.407 ± 0.084	0.400 ± 0.079	0.401 ± 0.125	0.392 ± 0.127	0.406 ± 0.113	0.403 ± 0.119
$glass\hbox{-} 0\hbox{-} 1\hbox{-} 5\hbox{-} vs\hbox{-} 2$	0.113 ± 0.179	0.327 ± 0.175	0.322 ± 0.156	0.347 ± 0.126	0.325 ± 0.093	0.311 ± 0.105	0.319 ± 0.089
ecoli-0-6-7-vs-5	0.774 ± 0.170	0.727 ± 0.153	$0.710 \stackrel{1}{\pm} 0.146$	0.785 ± 0.170	$0.775 \stackrel{1}{\pm} 0.169$	0.772 ± 0.158	0.752 ± 0.178
ecoli-0-2-3-4- vs -5	0.852 ± 0.121	0.822 ± 0.130	0.821 ± 0.128	0.828 ± 0.139	0.816 ± 0.135	0.828 ± 0.138	0.817 ± 0.133
ecoli4	0.853 ± 0.143	$0.807 \stackrel{-}{\pm} 0.146$	0.791 ± 0.148	0.868 ± 0.133	0.862 ± 0.136	0.848 ± 0.153	0.822 ± 0.138
yeast5	0.706 ± 0.114	0.707 ± 0.074	0.697 ± 0.080	0.709 ± 0.086	0.702 ± 0.077	0.689 ± 0.085	0.693 ± 0.075
ecoli-0-4-6- vs -5	0.860 ± 0.134	0.850 ± 0.140	0.850 ± 0.135	0.801 ± 0.137	0.792 ± 0.143	0.801 ± 0.137	0.787 ± 0.146
$led 7 digit \hbox{-} 0 \hbox{-} 2 \hbox{-} 4 \hbox{-} 5 \hbox{-} 6 \hbox{-} 7 \hbox{-} 8 \hbox{-} 9 \hbox{-} vs \hbox{-} 1$	0.388 ± 0.185	0.678 ± 0.098	0.639 ± 0.163	0.314 ± 0.189	$0.405 \stackrel{-}{\pm} 0.182$	0.729 ± 0.122	0.668 ± 0.163
ecoli-0-1- vs -5	$0.855 \stackrel{4}{\pm} 0.117$	0.862 ± 0.100	0.858 ± 0.104	0.874 ± 0.099	$0.875 \stackrel{4}{\pm} 0.102$	0.876 ± 0.099	0.876 ± 0.102
ecoli - 0 - 2 - 6 - 7 - vs - 3 - 5	0.699 ± 0.217	0.721 ± 0.135	0.727 ± 0.131	0.732 ± 0.178	0.731 ± 0.173	0.723 ± 0.159	0.710 ± 0.178
ecoli-0-1-4-7-vs-2-3-5-6	0.773 ± 0.159	0.687 ± 0.128	0.679 ± 0.111	0.798 ± 0.114	0.783 ± 0.132	0.781 ± 0.117	0.766 ± 0.139
shuttle-c0-vs-c4	0.996 ± 0.008	0.996 ± 0.008	0.996 ± 0.008	0.995 ± 0.008	0.995 ± 0.008	0.995 ± 0.008	0.995 ± 0.008
ecoli-0-6-7- vs -3-5	0.689 ± 0.199	0.718 ± 0.169	0.717 ± 0.169	0.728 ± 0.181	0.722 ± 0.181	0.706 ± 0.177	0.715 ± 0.174
vowel0	0.963 ± 0.046	0.990 ± 0.026	0.991 ± 0.025	$0.710 \stackrel{6}{\pm} 0.102$	0.852 ± 0.086	0.869 ± 0.074	0.885 ± 0.077
glass4	0.572 ± 0.309	0.707 ± 0.249	0.689 ± 0.242	0.527 ± 0.221	0.559 ± 0.247	0.514 ± 0.232	0.582 ± 0.243
yeast - 0 - 5 - 6 - 7 - 9 - vs - 4	0.405 ± 0.157	0.555 ± 0.077	0.549 ± 0.078	0.561 ± 0.085	0.561 ± 0.089	0.489 ± 0.077	0.528 ± 0.083
yeast - 0 - 2 - 5 - 6 - vs - 3 - 7 - 8 - 9	0.626 ± 0.075	0.550 ± 0.060	0.537 ± 0.064	0.625 ± 0.085	0.626 ± 0.085	0.601 ± 0.099	0.633 ± 0.084
ecoli- 0 - 1 - vs - 2 - 3 - 5	0.773 ± 0.150	0.744 ± 0.131	0.743 ± 0.141	0.802 ± 0.135	0.810 ± 0.136	0.800 ± 0.135	0.785 ± 0.135
ecoli-0-3-4- vs -5	0.861 ± 0.162	0.836 ± 0.158	0.829 ± 0.156	0.828 ± 0.161	0.818 ± 0.161	0.827 ± 0.164	0.811 ± 0.171
glass5	0.325 ± 0.332	0.519 ± 0.318 $1,5,6$	0.558 ± 0.307 $1,4,5,6,7$	0.476 ± 0.273 $1,6$	0.462 ± 0.224	0.442 ± 0.241	0.478 ± 0.232
yeast4	0.170 ± 0.122	0.385 ± 0.108 $1,3,6,7$	0.374 ± 0.100	0.394 ± 0.096	0.399 ± 0.094	0.348 ± 0.091	0.360 ± 0.080
$glass\hbox{-} 0\hbox{-} 4\hbox{-} vs\hbox{-} 5$	0.547 ± 0.415	0.908 ± 0.141 $1,4,5,6,7$	$0.909 \stackrel{1}{\pm} 0.135$ $1,4,5,6,7$	0.622 ± 0.281	0.689 ± 0.296	0.626 ± 0.283	0.644 ± 0.295
yeast6	0.553 ± 0.158	0.494 ± 0.123	0.494 ± 0.120	0.540 ± 0.117	0.513 ± 0.122	0.479 ± 0.101	0.469 ± 0.130
page-blocks-1-3-vs-4	0.648 ± 0.152	0.691 ± 0.116	0.685 ± 0.124 $4,5,6$	0.524 ± 0.211	0.613 ± 0.160	0.614 ± 0.209	0.660 ± 0.186
yeast-1-vs-7	0.101 ± 0.143	0.292 ± 0.155	0.281 ± 0.144	0.246 ± 0.088 $1,6$	0.237 ± 0.110	0.226 ± 0.079	0.243 ± 0.089
ecoli - 0 - 1 - 3 - 7 - vs - 2 - 6	0.727 ± 0.386	0.530 ± 0.314	0.608 ± 0.357 2.6	0.677 ± 0.389	0.643 ± 0.380	0.441 ± 0.271	0.569 ± 0.347
yeast-1-4-5-8- vs -7	$\begin{array}{c} 2,3,5,6,7 \\ 0.004 \pm 0.031 \end{array}$	0.142 ± 0.109	0.145 ± 0.106	0.135 ± 0.084	0.131 ± 0.065	0.156 ± 0.080 $1,4,5$	0.142 ± 0.060
ecoli-0-1-4-7-vs-5-6	0.812 ± 0.160	0.775 ± 0.122	$0.771 \stackrel{1}{\pm} 0.116$	0.828 ± 0.109 $2,3,6,7$	0.813 ± 0.121	0.806 ± 0.109	0.804 ± 0.131
yeast-2-vs-8	0.661 ± 0.209	0.528 ± 0.180	0.504 ± 0.158	0.661 ± 0.209	0.665 ± 0.200	0.660 ± 0.210	0.656 ± 0.204
yeast - 0 - 2 - 5 - 7 - 9 - vs - 3 - 6 - 8	0.829 ± 0.059	0.744 ± 0.053	0.733 ± 0.056	0.822 ± 0.058 $2,3$	$0.823 \pm 0.055 \\ 2.3$	0.822 ± 0.058 2.3	0.821 ± 0.058
glass2	$ \begin{array}{c c} 2,3,4,6,7 \\ 0.152 \pm 0.209 \\ - \end{array} $	$0.369 \pm 0.148 \\ 1,3,5,6,7$	$0.344 \pm 0.149 \\ 1,6,7$	$0.351 \pm 0.125 \\ 1,5,6,7$	$0.331 \pm 0.107 \\ 1,6$	0.306 ± 0.086	$\begin{array}{c} 2.3 \\ 0.323 \pm 0.099 \\ 1.6 \end{array}$

Table 3: Results for F1 metric

	kNN (1)	OSB (2)	OKNORAU (3)	TBAC (4)	OTBAC (5)	TBAW (6)	OTBAW (7)
Mean rank	3.500	4.720	4.207	4.683	4.122	3.354	3.415
	_	1,3,6,7	7	1,6,7	6	_	_

Table 4: Results for mean ranks according to F1 metric

Dataset	kNN (1)	OSB (2)	OKNORAU (3)	TBAC (4)	OTBAC (5)	TBAW (6)	OTBAW (7)
glass-0-1-6-vs-2	0.161 ± 0.334	0.289 ± 0.203	0.274 ± 0.172	0.230 ± 0.084	0.208 ± 0.063	0.200 ± 0.063	0.208 ± 0.063
ecoli-0-3-4-7-vs-5-6	0.944 ± 0.091	0.748 ± 0.150	0.726 ± 0.162	0.853 ± 0.135	0.816 ± 0.147	0.774 ± 0.147	0.780 ± 0.149
shuttle-c2-vs-c4	0.200 ± 0.400	1.000 ± 0.000	1.000 ± 0.000	0.740 ± 0.438	0.880 ± 0.324	0.760 ± 0.427	0.880 ± 0.324
glass-0-1-4-6-vs-2	0.133 ± 0.310	0.277 ± 0.123	0.264 ± 0.131	0.219 ± 0.093	$0.206 \stackrel{1}{\pm} 0.071$	$0.193 \stackrel{1}{\pm} 0.073$	0.207 ± 0.069
yeast-1-2-8-9-vs-7	0.070 ± 0.223	0.197 ± 0.107	0.184 ± 0.100	0.122 ± 0.072	0.112 ± 0.085	0.106 ± 0.060	0.115 ± 0.045
ecoli-0-1-4-6-vs-5	0.960 ± 0.100	0.866 ± 0.144	0.852 ± 0.142	0.885 ± 0.135	0.859 ± 0.139	0.878 ± 0.137	0.861 ± 0.142
$glass\hbox{-} 0\hbox{-} 1\hbox{-} 6\hbox{-} vs\hbox{-} 5$	0.373 ± 0.371	0.543 ± 0.253	0.536 ± 0.286	0.486 ± 0.262	0.418 ± 0.245	0.470 ± 0.257	0.425 ± 0.244
yeast-2- vs -4	0.922 ± 0.095	0.741 ± 0.113	0.747 ± 0.117	0.862 ± 0.108	0.848 ± 0.107	$0.820 \overset{5,7}{\pm} 0.137$	0.812 ± 0.131
glass-0-6-vs-5	$0.600 \stackrel{all}{\pm} 0.469$	0.772 ± 0.302	0.782 ± 0.266	0.678 ± 0.420	0.705 ± 0.389	0.748 ± 0.363	0.712 ± 0.374
ecoli-0-3-4-6- vs -5	0.946 ± 0.119	$0.844 \stackrel{1}{\pm} 0.160$	0.842 ± 0.145	0.761 ± 0.170	0.753 ± 0.183	$0.775 \stackrel{1}{\pm} 0.175$	0.744 ± 0.181
yeast - 0 - 3 - 5 - 9 - vs - 7 - 8	0.605 ± 0.176	0.334 ± 0.075	0.319 ± 0.069	0.584 ± 0.197	0.497 ± 0.177	0.513 ± 0.175	0.490 ± 0.176
$glass\hbox{-} 0\hbox{-} 1\hbox{-} 5\hbox{-} vs\hbox{-} 2$	0.186 ± 0.333	$0.255 \stackrel{3}{\pm} 0.137$	0.250 ± 0.124	0.233 ± 0.088	0.208 ± 0.068	$0.199 \overset{2,3}{\pm} 0.075$	$0.203 \stackrel{2,3}{\pm} 0.061$
ecoli-0-6-7-vs-5	0.953 ± 0.114	0.732 ± 0.191	0.704 ± 0.181	0.852 ± 0.187	$0.813 \stackrel{1}{\pm} 0.188$	$0.814 \stackrel{1}{\pm} 0.183$	$0.768 \stackrel{1}{\pm} 0.209$
ecoli-0-2-3-4-vs-5	0.960 ± 0.092	0.829 ± 0.180	0.829 ± 0.181	0.846 ± 0.184	0.824 ± 0.183	0.846 ± 0.181	0.820 ± 0.180
ecoli4	0.973 ± 0.073	0.812 ± 0.179	0.788 ± 0.189	0.913 ± 0.127	0.870 ± 0.151	0.877 ± 0.156	0.813 ± 0.176
yeast5	0.794 ± 0.140	0.591 ± 0.087	0.580 ± 0.090	0.609 ± 0.093	0.585 ± 0.085	0.566 ± 0.088	0.577 ± 0.086
ecoli-0-4-6- vs -5	0.935 ± 0.135	0.871 ± 0.172	0.873 ± 0.168	0.787 ± 0.178	0.764 ± 0.181	0.795 ± 0.181	0.756 ± 0.186
$led 7 digit \hbox{-} 0 \hbox{-} 2 \hbox{-} 4 \hbox{-} 5 \hbox{-} 6 \hbox{-} 7 \hbox{-} 8 \hbox{-} 9 \hbox{-} vs \hbox{-} 1$	0.782 ± 0.304	0.570 ± 0.106	0.578 ± 0.134	0.548 ± 0.324	0.518 ± 0.254	0.722 ± 0.127	0.602 ± 0.157
ecoli- 0 - 1 - vs - 5	0.972 ± 0.076	0.902 ± 0.122	0.896 ± 0.138	0.973 ± 0.073	0.956 ± 0.097	0.962 ± 0.088	$0.944 \stackrel{5}{\pm} 0.110$
ecoli - 0 - 2 - 6 - 7 - vs - 3 - 5	0.933 ± 0.175	0.734 ± 0.182	0.726 ± 0.196	0.813 ± 0.193	0.804 ± 0.194	0.764 ± 0.200	0.735 ± 0.217
ecoli - 0 - 1 - 4 - 7 - vs - 2 - 3 - 5 - 6	0.979 ± 0.065	0.673 ± 0.169	0.650 ± 0.148	0.923 ± 0.111	0.891 ± 0.133	0.856 ± 0.121	0.836 ± 0.176
shuttle-c0-vs-c4	$1.000 \stackrel{all}{\pm} 0.000$	1.000 ± 0.000	1.000 ± 0.000	1.000 ± 0.000	1.000 ± 0.000	1.000 ± 0.000	1.000 ± 0.000
ecoli-0-6-7- vs -3-5	0.907 ± 0.169	0.727 ± 0.204	0.705 ± 0.192	0.831 ± 0.198	0.818 ± 0.202	0.766 ± 0.202	0.785 ± 0.207
vowel0	0.989 ± 0.027	0.987 ± 0.027	0.989 ± 0.026	0.850 ± 0.110	0.880 ± 0.087	0.892 ± 0.072	0.934 ± 0.071
glass4	0.728 ± 0.384	0.637 ± 0.272	$4,5,6,7$ 0.609 ± 0.261	0.503 ± 0.249	$0.514 \stackrel{4}{\pm} 0.269$	0.491 ± 0.264	0.538 ± 0.275
yeast-0-5-6-7-9-vs-4	0.647 ± 0.237	0.476 ± 0.087	0.469 ± 0.087	0.531 ± 0.101	0.501 ± 0.127	0.386 ± 0.080	0.432 ± 0.110
yeast - 0 - 2 - 5 - 6 - vs - 3 - 7 - 8 - 9	0.779 ± 0.092	0.473 ± 0.059	$0.453 \stackrel{6}{\pm} 0.061$	0.728 ± 0.089	0.686 ± 0.097	0.682 ± 0.137	0.726 ± 0.099
ecoli-0-1- vs -2-3-5	0.968 ± 0.081 $2,3,7$	0.746 ± 0.169	0.731 ± 0.167	0.951 ± 0.112	$0.943 \pm 0.115 \\ 2,3,7$	0.926 ± 0.127 2.3	0.887 ± 0.153
ecoli-0-3-4- vs -5	0.958 ± 0.111	0.868 ± 0.168	0.857 ± 0.171	0.835 ± 0.165	0.817 ± 0.170	0.837 ± 0.168	0.812 ± 0.179
glass5	0.377 ± 0.406	0.451 ± 0.298 $5,6,7$	0.494 ± 0.301 $4.5.6.7$	0.401 ± 0.273	0.355 ± 0.205	0.365 ± 0.238	0.372 ± 0.220
yeast4	0.358 ± 0.276 $6,7$	0.328 ± 0.103 $3,6,7$	0.309 ± 0.088 $6,7$	0.328 ± 0.090 $6,7$	0.331 ± 0.094 $3,6,7$	0.252 ± 0.068	0.255 ± 0.062
glass-0-4-vs-5	0.660 ± 0.473	0.860 ± 0.203 $1,4,5,6,7$	0.860 ± 0.195 $1,4,5,6,7$	0.646 ± 0.342	0.695 ± 0.345	0.596 ± 0.316	0.670 ± 0.353
yeast6	0.626 ± 0.178	0.402 ± 0.111 $6,7$	0.395 ± 0.110	$0.454 \pm 0.112 \\ 2,3,5,6,7$	0.410 ± 0.114 $6,7$	0.368 ± 0.095	0.354 ± 0.129
$page-blocks\hbox{-} 1\hbox{-} 3\hbox{-} vs\hbox{-} 4$	0.686 ± 0.174	0.577 ± 0.117	0.590 ± 0.140	0.552 ± 0.222	0.630 ± 0.185	0.663 ± 0.255 $2,4$	0.746 ± 0.213
yeast-1-vs-7	0.330 ± 0.464	0.262 ± 0.146 $3,4,5,6,7$	0.243 ± 0.133 $4,5,6,7$	0.182 ± 0.072	0.180 ± 0.101	0.150 ± 0.053	0.162 ± 0.063
ecoli - 0 - 1 - 3 - 7 - vs - 2 - 6	0.790 ± 0.401 $2,3,5,6,7$	0.494 ± 0.349	0.600 ± 0.389 2.6	$0.697 \pm 0.412 \\ 2,6,7$	0.650 ± 0.411 2.6	0.390 ± 0.318	0.557 ± 0.391
yeast-1-4-5-8- vs -7	0.007 ± 0.046	0.115 ± 0.089 $1,4,5,7$	$0.112 \pm 0.081 \\ 1,4,5,7$	0.088 ± 0.056	0.082 ± 0.041	0.097 ± 0.052 $1,5,7$	0.086 ± 0.037
ecoli-0-1-4-7-vs-5-6	0.967 ± 0.091	0.768 ± 0.175	0.751 ± 0.177	0.902 ± 0.122	0.877 ± 0.146 $2,3,6$	0.828 ± 0.137	0.835 ± 0.156 $2,3$
yeast-2-vs-8	0.908 ± 0.200 $2,3$	0.563 ± 0.234	0.500 ± 0.203	0.908 ± 0.200 $2,3$	0.911 ± 0.190 $2,3$	0.902 ± 0.202 2.3	0.877 ± 0.208 2,3
yeast - 0 - 2 - 5 - 7 - 9 - vs - 3 - 6 - 8	0.871 ± 0.068	0.679 ± 0.067	0.660 ± 0.071	0.841 ± 0.066 $2,3,5$	0.828 ± 0.068	0.843 ± 0.069 2.3	0.830 ± 0.073 $2,3$
glass2	0.260 ± 0.387	$0.295 \pm 0.137 \\ 3,4,5,6,7$	0.279 ± 0.163	0.235 ± 0.096	0.215 ± 0.080	0.193 ± 0.061	0.208 ± 0.074
	_	3,4,5,6,7	4,5,6,7	5,6,7	1 6	_	1 6

Table 5: Results for Precision metric

	kNN (1)	OSB (2)	OKNORAU (3)	TBAC (4)	OTBAC (5)	TBAW (6)	OTBAW (7)
Mean rank	5.451	4.171	3.585	4.671	3.695	3.293	3.134
	3,4,5,6,7	3,7	_	3,5,6,7	7	_	_

Table 6: Results for mean ranks according to Precision metric

Dataset	kNN (1)	OSB (2)	OKNORAU (3)	TBAC (4)	OTBAC (5)	TBAW (6)	OTBAW (7)
glass-0-1-6-vs-2	0.065 ± 0.123	0.480 ± 0.251	0.477 ± 0.241	0.705 ± 0.240	0.802 ± 0.202	0.793 ± 0.221	0.798 ± 0.200
ecoli-0-3-4-7-vs-5-6	0.744 ± 0.196	0.824 ± 0.163	0.824 ± 0.168	0.776 ± 0.153	0.772 ± 0.154	0.808 ± 0.154	0.784 ± 0.154
shuttle- $c2$ - vs - $c4$	0.170 ± 0.355	0.990 ± 0.069	0.990 ± 0.069	0.710 ± 0.436	0.860 ± 0.332	0.730 ± 0.426	0.860 ± 0.332
$glass\hbox{-}0\hbox{-}1\hbox{-}4\hbox{-}6\hbox{-}vs\hbox{-}2$	0.055 ± 0.122	0.528 ± 0.239	0.502 ± 0.245	$0.655 \stackrel{1}{\pm} 0.280$	$0.767 \stackrel{1}{\pm} 0.213$	$0.742 \stackrel{1}{\pm} 0.213$	$0.775 \stackrel{1}{\pm} 0.193$
yeast-1-2-8-9-vs-7	0.017 ± 0.049	$0.303 \stackrel{1}{\pm} 0.165$	0.313 ± 0.162	0.307 ± 0.180	0.377 ± 0.199	0.423 ± 0.192	0.487 ± 0.162
ecoli-0-1-4-6-vs-5	0.775 ± 0.182	0.845 ± 0.149	$0.850 \stackrel{1}{\pm} 0.150$	$0.810 \stackrel{1}{\pm} 0.162$	0.825 ± 0.160	0.815 ± 0.156	$0.825 \stackrel{all}{\pm} 0.160$
$glass\hbox{-} 0\hbox{-} 1\hbox{-} 6\hbox{-} vs\hbox{-} 5$	0.360 ± 0.316	$0.820 \stackrel{1}{\pm} 0.278$	$0.810 \stackrel{1}{\pm} 0.314$	0.720 ± 0.318	$0.700 \stackrel{1}{\pm} 0.331$	0.690 ± 0.330	$0.720 \stackrel{1}{\pm} 0.318$
yeast-2-vs-4	0.647 ± 0.132	0.774 ± 0.125	$0.786 \stackrel{1}{\pm} 0.122$	0.682 ± 0.123	$0.705 \stackrel{1}{\pm} 0.133$	$0.701 \stackrel{1}{\pm} 0.131$	$0.723 \stackrel{1}{\pm} 0.135$
$glass\hbox{-} 0\hbox{-} 6\hbox{-} vs\hbox{-} 5$	0.440 ± 0.382	0.870 ± 0.279	0.900 ± 0.223	$0.590 \stackrel{1}{\pm} 0.396$	0.620 ± 0.354	0.660 ± 0.352	0.650 ± 0.350
ecoli-0-3-4-6-vs-5	0.795 ± 0.185	0.850 ± 0.173	0.850 ± 0.173	0.815 ± 0.164	0.835 ± 0.170	$0.825 \stackrel{1}{\pm} 0.167$	0.830 ± 0.169
yeast - 0 - 3 - 5 - 9 - vs - 7 - 8	0.306 ± 0.115	$0.534 \stackrel{1}{\pm} 0.124$	0.550 ± 0.118	0.328 ± 0.126	0.340 ± 0.124	0.364 ± 0.130	0.366 ± 0.127
$glass\hbox{-}0\hbox{-}1\hbox{-}5\hbox{-}vs\hbox{-}2$	0.090 ± 0.139	0.492 ± 0.289	0.490 ± 0.271	0.707 ± 0.267	$0.787 \stackrel{1}{\pm} 0.218$	$0.763 \overset{1,4}{\pm} 0.241$	0.780 ± 0.216
ecoli-0-6-7-vs-5	0.685 ± 0.216	$0.770 \stackrel{1}{\pm} 0.205$	$0.770 \stackrel{1}{\pm} 0.211$	0.750 ± 0.200	0.765 ± 0.202	0.760 ± 0.193	0.770 ± 0.205
ecoli-0-2-3-4-vs-5	0.785 ± 0.165	0.850 ± 0.158	$0.850 \stackrel{1}{\pm} 0.158$	0.840 ± 0.156	$0.840 \stackrel{1}{\pm} 0.156$	$0.840 \stackrel{1}{\pm} 0.156$	0.845 ± 0.157
ecoli4	0.790 ± 0.202	$0.855 \stackrel{1}{\pm} 0.200$	$0.855 \stackrel{1}{\pm} 0.200$	$0.850 \stackrel{1}{\pm} 0.180$	$0.880 \stackrel{1}{\pm} 0.167$	$0.855 \stackrel{1}{\pm} 0.194$	$0.875 \stackrel{1}{\pm} 0.175$
yeast5	0.647 ± 0.127	$0.894 \stackrel{1}{\pm} 0.090$	$0.887 \stackrel{1}{\pm} 0.097$	$0.862 \stackrel{1}{\pm} 0.124$	$0.892 \stackrel{1}{\pm} 0.104$	$0.894 \stackrel{1}{\pm} 0.114$	$0.884 \stackrel{1}{\pm} 0.097$
ecoli-0-4-6- vs -5	0.810 ± 0.162	0.850 ± 0.158	0.850 ± 0.158	0.840 ± 0.156	0.845 ± 0.157	0.835 ± 0.162	0.845 ± 0.157
$led 7 digit \hbox{-} 0\hbox{-} 2\hbox{-} 4\hbox{-} 5\hbox{-} 6\hbox{-} 7\hbox{-} 8\hbox{-} 9\hbox{-} vs\hbox{-} 1$	0.279 ± 0.155	0.858 ± 0.139	0.775 ± 0.244	0.238 ± 0.162	0.355 ± 0.176	0.782 ± 0.180	0.796 ± 0.236
ecoli-0-1- vs -5	0.785 ± 0.180	0.850 ± 0.150	0.850 ± 0.150	0.810 ± 0.154	0.825 ± 0.152	0.820 ± 0.150	0.835 ± 0.146
ecoli - 0 - 2 - 6 - 7 - vs - 3 - 5	0.597 ± 0.251	$0.749 \stackrel{1}{\pm} 0.186$	$0.774 \stackrel{1}{\pm} 0.166$	0.685 ± 0.203	0.691 ± 0.199	0.714 ± 0.180	0.714 ± 0.182
ecoli-0-1-4-7-vs-2-3-5-6	0.668 ± 0.202	0.740 ± 0.169	0.751 ± 0.166	0.729 ± 0.168	0.726 ± 0.177	0.737 ± 0.159	0.733 ± 0.169
shuttle-c0-vs-c4	0.992 ± 0.016	0.992 ± 0.016	0.992 ± 0.016	0.991 ± 0.016	0.991 ± 0.016	0.991 ± 0.016	0.991 ± 0.016
ecoli-0-6-7- vs -3-5	0.593 ± 0.237	0.746 ± 0.199	0.767 ± 0.208	0.672 ± 0.201	0.673 ± 0.205	0.681 ± 0.200	0.686 ± 0.194
vowel0	0.941 ± 0.077	0.994 ± 0.038	0.994 ± 0.038	0.621 ± 0.127	$0.839 \stackrel{1}{\pm} 0.125$	0.858 ± 0.118	$0.850 \stackrel{1}{\pm} 0.112$
glass4	0.513 ± 0.310	0.857 ± 0.278	0.857 ± 0.278	0.613 ± 0.275	$0.677 \stackrel{4}{\pm} 0.300$	$0.607 \stackrel{4}{\pm} 0.293$	$0.703 \stackrel{4}{\pm} 0.296$
yeast - 0 - 5 - 6 - 7 - 9 - vs - 4	0.317 ± 0.153	0.685 ± 0.116	0.683 ± 0.116	0.619 ± 0.127	0.665 ± 0.099	0.693 ± 0.130	0.724 ± 0.120
$yeast \hbox{-} 0 \hbox{-} 2 \hbox{-} 5 \hbox{-} 6 \hbox{-} vs \hbox{-} 3 \hbox{-} 7 \hbox{-} 8 \hbox{-} 9$	0.529 ± 0.083	0.664 ± 0.093	0.667 ± 0.094	0.556 ± 0.102	0.587 ± 0.106	0.553 ± 0.112	0.572 ± 0.107
ecoli- 0 - 1 - vs - 2 - 3 - 5	0.670 ± 0.187	0.787 ± 0.186	0.791 ± 0.184	0.711 ± 0.175	0.728 ± 0.180	0.724 ± 0.176	0.727 ± 0.170
ecoli-0-3-4- vs -5	0.810 ± 0.209	0.850 ± 0.200	0.850 ± 0.200	$0.850 \stackrel{1}{\pm} 0.200$	0.850 ± 0.200	0.845 ± 0.199	0.840 ± 0.204
glass5	0.310 ± 0.330	0.660 ± 0.405	0.700 ± 0.387	0.670 ± 0.355	0.760 ± 0.349	0.650 ± 0.350	0.770 ± 0.349
yeast4	0.117 ± 0.088	0.487 ± 0.158	0.495 ± 0.157	0.511 ± 0.135	0.529 ± 0.143	0.579 ± 0.168	0.630 ± 0.162
$glass\hbox{-} 0\hbox{-} 4\hbox{-} vs\hbox{-} 5$	0.490 ± 0.406	0.990 ± 0.069	0.990 ± 0.069	0.690 ± 0.330	0.780 ± 0.334	0.740 ± 0.335	0.710 ± 0.333
yeast6	0.523 ± 0.184	0.671 ± 0.183	0.686 ± 0.173	0.691 ± 0.169	0.711 ± 0.174	0.720 ± 0.164	0.749 ± 0.172
page-blocks-1-3-vs-4	0.657 ± 0.217	0.887 ± 0.155	0.851 ± 0.166	0.530 ± 0.233	0.631 ± 0.200	0.641 ± 0.255	0.621 ± 0.210
yeast-1-vs-7	0.060 ± 0.086	0.360 ± 0.203	0.363 ± 0.201	0.413 ± 0.177	0.403 ± 0.213	0.490 ± 0.209	0.513 ± 0.207
ecoli- 0 - 1 - 3 - 7 - vs - 2 - 6	0.700 ± 0.400	$0.700 \stackrel{1}{\pm} 0.400$	$0.700 \stackrel{1}{\pm} 0.400$	$0.700 \stackrel{1}{\pm} 0.400$	$0.700 \stackrel{1}{\pm} 0.400$	0.700 ± 0.400	0.700 ± 0.400
yeast-1-4-5-8- vs -7	0.003 ± 0.023	0.197 ± 0.165	0.217 ± 0.174	0.303 ± 0.190	0.363 ± 0.196	0.417 ± 0.197	0.433 ± 0.176
ecoli - 0 - 1 - 4 - 7 - vs - 5 - 6	0.732 ± 0.198	0.820 ± 0.150	0.832 ± 0.140	0.784 ± 0.154	0.780 ± 0.161	0.804 ± 0.146	0.796 ± 0.162
yeast-2- vs -8	0.550 ± 0.229	0.560 ± 0.232	0.575 ± 0.230	0.550 ± 0.229	0.555 ± 0.219	0.550 ± 0.229	0.555 ± 0.219
yeast - 0 - 2 - 5 - 7 - 9 - vs - 3 - 6 - 8	0.797 ± 0.084	0.832 ± 0.083	0.833 ± 0.082	0.809 ± 0.080	0.823 ± 0.075	0.808 ± 0.083	0.819 ± 0.079
glass2	0.117 ± 0.164	0.533 ± 0.224 1	0.512 ± 0.238 1	$0.738 \pm 0.228 \\ 1,2,3$	$0.765 \pm 0.219 \\ 1,2,3$	$0.783 \pm 0.209 \\ 1,2,3$	$0.760 \pm 0.222 \\ 1,2,3$

Table 7: Results for Recall metric

	kNN (1)	OSB (2)	OKNORAU (3)	TBAC (4)	OTBAC (5)	TBAW (6)	OTBAW (7)
Mean rank	1.439	5.183	5.402	2.817	4.244	4.049	4.866
	_	1,4,6	1,4,5,6	1	1,4	1,4	1,4,5,6

Table 8: Results for mean ranks according to Recall metric

Dataset	kNN (1)	OSB (2)	OKNORAU (3)	TBAC (4)	OTBAC (5)	TBAW (6)	OTBAW (7)
glass-0-1-6-vs-2	0.522 ± 0.062	0.672 ± 0.127	0.670 ± 0.122	0.735 ± 0.121	0.749 ± 0.093	0.739 ± 0.112	0.748 ± 0.094
ecoli-0-3-4-7-vs-5-6	0.869 ± 0.097	0.895 ± 0.080	0.892 ± 0.080	0.880 ± 0.077	0.876 ± 0.080	0.890 ± 0.079	0.879 ± 0.080
shuttle- $c2$ - vs - $c4$	0.585 ± 0.177	$0.995 \stackrel{3}{\pm} 0.034$	0.995 ± 0.034	$0.855 \stackrel{7}{\pm} 0.218$	0.930 ± 0.166	0.865 ± 0.213	0.930 ± 0.166
$glass\hbox{-}0\hbox{-}1\hbox{-}4\hbox{-}6\hbox{-}vs\hbox{-}2$	0.518 ± 0.062	0.702 ± 0.113	0.688 ± 0.121	0.720 ± 0.138	$0.745 \stackrel{1}{\pm} 0.108$	$0.722 \stackrel{1}{\pm} 0.110$	$0.745 \stackrel{1}{\pm} 0.106$
$yeast\hbox{-} 1\hbox{-} 2\hbox{-} 8\hbox{-} 9\hbox{-} vs\hbox{-} 7$	0.508 ± 0.024	0.631 ± 0.082	0.633 ± 0.082	0.617 ± 0.090	0.636 ± 0.091	0.649 ± 0.100	0.679 ± 0.082
ecoli- 0 - 1 - 4 - 6 - vs - 5	0.886 ± 0.091	0.916 ± 0.074	0.918 ± 0.075	$0.900 \stackrel{1}{\pm} 0.079$	0.906 ± 0.078	0.902 ± 0.077	0.906 ± 0.078
$glass\hbox{-} 0\hbox{-} 1\hbox{-} 6\hbox{-} vs\hbox{-} 5$	0.668 ± 0.151	0.889 ± 0.138	0.884 ± 0.157	0.837 ± 0.159	0.822 ± 0.165	0.823 ± 0.164	0.831 ± 0.161
yeast-2-vs-4	0.820 ± 0.066	0.871 ± 0.061	0.877 ± 0.059	0.834 ± 0.062	$0.845 \stackrel{1}{\pm} 0.067$	0.841 ± 0.065	0.851 ± 0.066
$glass\hbox{-} 0\hbox{-} 6\hbox{-} vs\hbox{-} 5$	0.714 ± 0.194	0.920 ± 0.139	0.935 ± 0.111	0.785 ± 0.200	0.797 ± 0.181	0.821 ± 0.175	$0.811 \stackrel{1}{\pm} 0.177$
ecoli-0-3-4-6- vs -5	0.895 ± 0.094	0.915 ± 0.087	0.915 ± 0.086	0.892 ± 0.087	$0.901 \stackrel{1}{\pm} 0.091$	0.898 ± 0.089	$0.898 \stackrel{1}{\pm} 0.091$
yeast - 0 - 3 - 5 - 9 - vs - 7 - 8	$0.641 \stackrel{4}{\pm} 0.058$	0.707 ± 0.062	0.709 ± 0.060	0.649 ± 0.061	$0.649 \stackrel{1}{\pm} 0.063$	$0.660 \stackrel{1}{\pm} 0.059$	$0.659 \stackrel{1}{\pm} 0.061$
$glass\hbox{-} 0\hbox{-} 1\hbox{-} 5\hbox{-} vs\hbox{-} 2$	0.533 ± 0.066	0.673 ± 0.141	0.670 ± 0.131	0.727 ± 0.135	0.728 ± 0.105	$0.709 \stackrel{1}{\pm} 0.128$	$0.723 \stackrel{1}{\pm} 0.104$
ecoli- 0 - 6 - 7 - vs - 5	0.840 ± 0.108	0.868 ± 0.101	0.865 ± 0.102	0.867 ± 0.103	0.872 ± 0.104	0.870 ± 0.099	0.871 ± 0.106
ecoli- 0 - 2 - 3 - 4 - vs - 5	0.890 ± 0.083	$0.912 \stackrel{4}{\pm} 0.080$	0.912 ± 0.079	$0.909 \stackrel{3}{\pm} 0.081$	0.907 ± 0.080	$0.909 \stackrel{3}{\pm} 0.081$	$0.910 \stackrel{3}{\pm} 0.080$
ecoli4	0.894 ± 0.100	0.919 ± 0.098	0.918 ± 0.097	0.922 ± 0.090	0.935 ± 0.084	0.923 ± 0.097	0.929 ± 0.086
yeast5	0.821 ± 0.064	0.937 ± 0.045	0.933 ± 0.048	0.922 ± 0.062	0.936 ± 0.052	0.936 ± 0.057	0.932 ± 0.048
ecoli-0-4- 6 - vs - 5	0.901 ± 0.084	0.916 ± 0.082	0.916 ± 0.081	0.905 ± 0.082	0.906 ± 0.083	0.903 ± 0.084	0.905 ± 0.083
$led 7 digit \hbox{-} 0 \hbox{-} 2 \hbox{-} 4 \hbox{-} 5 \hbox{-} 6 \hbox{-} 7 \hbox{-} 8 \hbox{-} 9 \hbox{-} vs \hbox{-} 1$	0.635 ± 0.077	0.898 ± 0.068	0.860 ± 0.118	0.609 ± 0.081	0.661 ± 0.090	0.875 ± 0.086	0.873 ± 0.115
ecoli- 0 - 1 - vs - 5	$0.891 \stackrel{4}{\pm} 0.089$	0.920 ± 0.074	0.919 ± 0.074	0.904 ± 0.076	0.910 ± 0.075	0.908 ± 0.074	0.915 ± 0.073
ecoli - 0 - 2 - 6 - 7 - vs - 3 - 5	0.797 ± 0.125	0.857 ± 0.090	0.867 ± 0.080	0.834 ± 0.105	0.836 ± 0.103	0.843 ± 0.093	0.840 ± 0.097
ecoli - 0 - 1 - 4 - 7 - vs - 2 - 3 - 5 - 6	0.833 ± 0.100	0.850 ± 0.084	0.854 ± 0.079	0.861 ± 0.082	0.858 ± 0.087	0.862 ± 0.079	0.858 ± 0.085
shuttle-c0-vs-c4	0.996 ± 0.008	0.996 ± 0.008	0.996 ± 0.008	0.996 ± 0.008	0.996 ± 0.008	0.996 ± 0.008	0.996 ± 0.008
ecoli-0-6-7- vs -3-5	0.792 ± 0.119	0.854 ± 0.102	0.863 ± 0.105	0.827 ± 0.104	0.827 ± 0.106	0.828 ± 0.103	0.831 ± 0.101
vowel0	0.970 ± 0.038	0.996 ± 0.019	0.997 ± 0.019	0.805 ± 0.063	0.913 ± 0.062	0.923 ± 0.058	0.922 ± 0.056
glass4	0.750 ± 0.158	0.909 ± 0.143	$\begin{array}{c} 1,4,5,6,7\\ 0.907 \pm 0.143 \end{array}$	0.783 ± 0.142	0.814 ± 0.155	0.779 ± 0.149	0.828 ± 0.153
yeast - 0 - 5 - 6 - 7 - 9 - vs - 4	0.649 ± 0.074	0.800 ± 0.055	0.798 ± 0.055	0.778 ± 0.060	0.793 ± 0.048	0.784 ± 0.060	0.805 ± 0.053
$yeast\hbox{-}0\hbox{-}2\hbox{-}5\hbox{-}6\hbox{-}vs\hbox{-}3\hbox{-}7\hbox{-}8\hbox{-}9$	0.756 ± 0.042	0.791 ± 0.045 $1,3,4,6,7$	0.789 ± 0.047	0.766 ± 0.051	0.778 ± 0.052	0.761 ± 0.055	0.774 ± 0.052
ecoli-0-1- vs -2-3-5	0.833 ± 0.093	0.876 ± 0.090	0.877 ± 0.091	0.853 ± 0.088	0.862 ± 0.090	0.859 ± 0.088	0.858 ± 0.085
ecoli-0-3-4-vs-5	0.903 ± 0.105	0.915 ± 0.100	0.914 ± 0.099	0.914 ± 0.102	0.913 ± 0.102	0.912 ± 0.102	0.908 ± 0.105
glass5	0.648 ± 0.165	0.814 ± 0.203	0.834 ± 0.194	0.810 ± 0.179	0.847 ± 0.174	0.798 ± 0.175	0.853 ± 0.175
yeast4	0.555 ± 0.043	0.725 ± 0.078	0.727 ± 0.077	0.736 ± 0.067	0.744 ± 0.070	0.759 ± 0.082	0.782 ± 0.078
$glass\hbox{-} 0\hbox{-} 4\hbox{-} vs\hbox{-} 5$	0.744 ± 0.204	0.982 ± 0.045	0.983 ± 0.044	0.819 ± 0.160	0.864 ± 0.166	0.839 ± 0.162	0.829 ± 0.166
yeast6	0.757 ± 0.091	0.823 ± 0.090	0.829 ± 0.086	0.835 ± 0.084	0.843 ± 0.087	0.844 ± 0.080	0.856 ± 0.085
page-blocks-1-3-vs-4	0.818 ± 0.106	0.922 ± 0.078	0.905 ± 0.083	0.752 ± 0.115	0.802 ± 0.100	0.808 ± 0.124	0.803 ± 0.106
yeast-1-vs-7	0.529 ± 0.043	0.641 ± 0.104	0.638 ± 0.103	0.639 ± 0.084	0.631 ± 0.098	0.646 ± 0.096	0.661 ± 0.099
ecoli-0-1-3-7-vs-2-6	0.850 ± 0.200	0.839 ± 0.197	0.843 ± 0.200	0.844 ± 0.206	0.840 ± 0.208	0.829 ± 0.199	0.838 ± 0.205
yeast-1-4-5-8- vs -7	$0.501 \stackrel{all}{\pm} 0.010$	0.565 ± 0.081	0.570 ± 0.085	0.581 ± 0.094	0.588 ± 0.092	0.617 ± 0.103	0.610 ± 0.090 $1,2,3,4$
ecoli- 0 - 1 - 4 - 7 - vs - 5 - 6	0.865 ± 0.098	0.897 ± 0.074	0.902 ± 0.067	0.888 ± 0.077	0.885 ± 0.080	0.894 ± 0.073	0.891 ± 0.081
yeast-2-vs-8	0.774 ± 0.114	0.768 ± 0.113	0.773 ± 0.111	0.773 ± 0.116	0.776 ± 0.111	0.773 ± 0.116	0.775 ± 0.111
$yeast \hbox{-} 0 \hbox{-} 2 \hbox{-} 5 \hbox{-} 7 \hbox{-} 9 \hbox{-} vs \hbox{-} 3 \hbox{-} 6 \hbox{-} 8$	0.892 ± 0.042	0.894 ± 0.040	0.892 ± 0.040	0.896 ± 0.040	0.902 ± 0.038	0.895 ± 0.041	0.900 ± 0.039
glass2	0.547 ± 0.083	0.708 ± 0.109	0.695 ± 0.114	0.759 ± 0.118	0.757 ± 0.113	0.746 ± 0.105	0.752 ± 0.110
	I –	1	1	all	1,2,3,6	1,2,3	1,2,3,6

Table 9: Results for AUC metric

	kNN (1)	OSB (2)	OKNORAU (3)	TBAC (4)	OTBAC (5)	TBAW (6)	OTBAW (7)
Mean rank	1.610	5.061	4.902	3.244	4.329	4.134	4.720
	_	1,4,6	1,4	1	1,4	1,4	1,4,6

Table 10: Results for mean ranks according to AUC metric

Dataset	kNN (1)	OSB (2)	OKNORAU (3)	TBAC (4)	OTBAC (5)	TBAW (6)	OTBAW (7)
glass-0-1-6-vs-2	0.118 ± 0.222	0.603 ± 0.222	0.602 ± 0.219	0.720 ± 0.135	0.737 ± 0.097	0.726 ± 0.116	0.736 ± 0.098
ecoli-0-3-4-7-vs-5-6	0.852 ± 0.116	0.887 ± 0.090	0.884 ± 0.090	0.869 ± 0.088	0.865 ± 0.090	0.882 ± 0.089	0.870 ± 0.089
shuttle- $c2$ - vs - $c4$	0.182 ± 0.369	$0.994 \stackrel{3}{\pm} 0.041$	0.994 ± 0.041	0.722 ± 0.433	0.868 ± 0.325	0.742 ± 0.422	$0.868 \stackrel{4}{\pm} 0.325$
$glass\hbox{-} 0\hbox{-} 1\hbox{-} 4\hbox{-} 6\hbox{-} vs\hbox{-} 2$	0.098 ± 0.210	0.645 ± 0.205	0.622 ± 0.222	0.682 ± 0.212	$0.729 \stackrel{1}{\pm} 0.144$	$0.712 \stackrel{1}{\pm} 0.114$	$0.737 \stackrel{1}{\pm} 0.108$
yeast-1-2-8-9- vs -7	0.041 ± 0.122	0.504 ± 0.191	0.517 ± 0.179	0.488 ± 0.215	0.531 ± 0.224	0.584 ± 0.174	0.641 ± 0.114
ecoli-0-1-4-6-vs-5	0.873 ± 0.105	$0.910 \stackrel{1}{\pm} 0.082$	0.912 ± 0.083	$0.890 \stackrel{1}{\pm} 0.090$	0.898 ± 0.089	0.893 ± 0.087	0.898 ± 0.089
$glass\hbox{-} 0\hbox{-} 1\hbox{-} 6\hbox{-} vs\hbox{-} 5$	0.459 ± 0.368	0.859 ± 0.217	0.837 ± 0.274	0.784 ± 0.268	0.760 ± 0.286	0.759 ± 0.286	0.779 ± 0.267
yeast-2- vs -4	0.797 ± 0.083	0.863 ± 0.070	0.869 ± 0.068	0.817 ± 0.074	0.830 ± 0.079	$0.825 \stackrel{1}{\pm} 0.077$	0.837 ± 0.077
$glass\hbox{-} 0\hbox{-} 6\hbox{-} vs\hbox{-} 5$	0.521 ± 0.407	0.885 ± 0.244	0.918 ± 0.168	0.655 ± 0.388	0.703 ± 0.334	0.736 ± 0.324	0.727 ± 0.322
ecoli-0-3-4-6-vs-5	0.883 ± 0.108	0.907 ± 0.098	0.907 ± 0.098	0.884 ± 0.097	0.894 ± 0.100	0.890 ± 0.098	0.891 ± 0.100
yeast - 0 - 3 - 5 - 9 - vs - 7 - 8	0.533 ± 0.123	0.680 ± 0.083	0.686 ± 0.079	$0.548 \stackrel{1}{\pm} 0.129$	0.557 ± 0.126	0.574 ± 0.126	$0.576 \stackrel{1}{\pm} 0.125$
$glass\hbox{-} 0\hbox{-} 1\hbox{-} 5\hbox{-} vs\hbox{-} 2$	0.161 ± 0.246	0.591 ± 0.258	0.601 ± 0.226	0.705 ± 0.172	0.710 ± 0.139	0.689 ± 0.154	0.704 ± 0.137
ecoli-0-6-7-vs-5	0.814 ± 0.139	0.853 ± 0.120	0.851 ± 0.121	0.852 ± 0.122	0.858 ± 0.123	0.855 ± 0.117	0.857 ± 0.124
$ecoli \hbox{-} 0 \hbox{-} 2 \hbox{-} 3 \hbox{-} 4 \hbox{-} vs \hbox{-} 5$	0.878 ± 0.100	$0.906 \stackrel{4}{\pm} 0.089$	$0.905 \stackrel{-}{\pm} 0.088$	0.902 ± 0.089	0.901 ± 0.089	0.902 ± 0.089	0.903 ± 0.089
ecoli4	0.879 ± 0.124	$0.909 \stackrel{-}{\pm} 0.117$	0.907 ± 0.116	0.913 ± 0.103	0.928 ± 0.095	0.913 ± 0.116	0.922 ± 0.098
yeast5	0.798 ± 0.083	0.935 ± 0.048	0.931 ± 0.053	0.917 ± 0.069	0.933 ± 0.056	0.933 ± 0.063	0.929 ± 0.052
ecoli-0-4- 6 - vs - 5	0.892 ± 0.095	0.910 ± 0.091	$0.909 \stackrel{1}{\pm} 0.090$	$0.899 \stackrel{1}{\pm} 0.090$	$0.900 \stackrel{1}{\pm} 0.091$	0.896 ± 0.093	$0.899 \stackrel{1}{\pm} 0.091$
$led 7 digit \hbox{-} 0\hbox{-} 2\hbox{-} 4\hbox{-} 5\hbox{-} 6\hbox{-} 7\hbox{-} 8\hbox{-} 9\hbox{-} vs\hbox{-} 1$	0.494 ± 0.179	0.894 ± 0.075	0.839 ± 0.161	0.434 ± 0.212	0.563 ± 0.165	0.862 ± 0.113	0.855 ± 0.156
ecoli-0-1-vs-5	0.879 ± 0.104	0.913 ± 0.082	0.913 ± 0.082	0.894 ± 0.087	0.902 ± 0.085	0.900 ± 0.084	0.907 ± 0.081
ecoli - 0 - 2 - 6 - 7 - vs - 3 - 5	0.747 ± 0.192	0.842 ± 0.108	0.856 ± 0.092	0.811 ± 0.129	0.814 ± 0.127	0.826 ± 0.111	0.823 ± 0.116
$ecoli \hbox{-} 0 \hbox{-} 1 \hbox{-} 4 \hbox{-} 7 \hbox{-} vs \hbox{-} 2 \hbox{-} 3 \hbox{-} 5 \hbox{-} 6$	0.805 ± 0.133	0.836 ± 0.104	0.842 ± 0.094	0.844 ± 0.101	0.840 ± 0.111	0.847 ± 0.095	0.843 ± 0.106
shuttle-c0-vs-c4	0.996 ± 0.008	0.996 ± 0.008	0.996 ± 0.008	0.995 ± 0.008	$0.995 \stackrel{2}{\pm} 0.008$	0.995 ± 0.008	0.995 ± 0.008
ecoli-0-6-7- vs -3-5	0.750 ± 0.159	0.839 ± 0.121	0.848 ± 0.127	0.803 ± 0.129	0.803 ± 0.131	0.805 ± 0.128	0.809 ± 0.122
vowel0	0.969 ± 0.041	$0.996 \stackrel{1}{\pm} 0.020$	0.996 ± 0.020	0.779 ± 0.082	0.907 ± 0.071	$0.919 \stackrel{4}{\pm} 0.065$	0.917 ± 0.063
glass4	0.641 ± 0.310	0.875 ± 0.244	0.873 ± 0.243	0.730 ± 0.231	$0.760 \stackrel{4}{\pm} 0.262$	0.717 ± 0.254	0.783 ± 0.243
yeast - 0 - 5 - 6 - 7 - 9 - vs - 4	0.532 ± 0.164	0.788 ± 0.066	0.786 ± 0.066	0.757 ± 0.078	0.780 ± 0.057	0.774 ± 0.070	0.797 ± 0.061
yeast - 0 - 2 - 5 - 6 - vs - 3 - 7 - 8 - 9	0.719 ± 0.058	0.778 ± 0.055	0.777 ± 0.056	$0.733 \stackrel{1}{\pm} 0.069$	$0.751 \stackrel{1}{\pm} 0.070$	0.728 ± 0.075	0.743 ± 0.070
ecoli- 0 - 1 - vs - 2 - 3 - 5	0.807 ± 0.125	0.864 ± 0.108	0.866 ± 0.109	$0.835 \stackrel{1}{\pm} 0.108$	0.844 ± 0.110	$0.841 \stackrel{1}{\pm} 0.108$	0.841 ± 0.104
ecoli-0-3-4-vs-5	0.888 ± 0.132	0.905 ± 0.122	0.904 ± 0.121	0.904 ± 0.123	0.903 ± 0.123	0.902 ± 0.123	0.897 ± 0.126
glass5	0.394 ± 0.387	0.698 ± 0.388	0.738 ± 0.365	0.730 ± 0.323	0.782 ± 0.311	0.716 ± 0.318	0.789 ± 0.313
yeast4	0.288 ± 0.183	0.675 ± 0.116	0.680 ± 0.112	0.694 ± 0.094	0.705 ± 0.095	0.728 ± 0.114	0.760 ± 0.100
$glass\hbox{-} 0\hbox{-} 4\hbox{-} vs\hbox{-} 5$	0.560 ± 0.419	0.981 ± 0.049	0.982 ± 0.048	0.754 ± 0.284	0.806 ± 0.293	0.778 ± 0.289	$0.767 \stackrel{all}{\pm} 0.288$
yeast6	0.707 ± 0.136	0.800 ± 0.119	0.810 ± 0.108	0.815 ± 0.110	0.825 ± 0.113	0.828 ± 0.100	0.842 ± 0.106
page-blocks-1-3-vs-4	0.789 ± 0.138	0.917 ± 0.087	0.899 ± 0.094	0.683 ± 0.221	0.773 ± 0.130	0.761 ± 0.209	0.769 ± 0.140
yeast-1- vs -7	0.142 ± 0.199	0.538 ± 0.209	0.538 ± 0.206	0.583 ± 0.123	0.557 ± 0.176	$0.609 \stackrel{4}{\pm} 0.131$	0.624 ± 0.151
ecoli-0-1-3-7-vs-2-6	0.741 ± 0.387	0.733 ± 0.382	0.737 ± 0.385	0.739 ± 0.387	0.737 ± 0.385	0.726 ± 0.378	0.734 ± 0.383
yeast-1-4-5-8- vs -7	0.008 ± 0.056	0.358 ± 0.234	0.382 ± 0.231	0.464 ± 0.210	0.506 ± 0.190	0.557 ± 0.174	0.561 ± 0.159
ecoli- 0 - 1 - 4 - 7 - vs - 5 - 6	0.844 ± 0.132	$0.890 \stackrel{1}{\pm} 0.083$	0.895 ± 0.074	0.878 ± 0.086	0.874 ± 0.092	0.886 ± 0.082	0.881 ± 0.092
yeast-2-vs-8	0.718 ± 0.181	0.716 ± 0.180	0.729 ± 0.154	0.718 ± 0.181	0.728 ± 0.154	$0.718 \stackrel{4}{\pm} 0.181$	0.727 ± 0.154
yeast - 0 - 2 - 5 - 7 - 9 - vs - 3 - 6 - 8	$0.885 \stackrel{2}{\pm} 0.047$	0.891 ± 0.044	$0.889 \stackrel{all}{\pm} 0.043$	$0.891 \stackrel{2}{\pm} 0.045$	$0.898 \stackrel{2}{\pm} 0.042$	$0.890 \stackrel{2}{\pm} 0.046$	$0.895 \stackrel{2}{\pm} 0.044$
glass2	0.201 ± 0.271	$0.660 \stackrel{3}{\pm} 0.182$	0.636 ± 0.204	0.742 ± 0.158	0.741 ± 0.149	0.729 ± 0.139	0.735 ± 0.146
	l –	1,3	1	all	1,2,3,6	1,2,3	1,2,3,6

Table 11: Results for GMEAN metric

	kNN (1)	OSB (2)	OKNORAU (3)	TBAC (4)	OTBAC (5)	TBAW (6)	OTBAW (7)
Mean rank	1.549	4.939	5.037	3.268	4.439	3.915	4.854
	_	1,4,6	1,4,6	1	1,4	1,4	1,4,6

Table 12: Results for mean ranks according to GMEAN metric